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**QALHÂT (ASH-SHARQYJAH)**

**SEASON 2015B-2016A**

**FINAL REPORT**

**VOL. 1/2**

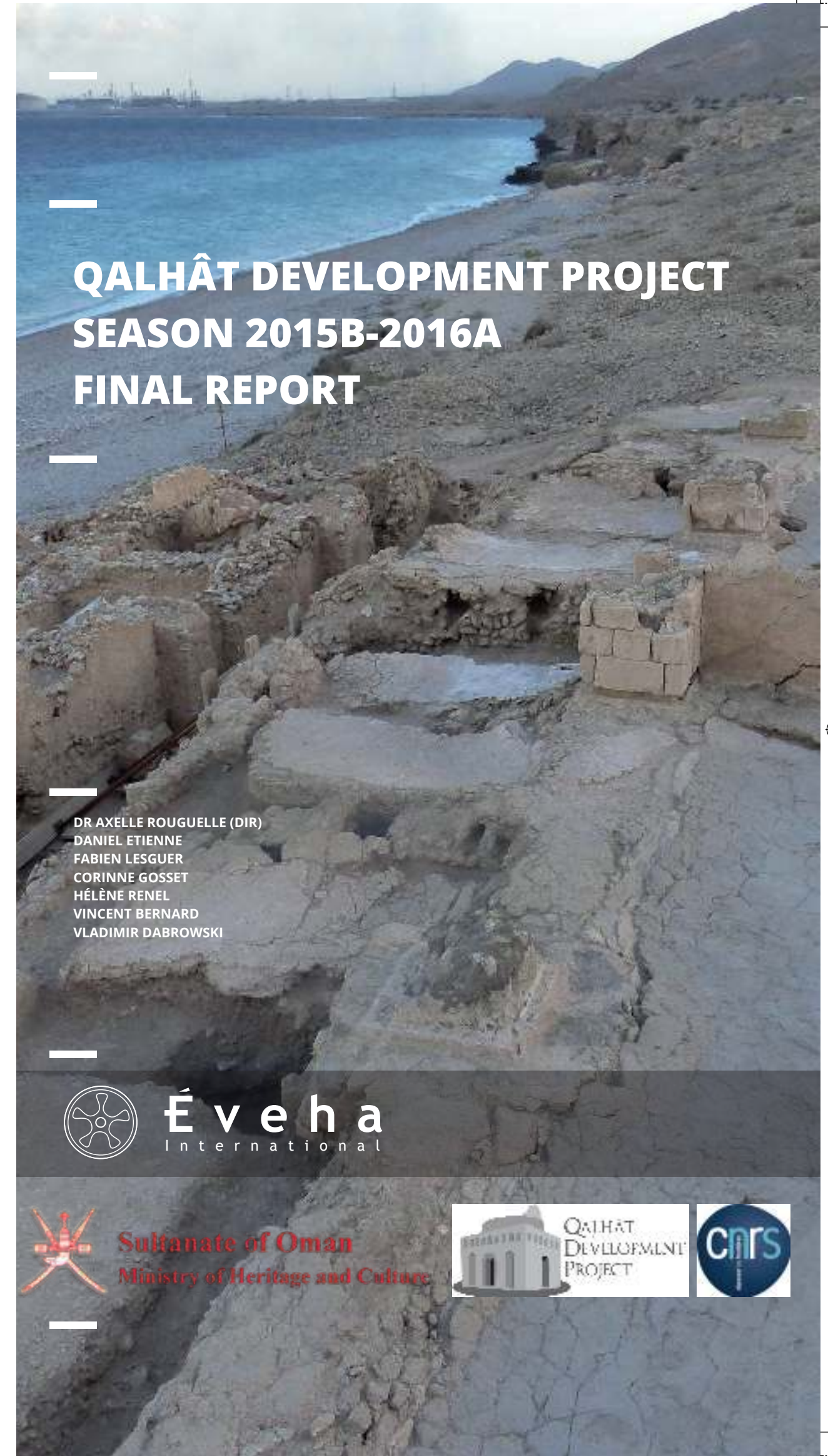


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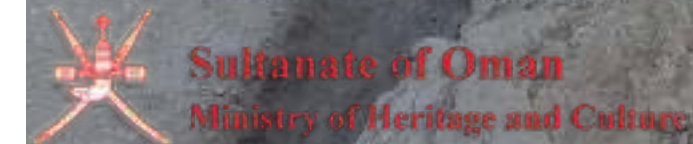
**FINAL REPORT**

**VOL. 1/2**



# QALHÂT DEVELOPMENT PROJECT SEASON 2015B-2016A FINAL REPORT

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# **QALHÂT DEVELOPMENT PROJECT, SEASON 2015B-2016A**

***Completion of Excavations on the Great Mosque  
Complex (Buildings B12, B95 and B139) and its  
surroundings (Buildings B197 and B255)***

***Excavations on the Ceramic Workshop B41***

***Excavations on the Western area of the City, the west  
gate (B31), the funerary terraces (B280, B281, B282  
and B283) and the platform mosque (B29)***

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International





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The French Team also wish to thanks all the peoples in Sur and elsewhere in Oman who warmly welcomed us and all the Pakistani and Bengladeshi who worked with us, sometimes through harsh times, always with the smile and many times with a real interest for archaeology.



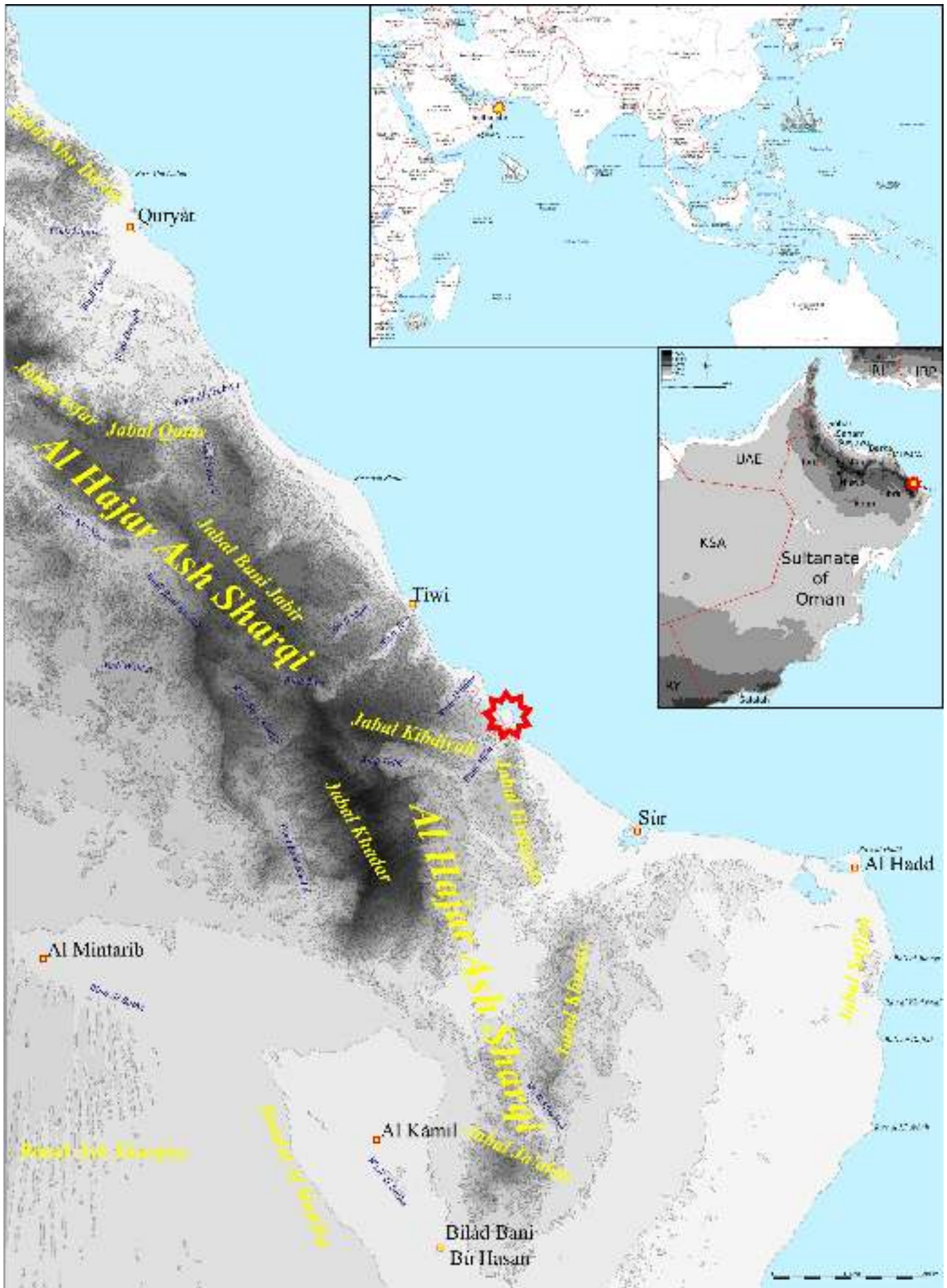


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Fig. 0-1 : Location map of the city of Qalhât





## GENERAL INTRODUCTION

### Summary of the Qalhât Project and Qalhât Development Project, Researches and Results

Qalhât is one of the most famous and impressive archaeological sites of Oman, and is known from several medieval literary sources which enhance its key importance in the history of Oman and the Indian Ocean trade, especially at the time of the Hormuz kingdom (13<sup>th</sup>-15<sup>th</sup> centuries). Due to its huge size the site was nevertheless little studied, until the Ministry of Heritage and Culture (MHC) of the Sultanate started in 2008 a comprehensive study project, the Qalhât Project (QP), in cooperation with a French team directed by Dr A. Rougeulle from the French National Centre for Scientific Research (CNRS-UMR8167). Five excavation seasons were first conducted in 2008-2012, which delivered much interesting information about the history of the city, its spatial organisation and development, the daily life of the inhabitants and their activities, the regional and international trade networks of the harbour. A cartographical project was carried out, which achieved a GIS and preliminary maps of the medieval city, the various quarters, architectural units, main buildings and circulation networks. The defensive system, water supply system, and the funerary quarters, were studied. The Friday mosque and some secondary mosques, a ceramic factory and several large buildings as houses and stores, were discovered and tested. A detailed study of the archaeological material, and especially of the local and imported ceramics, was undertaken, which allowed the identification of the main commercial partners of the harbour during the pre-Hormuzi and Hormuzi periods.

Consequently, the MHC launched in January 2013 a new five-year project, with the final aim to create an archaeological park at the site. The Qalhât Development Project (QDP) is led and supported by the MHC, under the scientific direction of Dr A. Rougeulle. It runs in seasons of about five months from October to March, with two sessions, Fall and Winter, separated by a one month break in Christmas/New Year time. Its aim is to excavate and clear extensively some of the main buildings discovered in the course of the QP, then to make conservation works for their display to the public in the future park. It therefore includes an excavation component, achieved by the CNRS and the archaeological agency Eveha International; a conservation component, realized by World Monuments Fund; and a tourist development component which has still to be initiated.

Researches conducted during the first half-season 2013a of the QDP (January-March 2013) focused on the northwest quarter of the city. Several buildings previously tested by the QP were then entirely cleared, a funerary mosque (B67), a twin house (B94), a large store (B21) and a small platform mosque (B19), which were later conserved by the WMF. They brought quite a lot of information on the religious, domestic and economic life of the inhabitants of Qalhât, as on the chronological evolution of the city. **(Fig 0.-2)**



**Fig 0-2** : Excavated buildings B21 and B94 under restoration in February 2014



The full following season 2013b-2014a (October-December 2013 and January-March 2014) was entirely devoted to the comprehensive excavation of the Great Mosque of the city, which was built by Bibi Maryam around 1300 and destroyed by the Portuguese in 1508. The surrounding walls of this wide architectural complex on the seashore include two wide courtyards and several secondary structures, beside the mosque proper. Although largely destroyed, this one appeared as a unique edifice in the architectural history of Oman and of the Islamic world: an extremely complex construction with two storeys, the prayer hall erected on top of a massive basement with underground cellars, and heavily ornamented with varied decoration styles depending on the area in the building. Excavations and registration had therefore to be very precise and detailed to allow a final 3D restitution of the original building, and they could not be completed during this season, the remaining work planned for the following season 2014b-2015a. (Fig 0-3)

**Fig 0-3** : *The Great Mosque under excavations in February 2014*



Unfortunately, for administrative reasons excavations could not be resumed in Fall 2014, and the mosque was left untouched for one year, until work started again in October 2015.

### **Course and Methodology of Excavations**

After one year of interruption between mid-2014 and mid-2015, the Qalhât Development Project hold its third archaeological season from October 2015 to March 2016, with a month of break around the New Year's Day. The 2015b-2016a season must so be divided in two sessions, the Fall session, which took place from October 5th to December 18th, and the Winter session, which occurred from January 24th to March 31st. The Fall session focused only on the excavations at the Great Mosque Complex (B12), and it was firstly planned to complete these excavations before the end of the session. But, as the workforce was provided with a certain delay, this initial aim could not be reached and. A part of the Winter session was therefore devoted to the complete ending of the excavations of the Mosque Complex and its immediate surroundings, beside the other works planned at the Kiln factory B41, the West gate of the city B31, and the platform mosque B29.

### Fall session (2015b)

Seven archaeologists of the French company Eveha International were involved in the Fall session, under the direction of Dr Axelle Rougeulle who made two sojourns on the site, from October 12<sup>th</sup> to 24<sup>th</sup>, and from November 17<sup>th</sup> to December 18<sup>th</sup> :

- Daniel Etienne, Field Director, from October 5<sup>th</sup> to December 18<sup>th</sup>.
- Corinne Gosset, Assistant Field Director, from October 18<sup>th</sup> to December 18<sup>th</sup>.
- Fabien Lesguer, Archaeologist, from October 5<sup>th</sup> to December 15<sup>th</sup>.
- Juliette André, Archaeologist, from October 5<sup>th</sup> to December 18<sup>th</sup>.
- Ronald Schwerdtner, Topographer, from October 5<sup>th</sup> to December 18<sup>th</sup>.
- Romain Séguier, Archaeologist, from October 5<sup>th</sup> to November 27<sup>th</sup>.
- Sanae Es-Safi, Archaeologist, from November 24<sup>th</sup> to December 18<sup>th</sup>.

In addition to the archaeological team, the Qalhât Development Project also welcomed during the Fall session two specialists:

- Vincent Bernard, specialist of Islamic architecture, from October 18<sup>th</sup> to December 15<sup>th</sup>, who made an important study of the architectural remains, in situ and after excavation, the precise technical drawings of the most important ones, and the archaeological site plan of the Complex.
- Vladimir Dabrowsky, Archaeobotanist, National Museum of Natural History, Paris, from October 18<sup>th</sup> to December 15<sup>th</sup>, who studied the charcoals, woods and seeds sampled during the previous excavations.

The Qalhât Development Project also welcomed during the last month of the session the four members of the Qalhât Project, who completed the excavations of the building B39 and continued the survey of the central ancient quarter of the medieval city:

- Dr Axelle Rougeulle, Archaeologist, CNRS, scientific director of the QDP, director of the QP.
- Dr Thomas Creissen, Archaeologist, Head of Eveha International.
- Dr Sterenn Le Maguer, Archaeologist.
- Hélène Renel, Ceramologist, research engineer at the CNRS, who also studied a part of the ceramics found during the excavations at the Great Mosque.

If the excavations firstly intended to start in October 11<sup>th</sup>, some administrative delays in the providing of the workforce did not permit an effective start before October 15<sup>th</sup>, and then only with less than half of the expected workforce. A dozen of workers were also lent to the QP during the last month of the session and, from time to time, a small team of workers was also assigned to the building B4 (hammam), excavated in 2003 by the Australian team and presently under conservation works by the WMF, but which appeared to need further excavation in some areas. This complicated running of workforce explains why it was not possible to reach the original aim to finish the Mosque Complex and why it has to be completed during the following Winter session.

The methodology used for the excavations at the Mosque is the same as the one already used during the 2013b-2014a season. In the remaining unexcavated part of the basement of the building, the upper part of the collapse was removed until the discovery of the leveling course of the walls separating the basement in several rooms. When the plan of a room was known, the internal space was artificially divided in two spaces by an east-west axis more or less in the middle of the room, each half being excavated and registered separately. The massive level of collapse which filled the rooms was also artificially divided in several horizontal layers, more or less 0.5 m high, and separately registered under an increasing numbered Unit File (UFxxx) located in plan and height.

The purpose of this particular methodology was to know the global spreading of the decorative and architectural remains among the ruins of the building and thus find out special concentrations to help for the reconstitution of the architecture and decoration of the Mosque. The more massive architectural remains were included in the topographical survey while the smaller scattered ones were simply registered under the identification of the Unit File inside which it was found, the location being regarded as sufficient. The separation of the internal rooms in two parts also permit to maintain benches for stratigraphical observations and drawings.

The occupancy levels were excavated layer by layers and the various occupancy structures discovered, such as postholes or hearths, were also excavated and registered following the international standards of archaeology, by data files, archaeological drawings and photographs, all registered under an increasing numbered Structure Files which took into account the registration number of the corresponding building (St Bxx-xxx).

The excavations of the surroundings of the Mosque building followed a similar but simpler protocol, as the artificial divisions were fewer and not related with a real limit, such as walls. The collapse of the enclosing walls of the courtyards, for example, was considered and registered as a single Unit File, as no remains of decoration were expected and found.

In the prayer's hall of the Mosque, which is only preserved at first floor on the two westernmost spans (1/3<sup>rd</sup> of the total surface), the protocol used is the same as in the basement, but the axis chosen for the internal division of the collapse followed the remains of the pillars which were already known or guessable and, as the layer of collapse was thinner, the horizontal artificial divisions are fewer. Apart from this difference, the protocol was strictly similar.

All the archaeological material found (ceramics, tiles, glass, metal, bones...) was also registered under the identification of its corresponding Unit File, cleaned and stored but variously studied. Because of the available time, only a part of the ceramics found in the occupancy layers was studied, according to the assumed relevance of the considered Unit File to give a precise and useful dating of the setting of the archaeological level and thus the chronological evolution of the use of the building. This study was made by H el ene Renel during the two sessions and, though still incomplete, is sufficient enough to date the main stages of the Mosque.

The architectural elements, both massive and smaller scattered ones, were also registered under the registration of their corresponding Unit Files and photographed, mainly in situ. The study of those elements was made by Vincent Bernard, who also made precise technical drawings of the most relevant ones, helped by Corinne Gosset and Fabien Lesguer. The various architectural elements, hereafter registered as IsoArc (for Isolate Architectural) followed by an increasing number, have known various ways of conservation and storing. The smaller ones, which were most of the time a simple carved stone easily movable by hand, were stored in the storehouse and adjacent containers, except for the most fragile which didn't support their removal. The treatment for the massive ones depended on the architectural importance of the element, its state of conservation and its location, preventing or not the continuation of excavations. When the remain was considered as relevant for its architectural or decorative features not preventing the ongoing excavations, it was left in place to create some animation among the ruins for the visitors to come. When the remain showed some interesting features and was strong enough to be moved, it was taken and stored in the storehouse, sometimes all the discovered part, sometimes only the most interesting one. When the remain was important regarding its decoration or architectural use but too massive or too fragile to be moved, the architectural element was methodically dismantled, following a precise protocol already used during the last season and explained in the previous report, piece by piece, each of them being stored in the storehouse or containers. The precise protocol, with the registered location of each piece, will make possible a further reconstitution for public display. Finally, when the architectural remain showed no special features, it was completely destroyed after extensive documentation, to allow the excavations to continue.

The scattered elements of decoration (mainly tiles and plaster fragments), which were registered under their corresponding Unit File, were also photographed and counted in accordance with the different identified styles of decoration to which they were assumed to belong, in order to allow estimation of the surface area and location of the various styles of decoration, and so to help for their interpretation and the restitution of the original superstructures of the Mosque and its internal decoration. This study of the elements of decoration, and particularly the exhausting and not exciting phase of counting, was made by Corinne Gosset, helped by Fabien Lesguer, especially for the statistical analysis, and by Vincent Bernard for the identification and interpretation.

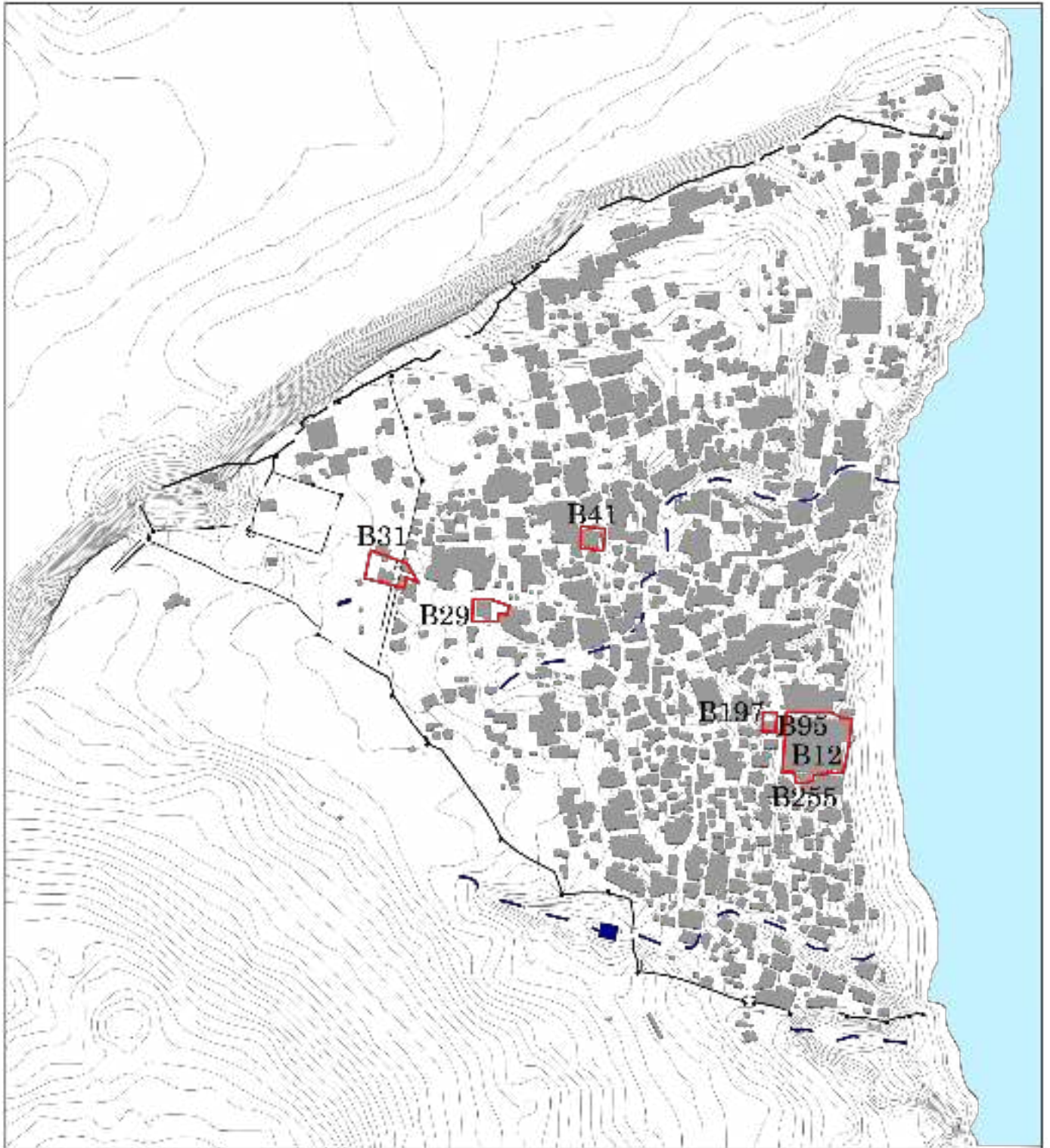
The small objects found (such as coins, pieces of metal or of glass ...) were also registered under their corresponding Unit File, cleaned and photographed. The most remarkable ones, or those found on occupancy levels, were included in the topographic survey, and all of them were stored in the most adequate way to preserve them for further study. All other artifacts (mainly bones and shells) were also registered, cleaned and stored, but no study was yet made.

### Winter session (2016a)

Apart from the completing of the archaeological work in the Mosque Complex (B12), the main part of the Winter session focused on the excavations at three different areas in the north-western part of the city. The main part of the work was devoted to the excavations of the pottery kiln (B41) which occupied more or less half of the workforce and the two third of the archaeological team. The two other excavated places were the area around the west gate of the city (B31), in front of the mausoleum of Bibi Maryam, and a small building (B29), nearly halfway between B31 and B41, which was assumed to be a small mosque built over a platform, similar the one already excavated in the north-west quarter of the city (Building B19).



Fig 0-4 : Excavated buildings in 2015-2016



Seven archaeologists of the French company Eveha International were involved in the Fall session, under the direction of Dr Axelle Rougeulle, who made two sojourns on the site, from January 11<sup>th</sup> to 26<sup>th</sup>, and from March 14<sup>th</sup> to 31<sup>st</sup>:

- Daniel Etienne, Field Director and topographer, from January 24<sup>th</sup> to March 31<sup>st</sup>.
- Corinne Gosset, Assistant Field Director, from January 24<sup>th</sup> to March 31<sup>st</sup>.
- Fabien Lesguer, archaeologist, from February 5<sup>th</sup> to March 31<sup>st</sup>.
- Juliette André, archaeologist, from January 24<sup>th</sup> to March 31<sup>st</sup>.
- Romain Séguier, archaeologist, from January 24<sup>th</sup> to March 31<sup>st</sup>.
- Sanae Es-Safi, archaeologist, from January 24<sup>th</sup> to March 31<sup>st</sup>.
- Jérôme Janky, archaeologist, from January 24<sup>th</sup> to February 19<sup>th</sup>.

The archaeological team also welcomed three specialists during this session:

- Emmanuelle Régagnon, cartographer from the CNRS, from January 11<sup>th</sup> to January 21<sup>st</sup>, who worked with Dr Axelle Rougeulle to enter the results of the QP survey of the central quarter into the GIS of the site.
- Hélène Renel, ceramologist, research engineer at the CNRS, who came firstly from February 7<sup>th</sup> to February 12<sup>th</sup> to help for the setting of the protocol of excavations at the pottery kilns B41; and secondly from March 13<sup>th</sup> to March 31<sup>st</sup> for helping the study and analysis of the ceramics from the pottery kilns and from the other excavated areas.
- Vincent Bernard, specialist of Islamic architecture, from March 12<sup>th</sup> to March 22<sup>d</sup>, who came for finishing the archaeological site plan of the Great Mosque (B12), especially in the northern low courtyard.

No major problems occurred this time with the providing of the workforce but the Winter session suffered, as all the Sultanate, a bad weather during the month of March and the wadi downhill was overflowed for several days. However, the storms and rainfalls did not make many damages to the structures and did not delay the excavations, only some hours being lost. In the end, this unusual weather permitted to make interesting documentation and rare photographs which will be of a great help for the further managing of the site.

The methodology for the excavations at the pottery kilns B41 was very particular and only devoted to this area. An excavation grid, with a mesh size of 2m by 2m, was set up over the assumed extension of the pottery kilns and adjacent workshop and the levels of rubbish covering each square were excavated by artificial layers 0.30m thick, each artificial layer being registered under a different Unit File. The aim of this protocol was to know the spatial spreading of the wasters of ceramics and thus, by statistical analysis, to answer the questions regarding the techniques of production, the evolution of the local ceramics, the spatial organization of the workshop and its insertion in the neighborhood. The fragments and wasters of ceramics found during the excavations were sorted and counted directly on the site, square by square, into four categories (wasters, over-firing, red body and yellow body). Only the remarkable elements were cleaned and further studied, the less interesting part being counted but not cleaned, and stored loose.

In the other excavated buildings (B29 and B31), the protocol was simpler, following the international standard of archaeology. As no particular remains of decoration or architectural elements were expected and found, the levels of collapse were not artificially divided, other than their location on each side of the buildings. Apart from those differences, the registration of the excavations and the treatment of the discovered artifacts were exactly similar to those used during the Fall session.



**Technical and numeral data**

	Fall 2015	Winter 2016	Total
<b>Days of work</b> (on field)	50	45	95
<b>Workforce</b> (effective/excepted/ratio)	1261/2000/63%	1610/1800/89%	2871/3800/75%
<b>Excavated areas</b>			
B12 (Great Mosque)	880 m <sup>2</sup>	440 m <sup>2</sup>	1320 m <sup>2</sup>
B29 (small mosque)	-	500 m <sup>2</sup>	500 m <sup>2</sup>
B31 (west gate)	-	550 m <sup>2</sup>	550 m <sup>2</sup>
B41 (kilns and workshop)	-	340 m <sup>2</sup>	340 m <sup>2</sup>
Total	880 m <sup>2</sup>	1830 m <sup>2</sup>	2710 m <sup>2</sup>
<b>Registration Data</b>			
Unit Files (UF) recorded	426	626	1052
Structures (St) recorded	149	160	309
IsoArc recorded	463	4	467
IsoDec recorded	22	2	24
Others Isolates	15	3	18
Photographs taken	5448	4680	10128

**Fig 0-5** : General view of the Great Mosque B12 from the beach in December 2015





# A

## RESULTS AND FINDINGS



## **PART ONE: COMPLETION OF EXCAVATIONS AT THE GREAT MOSQUE COMPLEX (BUILDINGS B12, B15 AND B139) AND ITS SURROUNDINGS (BUILDINGS B197 AND B255)**

The Great Mosque of Qalhât was discovered during the first season of the Qalhât Project, in 2008, and studied through limited soundings in the course of the QP 2008–2011. The comprehensive excavations of the building and its surroundings were a main focus of the QDP program and they started during the 2013b and 2014a seasons. After one year of interruption of the project, the excavations were resumed in fall 2015 (season 2015b) and they were eventually completed in winter 2016 (season 2016a).

### **I-A. Previous works at the Great Mosque**

#### **I-A1. Summary of results after the QP excavations, 2008-2011**

At the beginning of the first excavations led by the Qalhât Development Project at the Great Mosque (B12), in October 2013, the main general features of the building were already known thanks to the previous soundings opened by the Qalhât Project between 2008 and 2011. The B12 Complex as a whole is more or less square, 60m long west-east and 50m wide north-south, bounded to the east by the seashore, to the south and west by streets, and to the north by the large building B13.

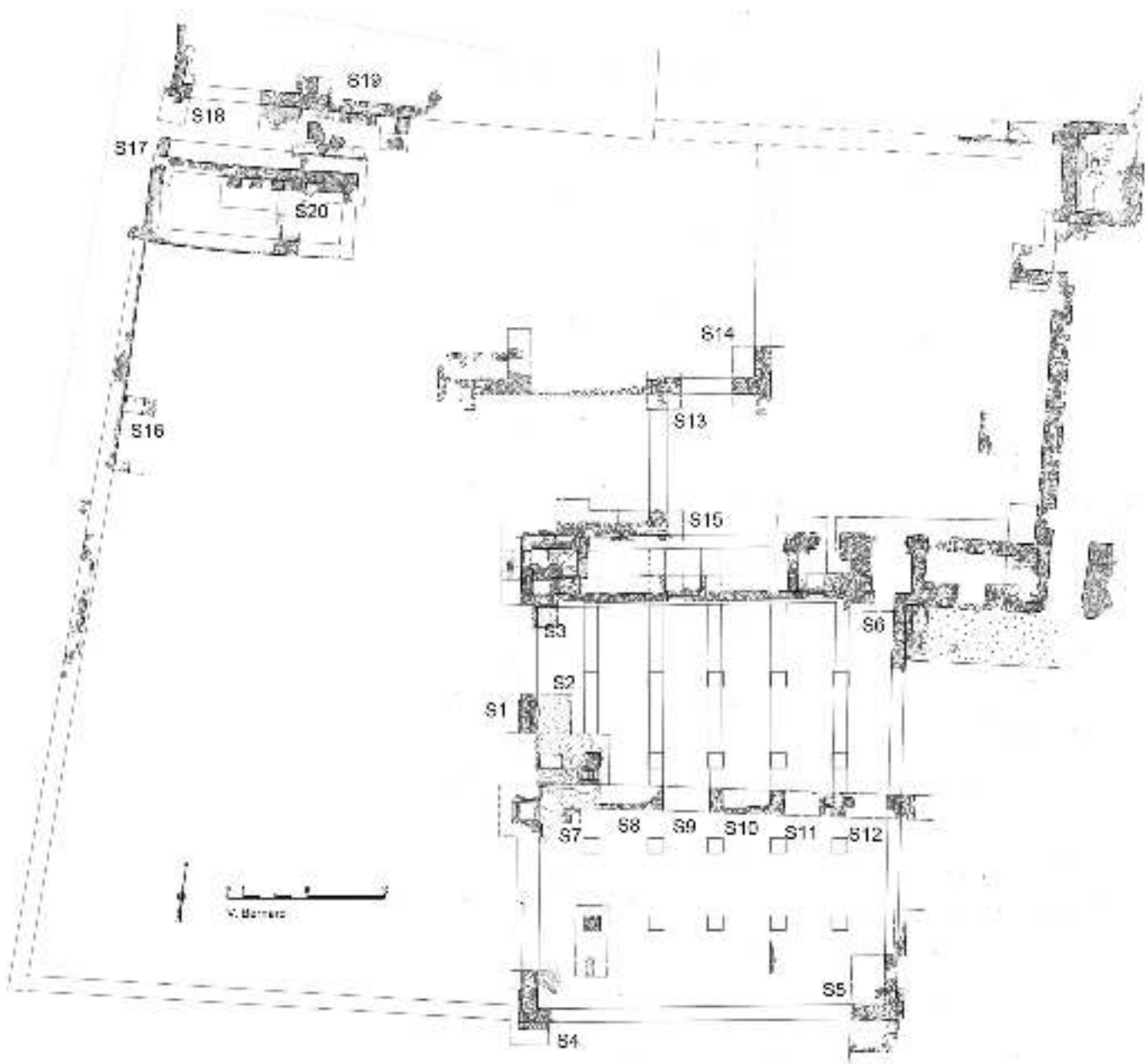
The Mosque properly said is located in the south-east corner of the Complex and the QP soundings uncovered a square building, 25m long east-west and 26m north-south, variously preserved. A long trench opened in the axis of the building also found the mihrab and the minbar and revealed that the mosque was built on two levels, with the prayer hall on the first floor. The ground floor, which was identified as a basement, was assumed to be divided into six spans by north-south walls, parallel to the shore and qibla wall, which were divided into compartments by shear walls. The easternmost four spans (1 to 4) were packed by the collapse of the prayer hall, when the two westernmost spans (5 and 6) were filled by a backfill. It was so assumed that the westerly spans were never accessible, while the easterly ones, or at least some compartments, were originally empty and probably accessible, as cellars. The prayer hall itself was nearly entirely destroyed and washed by erosion, except to the west, on top of the backfilled spans 5 and 6. Only one meter high of the qibla wall was preserved, together with the bases of the pillars of the westernmost row, founded on top of the basement wall between the two spans. **Fig 1-1**

QP excavations also revealed that the mosque was bounded to the west/north-west and north by two courtyards set at different levels, which were separated by a high retaining wall built in the same alignment than the basement inner wall between spans 4 and 5. The north low courtyard (B12-LC) was at the level of the bedrock, on the shore on top of the beach, when the north-west/west high courtyard (B12-D and HC) was about 3 to 4m higher. The soundings opened in the north courtyard revealed a row of rooms set alongside the northern façade of the basement, with the base of a minaret at the eastern extremity, near the shore. One of the main questions which arose during the QP excavations was the location of the entrance to the prayer hall on the first floor, the most probable location of the gate being in the north wall, up the roof of the northern wing of rooms. But no trace of it was discovered at that time in the excavated areas, and the access to this gate, from the north low and/or west high courtyards, was difficult to understand.

A small building (B95) was also partially uncovered in the north-west corner of the Complex, in the high courtyard. Between this construction and the large building B13 to the north was a narrow passageway, which was interpreted as probably the main entrance to the Mosque Complex from the city.



**Fig 1-1 :** *The Great Mosque B12 at the end of the QP soundings*



**I-A2. Summary of results after the first QDP season of excavations at the Great Mosque, 2013b-2014a**

After the end of the first season of the Qalhât Development Project devoted to the comprehensive excavations of the Mosque Complex, between October 2013 and March 2014, the plan, general organization, and original appearance of the building were highly documented. Especially, an important study was initiated on the decorative and architectural remains found in the collapse levels, in order to find a way to be able to restore the original aspect of the Mosque, its architecture and internal ornamentation. The excavation focused mainly on the basement, the north aisle and the building B95 with the nearby entrance.

### I-A2a. The basement

The first main information was the confirmation that the four eastern spans of the basement were fully occupied by several accessible rooms (all alphabetically named), a quite unusual feature. This part of the basement was divided in two halves with no communication in-between. To the east, the northern part of the two eastern spans (1-2) only was excavated, because of insufficient workforce. Four rooms were variously cleared in this area. The two northernmost ones (B12-H in span 1 and B12-G in span 2) were reachable from the northern low courtyard through two rooms in the north wing. South of them were a room (B12-K in span 1), accessible from the beach, and its back-room (B12-Q in Span 2). Other rooms were at that time only partially observed to the south (B12-L, R, S and V), the ones in span 2 seemingly accessible through rooms in span 1.

To the west, spans 3 and 4 were nearly entirely cleared, except for the southern extremity. The spatial organization was totally different: a long corridor in span 4 (B12-B), giving access to four rooms in span 3 (B12-A, C, I and F). The corridor was lined to the west by a long north-south uninterrupted wall which retained the backfills of the western spans 5 and 6. Though not completely cleared at that time, it was obvious that it was crossing the entire basement, from the southern street to the northern low courtyard, and could so be interpreted as a covered street.

All the walls were covered by a beige coating, more or less preserved. Where the coating was missing, it was observed that the walls were all built on the same way, with a mix of large pebbles and limestone blocks becoming smaller as the wall is rising. The corals blocks were less numerous but becoming more present in the upper part. This choice was undoubtedly ordered to make strong foundations and lighter elevation.

All the excavated rooms of the basement had also a coated floor, similar to the coating of the walls, sometimes very well-preserved, sometimes highly damaged. Cracks were observed almost everywhere, especially at the junction between the coating of the floors and the coating of the walls, suggesting that the underneath backfill has known a subsidence leading to a slight drop. Only in one room was observed an underneath and former floor, also made of coating, but as it was chosen not to go under the preserved floor for reasons of conservation, there is a possibility that the same kind of repairing also occurred elsewhere in the basement.

Nearly in every room, except in the long corridor B, the coated floors were covered by a layer made of small pebbles, presumably coming from the beach. The ceramics found in those levels suggest a setting around 1500A.D. It is quite likely that levels of pebbles were used as a sanitary floor which infiltrated the rubbish, frequently removed when too dirty and replaced with new clean levels of pebbles. In this assumption, the discovered levels of pebbles would have been the last ones to be set before the arrival of the Portuguese invaders and the abandonment of the Mosque. Though it is quite possible that the coating of the whole basement was also lately renovated, there is no reason to doubt that this feature dates back to the foundation of the Mosque by Bibi Maryam around 1300.

### I-A2b. The prayer hall

Except for its western part along the qibla wall where the superstructure are preserved 1m high on top of the two backfilled spans 5 and 6, the prayer hall is known only from the study of the collapsed fragments trapped in the basement's rooms. The presence of fragments of walls at the foot of the long wall between span 2 and span 3, and the decorative and architectural features visible on some of them, clearly state that this wall was originally rising over the first floor, up to the roof. The first floor was so divided in two unequal parts by a wall, built over the long wall of the basement, which was pierced with several gates and decorated by niches. The biggest part, occupying the western two-third over spans 3 to 6 and containing the mihrab and the minbar, was undoubtedly used as the main prayer hall. The smaller part, occupying the eastern one-third over spans 1 and 2, can either be seen as a secondary prayer hall or as an entrance hall towards the sea.

According to the architectural and decorative elements found in the collapse, the prayer hall was divided into four naves by three rows of columns bearing north-south oriented ranges of arcades, parallel to the qibla wall, all different in shape and style. Combinations of carved stones and tiles also created a variety of decoration, particular to each part of the prayer hall, and the precise methodology put in place in the beginning of excavations allows the convenient restitution of this decoration. In the middle of the span 4, in front of the mihrab, various elements showed that four massive columns were bearing a vaulted cupola protruding from the roof. Well preserved remains of the four columns were found, with their elaborated decoration, as well as remains, less-preserved, of the spandrels and arches. Remains of the cupola itself

were scarce but it was possible to consider an octagonal tambour surmounted by a row of narrow windows and a hemispherical fan vault.

The decoration of this part seemed to be the most elaborate in the prayer hall. The cubic basis and the two circular drums of the columns were decorated by a combination of beige limestone blocks cut into hexagons and inlays of four-pointed stars made of molded plaster and pieces of glazed tiles. The spandrels and arches in the upper part were mainly covered by panels made of molded plaster and small pieces of glazed tiles and ceramics, with small limestone blocks carved into quarterfoils on the intrados and edges. In the north and south of the prayer hall the decoration became simpler, the basis and drums of the pillars being only made of rectangular carved stones without decoration. In the entrance hall either, only fallen remains of pillars with a cubic basis and octagonal columns were found but no remains of arches and much less elements of decoration, suggesting a different treatment and a rather simple ornamentation, mainly made of plaster moldings. Here the roof was probably only supported by beams lying on top of the columns.

### **I-A2c. The North wing**

In the north wing, against the north façade of the basement, the long trench opened by the QP had revealed two rooms to the east, reachable from the low courtyard, and two other rooms to the west, apparently accessible from the high courtyard. Between those two areas, an open space from the low courtyard was assumed. Extensive excavations by the QDP confirmed this setting and refined it.

The two eastern rooms (B12-T and W) were entirely cleared, down to a floor made of a coating different from the one in the basement, being grayer and stronger because using more mortar. They are the only accesses to the north rooms of spans 1 and 2 in the basement (B12-G and H). Fragments of a decorated cupola were found in the collapse, which suggest that a porch could have been located on top of the easternmost room G, against the minaret, probably a gate to the entrance room of the mosque. Thus, the rooms were covered by a terrace, which was accessible through the staircase discovered against the east wall of the courtyard along the beach, or/and straight from the high courtyard.

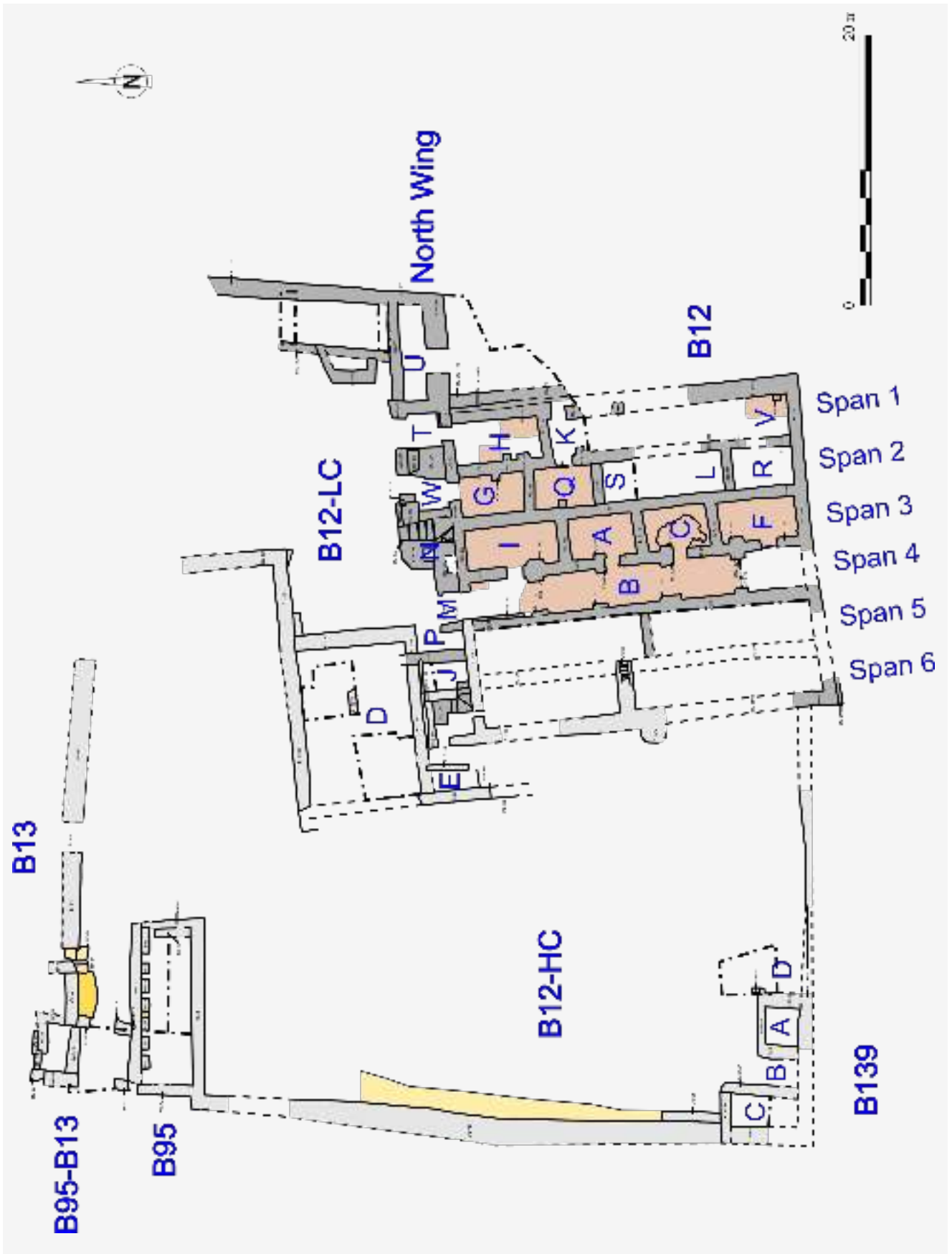
To the west of the north wing, against spans 6 and 5 of the basement, a staircase (B12-I) leading from the upper courtyard to a closed room (B12-J) at the level of the low courtyard had been partly excavated by the QP. Further excavations by the QDP uncovered basins with waterproof coating and other settings suggesting the use for ablutions. A partly closed room (B12-P) was also excavated right to the east, separated from the low courtyard by a small wall around 1m high. A large pit full of gravels was found there, probably for a slow infiltration of the water coming from the room B12-J by a gutter running under the base of the separating wall.

The middle part of the north wing, between the two groups of rooms to the east (B12-T and W) and west (B12-I, J and P) turned to be an area opened to the low courtyard, and not a continuous range of rooms, as it was firstly assumed. A staircase (B12-N), with two flights of stairs, was uncovered to the east, against span 3 of the basement, built in the corner of the basement and the room B12-W. The stairs are covered with a strong black mortar, which was also observed in some other parts of the façade of the north wing, but nowhere inside the building. A sounding opened inside the staircase revealed that it was built against the coating of the façade of the Mosque, and the ceramics found inside the backfill under the steps suggest a construction dating to the middle of the 15th century, at the earliest. This stair was leading to the terrace on top of the north wing, in front of the main gate to the prayer hall, but it appeared to be a later addition, probably when the assumed terrace covering the low courtyard was partially or completely damaged. At the end of the 2013-2014 season, excavations was not finished in the area west of the staircase, in front of the long corridor of the basement (B12-B).

### **I-A2d. The secondary structures**

In the north-west corner of the Complex, the building B95 and the passageway nearby (B95-B13) which is the main access to the Complex from the city, was nearly entirely excavated during the 2013b-2014a season. Damaged benches and a possible street-walk were found in the passageway reducing the width of the access to a narrow space, allowing place for only two peoples walking abreast. Access to the northern building B13 were also uncovered but only partially excavated. The building B95 is a long rectangular building, with a row of seven pillars against the northern wall, creating niches probably used for shelves. Those shelves firstly led to interpreted the building as a possible madrassa (the shelves being there used to store books), but the feature of shelves in niches is so common in Omani architecture that the building could have any function, possibly a store for the furniture of the mosque. No openings, such as doors or

Fig 1-2 : The Great Mosque B12 at the end of the 2013-2014 season



windows, were found at that time and the door was probably located in the east wall, now very badly preserved.

In the south-west corner of the Complex, heaps of collapse strongly suggested that several rooms were to be found here. The excavations of the 2013-2014 season revealed two rooms (B139-A and C), separated by a small open space (B13-B). Observations showed several stages of construction but the use of the rooms remained unexplained.

Finally, the internal face of the enclosing walls west and south of the high courtyard were also unearthed in their nearly entire length, except for the area near the southwest corner of the mosque, along the south street which was also partially uncovered.

During this first season of excavations at the Mosque, a long time was also devoted during the fieldwork time as during the preparation of the final report in France, to put in place a convenient protocol for the study of the decoration, the identification of the different styles used, and the mathematical statistics which will allow a restitution of the Great Mosque of Bibi Maryam from the number of fragments of decoration and architecture (tiles, carved stones...) found in the collapse.



Fig 1-3 : Internal Divisions of the Mosque Complex and surrounding buildings

Qallîât (Ash-Sharqiyah - Sultanate of Oman), The Complex of the Great Mosque, site plan



Walls	Others Structures	Floors
<ul style="list-style-type: none"> <li>Black: Fully excavated walls of the Great Mosque</li> <li>Dark Grey: Fully excavated walls of the Great Mosque</li> <li>Light Grey: Fully excavated walls of the Great Mosque</li> <li>White: Fully excavated walls of the Great Mosque</li> </ul>	<ul style="list-style-type: none"> <li>Yellow: Fully excavated walls of the Great Mosque</li> <li>White: Fully excavated walls of the Great Mosque</li> </ul>	<ul style="list-style-type: none"> <li>Dark Green: Fully excavated floors of the Great Mosque</li> <li>Light Green: Fully excavated floors of the Great Mosque</li> <li>White: Fully excavated floors of the Great Mosque</li> <li>Dark Brown: Fully excavated floors of the Great Mosque</li> <li>Light Brown: Fully excavated floors of the Great Mosque</li> <li>Orange: Fully excavated floors of the Great Mosque</li> </ul>
<ul style="list-style-type: none"> <li>Yellow: Fully excavated floors of the Great Mosque</li> <li>White: Fully excavated floors of the Great Mosque</li> </ul>	<ul style="list-style-type: none"> <li>Black: Fully excavated floors of the Great Mosque</li> <li>White: Fully excavated floors of the Great Mosque</li> </ul>	<ul style="list-style-type: none"> <li>Black: Fully excavated floors of the Great Mosque</li> <li>White: Fully excavated floors of the Great Mosque</li> </ul>

**B12** Fully excavated floors

Scale: 1:1000

Fig 1-4 : Site plan of the masonry and structures of the Mosque Complex



Fig 1-5 : Location of the main fallen architectural remains



## I-B. The 2015b-2016a season - 1. Excavations of the southeast part of the Mosque (Spans 1 and 2)

All the area of the south-east quarter of the basement was only partially unearthed during the 2013b-2014a season, only the top of the walls being uncovered. It was fully excavated till the floor during the Fall session of the 2015b-2016a season, under the supervision of Romain Séguier.

### I-B1. Room K (Span 1)

At the beginning of excavations, in October 2015, only a small part of the room was already unearthed: to the north was the long axial trench opened by the QP, and another sounding had also been opened by the QP to the south, at the south-east corner of the building. As it was thought that the uncovered part of the span would have probably been divided into several rooms, by east-west walls more or less in the same alignment than the walls of the westerly spans, the northern part of the area was named room B12-K and the southern part B12-V. However, no dividing walls were found and the span revealed to be occupied only by two rooms: the room B12-H to the north, occupying one-third of the span and already excavated in the previous season; and the room B12-K/V (hereafter called only B12-K) to the south, occupying the remaining two-third. The room B12-K is therefore 17.60m long (north-south) and 2.25m wide in average (east-west), the surface area being around 45m<sup>2</sup>, making the room B12-K the largest one of the basement, except for the corridor B12-B. The room was accessible from the beach by five nearly contiguous openings, and it gave access to four rooms in the western span 2 (B12-Q, S, L and R from north to south).

As the northern part of the room, where stands the access to room B12-Q and the threshold B12-137-153 that give access from the beach, was already excavated during the 2013b-2014a season, its description was made in the previous report and will not be repeated here.

### I-B1a. Architectural description **FIG 1-6**

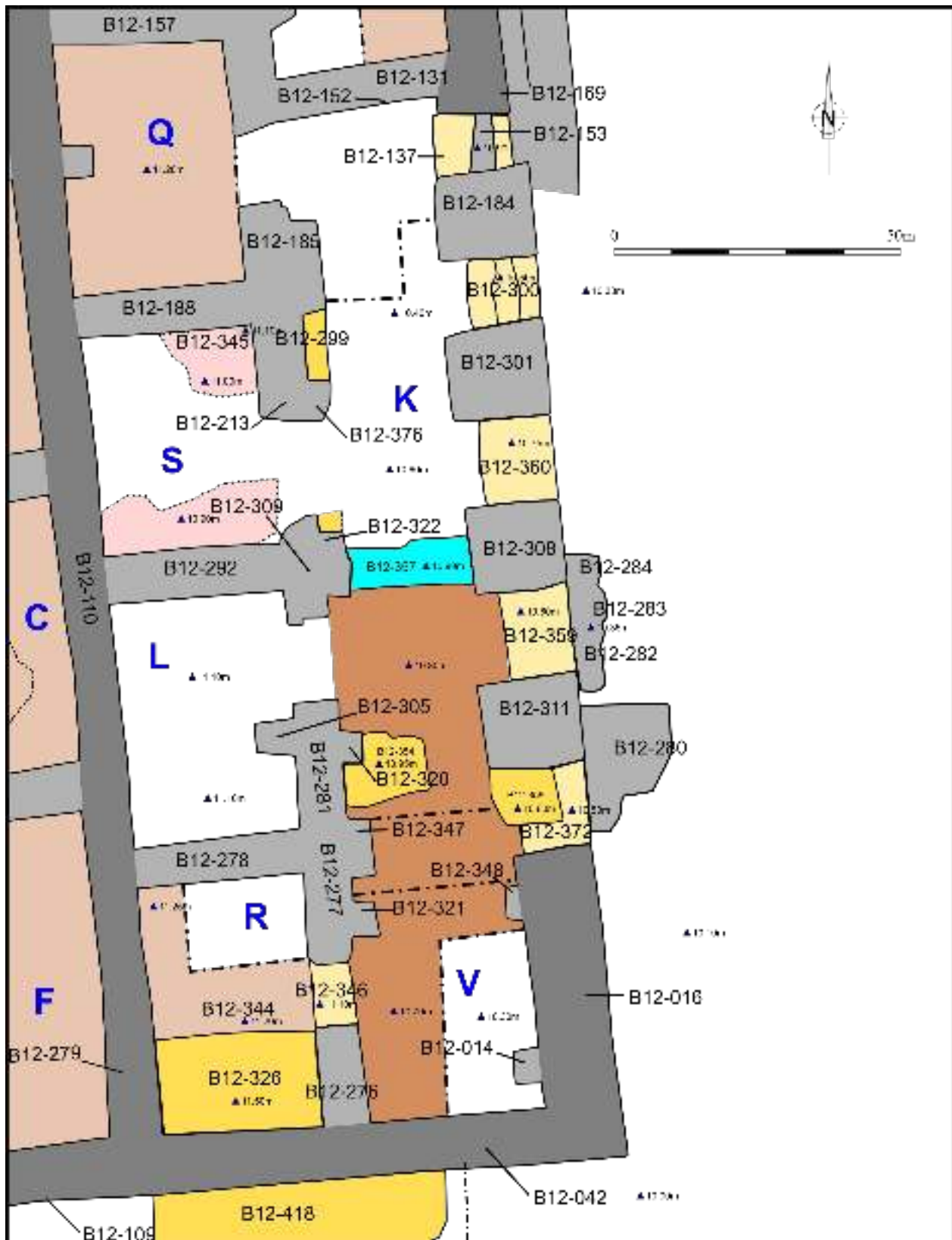
The room B12-K is bordered to the west by a series of walls which separate the room K from the westerly rooms in span 2. To the north, the walls B12-309 and B12-281, on both sides of the gate giving access to room B12-L, are the delimitation between the two rooms. To the south, the walls B12-277 and B12-276 make the separation between room K and room S, both being separated by the gate that give access to this room. All those walls and their accesses will be better described below, with the description of the span 2, but it can be said that those walls are made in the traditional way, with a double facing of medium pebbles and limestone blocks, with corals in the upper part, and bounded with a pale gray mortar. The walls are covered by a beige coating which is variously preserved, showing some important gaps, but there is no doubt that they were originally entirely coated. All walls are strengthened by buttresses, some of them being used as foundation for the above pillars in first floor, but others seem to have no architectural use and could have only be used for internal fittings, such as shelves.

The buttress **B12-322 Fig 1-7** is built against the wall B12-309, in the alignment of the wall B12-292 that separates the room B12-L and B12-S. It is preserved up to a maximal height of 1m and measures 1.10m long by 0.45m wide at its base. It is made with medium corals and limestone blocks, with bigger stones at the angles, and bounded with a rough gray mortar with inclusions of charcoal and small pebbles. It seems that this buttress was extended to the north for about 0.50m to give its actual size. The size and location clearly suggests that this buttress was made to support a pillar from the entrance hall in the first floor and the extension could be a later strengthening but could also dates back to the first stage of construction. In this hypothesis, the builders would have first made a too small buttress which had to be extended to support the weight of the pillar and roof above. This kind of construction's error was observed in other places of the basement. North of the buttress, a small horizontal projection of the coating might indicate that a bench once existed next to the gate to room B12-S, but the state of preservation is too bad to be affirmative.

To the south, the buttress **B12-347 Fig 1-8** is built against the walls B12-277/281, in the alignment of the wall B12-278 which separates the room B12-L and B12-R. 1m long by 0.40m wide, its elevation is only preserved for around 1m high, the upper part having collapsed. It is built in the same way as buttress B12-322, with medium corals and limestone blocks and bigger ones at the angles, bounded with a gray mortar and showing remains of coating. Its size and location also clearly indicate that it was bearing a pillar of the first floor. As a matter of fact, remains of the pillar were found at the foot of the buttress, with a cubic basis and two drums of the octagonal column that once supported the roof of the entrance hall. The collapsing of this pillar is undoubtedly the reason for the disappearing of the upper part of the buttress. The setting of the massive buttresses in this area is similar to the setting in the other parts of the basement, showing the



Fig 1-6 : Site plan and altitude of the main structures of the south-east part of the basement





**Fig 1-7 :** *the buttress B12-322, at right*



**Fig 1-8 :** *the buttress B12-347, at right of the fallen pillar that was once standing above*

location of the vanished pillars of the first floor and so drawing the plan of the prayer hall and entrance hall.

Apart from those two massive buttresses that have an architectural use, smaller ones were also uncovered which were certainly not used as a support for an above construction. To the north, the buttress **B12-376** (Fig 1-9), 0.70m long by 0.35m wide, is built right against the gate that gave access to the room B12-S and could either be used as a jamb for the gate or, more probably, as a border for the bench B12-299 that was found next to it. North of the massive buttress B12-247, the smaller one **B12-320** (Fig 1-10), 0.50m long by 0.35m wide and 1.90m high, is built against the wall B12-281 at 0.50m south of the gate to room B12-L. It is badly preserved, especially at its north-east angle where it is only preserved for around 1m high. It is made the same way as other buttresses with a quite well made gray mortar and its coating, which is linked with the coating of the wall B12-281, is also well preserved. In comparison, the small buttress **B12-321** (Fig 1-11) is very badly preserved. It is located about 0.50m north of the gate to room B12-S against the wall B12-277. Only the upper part of it, around 1.50m above the floor where the buttress measures 0.55m long by 0.38m wide, is preserved and it has slipped down from its original location, all its lower part having collapsed. It is made the same way as the other construction but bounded with a poorly made mortar containing many sand. The use of this badly mixed mortar is quite obviously responsible of its poor state of conservation and a security bench has to be let in place to prevent a complete decay of its remains.



**Fig 1-9** : the buttress B12-376, at left of the bench B12-299



**Fig 1-10** : the buttress B12-320

**Fig 1-11** : the damaged buttress B12-321



**1-10**

**1-11**



Those three small buttresses have no architectural function and must be related to an internal fitting of the room. It is very tempting to consider that they were used to put shelves against the walls, set between the small buttresses and the massive ones, but no trace of mortar or coating for bearing the plates of shelves were observed. As the preservation is very bad, there is a possibility that this fitting once existed but has disappeared. However, as the southernmost small buttress B12-321 is in front of another small buttress B12-348 built against the east wall, there is also a possibility that those two buttresses once supported a beam at their top to create a symbolic internal division to the south of the room B12-K.

The east wall of the room B12-K is the external east wall of the basement, pierced by no less than five gates with threshold, each being separated from the others by rather square walls which can be considered as massive abutments. To the north, the wall B12-13, which delimits the north room goes for about 0.30m south along room K to create the northern jamb of the northernmost gate and its threshold (B12-137 and B12-153) which were excavated during the 2013b-2014a season and described in previous report. Further south, the four abutments which frame the gates and threshold were registered, from north to south, as B12-184, B12-301, B12-308 and B12-311, the first one also already excavated during the previous season and described in the previous report.

The abutment **B12-301** (Fig 1-12) is a rather square construction, 1.90m long and from 1.75m to 1.50m wide, now preserved for about 0.90m high. It frames the threshold B12-300 to the south, opposite the abutment B12-184. Further south, the abutment **B12-308** (Fig 1-13), separated from the previous one by the threshold B12-360, measures 1.70m long by 1.50m wide for a maximal preserved elevation of 0.80m. The southernmost abutment **B12-311** (Fig 1-14), framing the threshold B12-359 with the aforementioned wall B12-308, is 1.70m by 1.60m wide for an actual elevation of 0.85m. South of it, the threshold B12-372 is framed to the south by the external wall B12-16, uncovered and registered during the soundings made by the QP. All those square jambs for the gates are made in the same way with medium coral and limestone blocks, carefully built, and bounded with gray mortar mixed with small pebbles, charcoals and fragments of ceramics. The coating is variously preserved, in a better way to the north than to the south where it shows important gaps on the wall B12-311. Two types of coating were also observed, the first one being similar to the coating observed elsewhere in the basement, though a little grayer, and the second one being a darker coating of the same type as the one observed in some part of the north wing and suggesting a possible later repairing.

Those abutments also show traces of a western widening in their lower part, a vertical line being visible between the original west facing and a doubling wall. But this line does not show in the upper part (Fig 1-15). It seems therefore very likely that the jambs of the gates were firstly built in a smaller scale before being enlarged during the construction phase, quite probably because the first dimensions were considered too small to support the walls above, including the wall of the entrance hall on the first floor that was facing the sea. In the actual state of knowledge, there is no indication about the original height of the gates and abutments. They could go up to the roof between the ground floor and the first floor or be lower, as no architectural remains found can suggest if the top of the gates were made by masoned arches, or lintels, or by simple beams. There are also no traces of door-frames or visible hinges and, though it seems quite unusual, these gates might have no doors at all.

**Fig 1-12** : the abutment B12-301 from the west



1-13



1-14



1-15



**Fig 1-13 :** the abutment B12-308 from the west

**Fig 1-14 :** the abutment B12-311 from the west

**Fig 1-15 :** the line (at left of the scale) suggesting a former widening

The five thresholds of the eastern gates, which are registered from north to south as B12-137/153, B12-300, B12-360, B12-359 and B12-372, are of the same size and all built more or less in the same way; observations for one of them could therefore also fit for the other ones. The northernmost, B12-137/153, was already excavated and described in the previous season's report and is the only one which was partially removed in a sounding to better understand its way of construction. The others were not excavated but there is no reason to doubt that they are built in the same way. The sounding opened revealed that the coating of the wall that makes the jamb extends under the level of the raised floor of the threshold, which might be seen as a clue for a later rebuilding. But as no previous threshold was found under the actual visible one, it is more likely that the walls were built and coated first, and that the threshold was made afterward: two small low walls were first built in the alignment of the facings of the external walls, then the space in-between was filled by various backfills, mainly made of rubbish including many ashes, and finally the entire threshold was covered by a rammed mix of plaster, soil and a little of mortar to make the floor.

The threshold **B12-300** (Fig 1-16) of the following gate, between the abutments B12-184 and B12-301, is 1m wide between the two jambs and 1.60m long from the outside to the inside. It is about 0.50m high from the outside floor (which is the natural bedrock) and it shows a small step more or less in its middle, as the northerly threshold. But this particular fitting, which can be considered as a plinth, was not observed in the other thresholds to the south and it is not possible to know whether this small step is a late addition or an original fitting.

**Fig 1-16** : the threshold B12-300



The threshold **B12-360** (Fig 1-17), to the south between the abutments B12-301 and B12-308, is 1m long between the two jambs and 1.20m long from the outside to the inside. It is 0.50m high and two small steps, though highly damaged, can be visible one the outside, while one step may also be assumed to the west for climbing down to the interior. Such kind of stepped threshold were already observed in Qalhât, especially in the southern part of the building B94, and they are very common in old Omani houses. It is also possible that, to the east, some kind of a street-walk bordering the façade of the mosque might have existed, but remains are too scarce to be affirmative. The eastern steps are made with small limestone blocks and pebbles, probably coming from the beach, while the threshold itself is made of bigger material. Some of the stones of the threshold have a polished aspect, testimony of a long time walking, and the indurate floor is made by a mix of soil and plaster, the whole being brown and halfway between rammed earth and mortar floor.

The threshold **B12-359** (Fig 1-18), to the south between the abutments B12-308 and B12-311, is 1.50m long between the two jambs and 1.10m wide from the outside to the inside, at least as it is a little damaged and pierced by later fittings. It shows also steps on the outside, the first one being made by massive pebbles and slabs of bedrock (B12-282/283/284) and around 0.30m high and 0.60m wide. Over it a second step was built, made of smaller limestone blocks and of a smaller width, around 0.40m, and around 0.20m high, to finally reach the threshold itself whose floor is made in the same way as the previous ones.

Finally, the southernmost threshold **B12-372** (Fig 1-19) is framed by the abutments B12-311 and B12-16, 1.75m long between the two jambs and 1.60m wide from the outside to the inside. A massive structure on the east (B12-280) could be an exterior step, but would in this case be much bigger than the previous one and not preserved for the entire length of the threshold. As no other step was observed either internally or





**Fig 1-17 :** *the threshold*  
B12-360

**Fig 1-18 :** *the threshold*  
B12-359

**Fig 1-19 :** *the threshold*  
B12-372

externally, people who entered this gate had to meet a huge step, more than 0.50m high, which is a unique feature for the thresholds. The floor of the threshold is here made by a very strong white-pink mortar which is also a unique fitting.

The southeast corner of the basement, walls **B12-16** and **B12-42**, was already partially unearthed during the soundings made by the QP and was fully excavated during this season. The east wall B12-16, south of the last gate, is 5m long and 0.90m wide, and now preserved up to around 1m. It shows a double facing made with large limestone and coral blocks and some fragments of bedrock, with an internal blocking made of small blocks, bounded with a mortar whiter than the one used in other nearby walls and of a lesser quality. The south wall B12-42, is the south external wall of the basement. It is 3m long in the room, 0.90m thick, and preserved up to 1m in average. It is bonded with the wall B12-16 and built in the same way, apart that no fragments of bedrock were observed there.

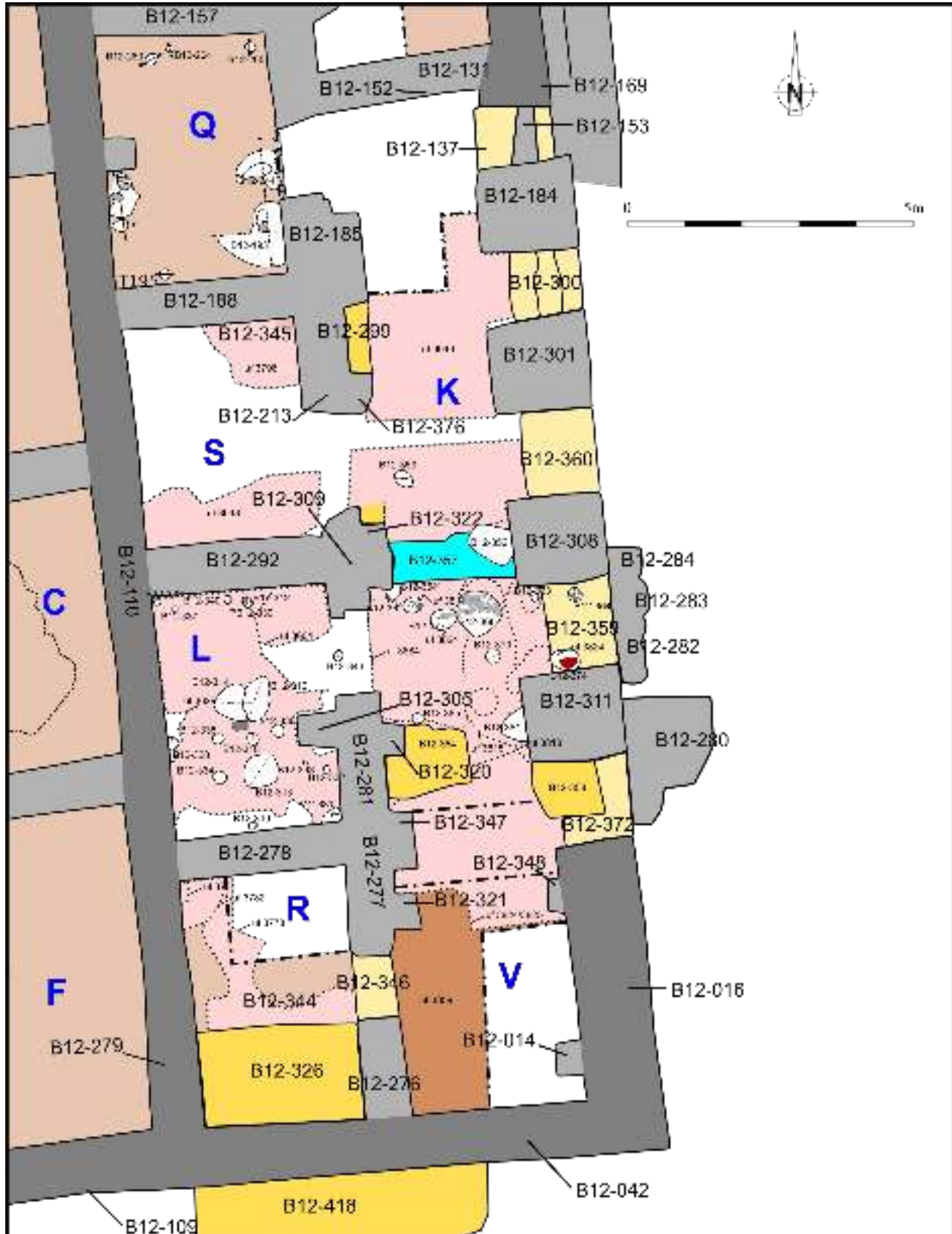
Two small buttresses were unearthed against the internal facing of the wall B12-16, in the southernmost part of room 21K. The southernmost, **B12-14**, 0.60m long by 0.45m wide for around 0.50m high, was already excavated by the QP, while the northern one, **B12-348** (Fig 1-20), 0.70m long by 0.25m wide and 0.50m high, was excavated during this season. Both are made with small limestone and corals blocks bounded by a rough gray mortar containing very few small pebbles and show remains of damaged coating. They can have been used for shelves, between them and/or between B12-14 and the wall B12-42 but no traces of lines of mortar or coating to support the plates of shelves were found. However the lines could have disappeared with the coating or the plates were higher than the actual elevation and so not preserved. Also, as mentioned above, the small buttress B12-348 could have worked with the small buttress B12-321 built in front in the other side of the room, to create a symbolic division for the south part of the room B12-K, this part being not reachable from an eastern gate. Even if there is nothing to be affirmative, it is possible to imagine a door fixed on the two buttresses, or a small beam with a curtain to close the space. In this configuration, the southern part of the room B12-K would have present some kind of private use, together with the back room B12-R in the adjacent span 2, which aspect also shows the same kind of privacy with its large bench, as will be see below.

**Fig 1-20 :** *the buttress B12-348*



I-B1b. Stratigraphical analysis (Fig 1-21)

Fig 1-21 : Site plan of the stratigraphical units and light structures of the south-east part of the basement





- The mosque period

Unique in the basement by its size and the number of its entrances, the room B12-K is also the only one where no coated floor was found and ever made. It is also the only internal area where the natural bedrock was unearthed, although only in its northern part. In this area, over the bedrock, some isolated levels were registered, such as the **UF3832** (Fig 1-22), located near the gate to the room B12-L. This level is made of sand and silt, with many small fragment of powdery white pinkish mortar and a little of plaster and very small pebbles. It is very possible that this level is the remain of a working area where the mortar used in the construction, or repairing, of the building was made. It could therefore date back to the beginning of the 14th century, but no material was found to confirm this dating, which is logical for a working area. The levels **UF3874** and **UF3875** (Fig 1-23), closed to the thresholds B12-359 and B12-372, are very similar in shape and components and could also be the testimony of a construction phase. But all three could also be considered as a leveling on the irregular bedrock to create a flat level above which was put the circulation floor, which is made here by a thin level of small pebbles covering the northern part of the room. It is very likely, considering the associated ceramics which date to the end of the 15th century, that the floor of small pebbles was frequently removed and renewed, as it was observed in the others rooms.



**Fig 1-22** : the possible working area Uf3832, in the center



**Fig 1-23** : the possible floor Uf3875

In the south part of the room B12-K, a floor made of rammed earth was found but not excavated down. The observations on the earlier archaeological levels were only observed in the sounding opened by the QP in the south-east corner of the building. The levels **UF3871**, made of brown to beige silt, could be a leveling of the underneath bedrock while the level **UF3870**, made of yellow-green organic soil, could be a waste for an unidentified craft activity. It is not possible to state whether those levels were put in place during the construction or shortly after, or if they date back to a former period, before the construction of the Mosque and related to the earliest phase of occupation of the city. The fact that the same kind of yellow-green organic soil was found south of the external wall might be a hint for the second hypothesis.

Covering those levels, the **UF3886** and **UF3869** seem to be both ground of rammed earth, the first one made with compact beige silt mixed with small pebbles, charcoals and fragments of plaster, while the second one is similar by its components but a little darker. Those two levels could be former floors, before the fitting of the last occupancy floor observed (UF3830, see below) but could also be levels of backfill to compensate the irregularities of the bedrock and to raise the level of the floor, in accordance with the height of the thresholds. Though it is not possible to be affirmative as the area was not excavated down, because of the will to let in place the most remarkable archaeological levels for conservation purpose, it is very likely that those two backfill levels were used as the foundation for the low partition wall **B12-357** (Fig 1-24) which divides the room B12-K in two nearly symmetrical halves. This east-west wall is built against the buttress B12-322 to the west and the abutment B12-308 to the east, in the same alignment than the wall separating the rooms B12-S and B12-L in the adjacent span 2. It is 2.20m long by 0.65m wide for a preserved height of 0.40m and, although one course of stones might have been accidentally removed during the excavations, it was never much higher, no more than 0.50m high and easy to climb over. It is made mainly with medium limestone and corals blocks with two facing but no mortar coating, and with an internal blocking of medium and small pebbles bounded with sandy gray-brown silt. The construction is rather rough and simple compared with other walls, but it can be easily explained by the fact that this low wall never intended to raise high and support the roof or any kind of structures.



**Fig 1-24** : the low partition wall B12-357

Considering the difference of altitude between the floor made of small pebbles to the north and the floor made of rammed earth UF3830 to the south, which is leaning against the low wall B12-357 and clearly associated with it, this low wall was most probably made to create a platform in the south half of the room 21K, 0.50/0.60m high and easy to climb over, probably testifying of two different functions. As the excavations were not completed down there because of the conservation need, it is not possible to state that this separation was intended since the original construction of the Mosque. But considering that the levels of backfill under the floor UF3830 could be earlier floors, also that the low wall B12-357 is not built on the bedrock and that it is leaning against the coating of the abutment B12-308 and the buttress B12-322, it is very possible that this fitting occurred in a later stage, though the internal division in two spaces with two different uses could date back from the very beginning.

The floor **UF3830** (Fig 1-25) covers all the southern half of the room B12-K and seems to be the last floor during the use of the Mosque, as it is covered by later reoccupation levels. It is a rammed earth floor made with sandy dark brown silt mixed with little charcoals and plaster and containing an important quantity of very small pebbles which could be infiltration from the upper level but could also be a voluntary mix as this kind of floor made with pebbles bounded with silt was observed elsewhere in Qalhât, mainly in courtyards, but nowhere else in the Mosque Complex. This floor is leaning against the south external wall (where it has been registered as **UF3886**), the western walls, the low wall B12-357 and slightly covers the western extremities of the thresholds, confirming the hypothesis that this floor was put in place in the last stage of use of the building. Six postholes and two pits were found piercing this floor but, as the covering levels are very similar in likeness and components, it is very difficult to state if those pits and postholes were made during the use of the floor or during the later occupancy, dug from the upper levels through the rammed earth floor. However, as some of the pits are located in the middle of the area and threshold, and thus greatly complicating the internal circulation, it is very likely that they were made when the building was no longer in its primary use.

**Fig 1-25** : the earthen floor Uf3830 with the threshold B12-359 in the background



The rammed earth floor UF3830 is covered, in the excavated part and quite presumably also in the unexcavated parts, by a thin layer only made of small pebbles (**UF3825**) (Fig 1-26) which can be considered as a sanitary circulation level, in the exact same fitting as the one observed in other rooms above the coated floor. Dating by ceramics indicates that this level was in use in the beginning of the 16<sup>th</sup> century, shortly before or after the arrival of the Portuguese invaders. Remains of hearths and burning areas could state that the invaders occupied this area for a while or be the remains of the fire that the Portuguese are supposed to have made, though the burning areas would have been, in this case, more important and visible on the walls, which is not the case.

The stratigraphical connection between the rammed earth floor Uf3830 and the overlying sanitary level UF3825 with the coated floors and levels observed in the western rooms B12-L, R and S (see below) is very difficult to observe because of the poor state of preservation, but it is very likely that they all are contemporary. In this case, the description made above of the walls, floors and levels could be considered as the general shape and fitting that was in place in the south-east quarter of the basement when the Mosque and city were seized in 1508 by the Portuguese, and all the upper levels hereafter described were put in place after this dating and thus belonged to the late reoccupation.



Above the sanitary level UF3825, remains of a second rammed earth floor **UF3824 (Fig 1-27)** was partially observed next to the gate to room B12-L, south of the low wall B12-357 and next to the thresholds B12-308 and B12-311. It is possible that this thin floor once covered the whole southern half and was damaged by the later occupancy and collapse. This layer is made by indurated brown sandy silt mixed with charcoals, ashes and fragments of plaster. In the northern half, the backfill **UF3831** made of brown to beige sandy silt seems to be contemporary. As the ceramics found in those levels belong to the first half of the 16<sup>th</sup> century and seem to be a little later than the year 1508, it is a possibility that those layers were put in place shortly after the seize of the city by the Portuguese. Also, the presence of some small elements of collapse found in this level seems to confirm that the fitting was made when the building has started to slowly collapse. This fitting could then either be an attempt to restore the Mosque or be the first stage of reoccupation after the abandonment of the building as a religious edifice. During this stage of occupancy, the low wall B12-357 was still in use and apparently still made a symbolic division between the two halves of the room B12-K. As the ceramic material is very mixed and the backfills very similar, all made with brown silt and small pebbles, it is in fact very difficult to link those levels with the occupancy prior to the arrival of the Portuguese when the Mosque was in use, or to the occupancy after this arrival when the Mosque is assumed to be abandoned. However, the location of this area in front of the seashore makes quite obvious the will to maintain this place in a reasonable state of use, either by the Portuguese occupants, if they stayed here for a certain time, or by the late Qalhâti, even if they did not try to fully restored the building for a religious use.



**Fig 1-26** : the sanitary floor  
Uf3825



**Fig 1-27** : the earthen floor  
Uf3824

- Main squatter occupation

The following stage of occupancy, in contrast, is clearly related to a phase when the building was no more used for a religious purpose. In this time, the low wall B12-357 is firstly partially leveled in its upper part, the level **UF3816** found around and above this wall containing some elements of it spread around. Some elements of this level, mainly the fragments of mortar and coating, could also come from the first stage of collapsing of the nearby gate and walls, the destruction levels having been cleared to clean the area and make it more suitable for occupancy.

Afterward, a sanitary floor made quite exclusively of pebbles mixed with a little bit of brown silt and ashes (**UF3814**) (**Fig 1-28**) was spread over nearly all the southern half, the reoccupation of the northern half being less visible. Right above this level, an important quantity of oyster's shells were found. Those remains can be linked to a craft activity (pearl production?) or simply to a food production and seems to clearly state that the Mosque was no longer in use when this layer was put in place, as both activities didn't suit to a religious building. A layer of ashes (**UF3815**), which can be considered as a damaged hearth, was found nearby above the sanitary floor UF3814, between the gate to room B12-L and the threshold B12-359, and could have been used to cook the oysters before their consumption, and so giving more credit to the hypothesis of a food production. Other concentrations of ashes were also observed above the floor UF3814, but they were not well-preserved enough to determine if they were remains of hearths or simply parts of the backfills or rubbish rejection.

As mentioned before, the levels of backfills and floors in this area are nearly looking the same, all being made mainly with pebbles and ashes, and it is very difficult to distinguish each one from the others and so conveniently understand the succession of layers. However, it is reasonable to link the several postholes, benches and pits discovered in this area to this phase of reoccupation as some of them are set in the gate or in the middle of the room, greatly embarrassing an easy circulation in the area. They have so all the chance to have been put in place when the building was abandoned, and so when less people were circulating there, than when the Mosque was in use and often frequented by the many inhabitants of the city. For example, it is obvious that the pit B12-374 (**Fig 1-29**) was dug after the abandonment of the Mosque as a religious building, because it is dug into the threshold, and so reducing the width of the access from the outside, a feature that clearly doesn't suit with an important circulation. This oval pit, 0.50m long by 0.35m wide for a depth around 0.50m was containing a large upside down jar without bottom, with ashes and charcoals found inside (**Fig 1-30**). This kind of fitting, an incomplete jar returned and used as a hearth or a brazier, is a very common feature in Qalhât, already observed in other places and always in a context of a later occupancy. It is quite probably also the case here, the later occupants of the building making a hearth in the gateway, in nearly open space to easily evacuate the smoke.

Shortly to the west, the oval pit **B12-366** (**Fig 1-31**), 0.80m long by 0.70m wide for a depth of 0.40m, was filled with a soft brown sandy silt containing some fragments of ceramics, animal bones and shells. Its function is yet unclear, though it might have been used as a rubbish pit which would have been cleared before its final abandonment, or also as a pit for a massive post which would have been used for strengthening the support of the roof above. Next to it, the oval pit **B12-377**, 0.45m long by 0.30m wide for a depth of 0.15m was cut by the pit B12-366. Its function remained unexplained. It is also possible that some of the several postholes unearthed in the area were used to support the roof, which was undoubtedly still standing during this stage of reoccupation as its remains were found in the collapse above those layers but could have known some damages, requiring a strengthening. The postholes **B12-361** (**Fig 1-32**), 0.30m long by 0.22m wide for a depth of 0.27m, located at south of the wall B12-322, **B12-362** (**Fig 1-33**), 0.15m wide for a depth of 0.12m, located at south of the previous one, **B12-363** (**Fig 1-34**), 0.16m long by 0.10m wide for a depth of 0.10m, located at south B12-308, and **B12-364** (**Fig 1-35**), 0.24m wide for a depth of 0.10m also at south of B12-308, were found with small stones probably used to prop a post which could have helped to maintain the damaged roof, but could also have been used for simple sticks where to hang clothes, jugs, curtain or any kind of human goods. The postholes **B12-365** (**Fig 1-36**), 0.20m wide for a depth of 0.05m, next to the small buttress B12-320, and **B12-370** (**Fig 1-37**), 0.25m wide for a depth of 0.05m and located at south of the pit B12-366, could also be of the same kind as the same first four ones described, but their remains are scarcer and no propping stones were found. It is in fact impossible to be affirmative about the use of those postholes, the only reasonable thing to say about them is that their sizes and locations clearly state that they were not used for shelves, as it is the case for the postholes found in the other rooms, which are aligned and set along the walls.

Finally, also belonging to this stage of reoccupation, two small and rough benches were unearthed, very similar in shape and construction. The first one, **B12-354** (**Fig 1-38**), was built against the buttress B12-320 and the wall B12-281 and over the level of pebbles UF3814. The bench is rectangular, 1.70m long by 0.95m wide for a height of 0.25m, i.e. one course of stones. The second one, **B12-358** (**Fig 1-39**), is rather square, 1.10m long by 1m wide for a height of 0.35m, two courses of stones; it is built against the south





**Fig 1-28** : the sanitary floor  
Uf3814

**Fig 1-29** : the pit B12-374  
fully excavated

**Fig 1-30** : the pit B12-374  
with the upside down jar  
used as a brazier



**Fig 1-31 :** the pit B12-366 at right and the pit B12-377 at left, half excavated

**Fig 1-32 :** the posthole B12-361

**Fig 1-33 :** the posthole B12-362



1-34



1-35



1-36

**Fig 1-34 :** the posthole  
B12-363

**Fig 1-35 :** the posthole  
B12-364

**Fig 1-36 :** the posthole  
B12-365



**Fig 1-37 :** *the posthole  
B12-370, unearthed*

**Fig 1-38 :** *the bench B12-  
354*

**Fig 1-39 :** *the bench B12-  
358*



side of the wall B12-311 and over the level Uf3814 and the threshold B12-372, reducing the entrance to a width suitable for a single man. Both are made in the same way, with medium corals and limestone blocks, and one fragment of bedrock, set on the edges without binder, the inside being afterward filled with small pebbles mixed with a little of sandy silt, above which peoples were seating. Those benches were used for living, the first one probably more in a domestic use due to the proximity of the hearths and oysters, the second one probably in a more resting use, with a view to the sea and harbour.

As it will be seen below, in the description of the rooms of the Span 2 where structures apparently belonging to the same stage of reoccupation were found, a certain logistic was required to build all those elements, more important that would have been required for a temporary squatting of a few days. It so seems that several people lived for a while in the abandoned basement of the Mosque before its collapsing and made some important repairs or strengthening and fitting out to create a comfortable living space. Nowhere else in the Mosque a reoccupation at that scale was observed and the proximity of the seashore is undoubtedly the reason why. The ceramics found in the different layers indicate that this reoccupation occurred or lasted in the second half of the 16<sup>th</sup> century.

#### ▪ Further squatter reoccupation

A final stage of occupancy was observed above the aforementioned one, mainly concentrated in the middle of room B12-K. A new level of floor (**UF3684**) (**Fig 1-40**), made again of small pebbles mixed with a beige sandy silt, was uncovered, well-preserved next to the eastern accesses B12-359 and B12-360, more disturbed in the middle where the collapse had greatly damaged this layer. Three hearths were found above this level. The first one, **B12-351** (**Fig 1-41**), 0.60m long by 0.50m wide and 0.07m deep, was set against the wall B12-311 which western facing was partially cut, probably by the settler or by the fire activity. The second one, **B12-352** (**Fig 1-42**), 0.85m long by 0.60m wide and 0.10m deep, was set against the wall B12-308 and also slightly damaged its western facing. Some stones probably coming from the collapse were reused in the bottom of this hearth to circumvent the fire and maybe prop a container. The last one, **B12-353** (**Fig 1-43**), 0.30 wide and 0.08m deep, was set near the gate to room B12-S. All the hearths were observed filled with ashes and charcoals and small fishbones and shells were found nearby, clearly suggesting that they were made by fishermen who were occasionally squatting the abandoned building when it was slowly starting to fall into decay. No major fittings were observed related to that late reoccupation and it can be assumed that the human presence only occurred for a short time, no more than several days.



**Fig 1-40** : the sanitary floor  
Uf3684





**Fig 1-41** : the possible  
hearth B12-351

**Fig 1-42** : the possible  
hearth B12-352

**Fig 1-43** : the hearth B12-  
353



### ▪ Collapse

Above this last reoccupation, when the building was still standing and more or less suitable for a safe occupancy, the first levels of collapse were observed. It can so be assumed that the Mosque remained more or less preserved until the end of the 16<sup>th</sup> century and that the general collapse only occurred afterward. The first level of collapse observed was registered as **UF3619**, **UF3670** and **UF3714** from north to south. The layer is made of a brown to red sandy silt, coming from the slow disintegration of the coating of the surrounding walls, mixed with some corals and limestone blocks together with a little bit of fragments of mortars, also coming from the walls, and some pieces of the roof above. Small pebbles were also found in those levels which came probably from the coating and the walls inside which they were used in the binder, rather than from occupancy layers, as they are scattered and not concentrated in a particular area. Few carved stones were also found, mainly rectangular, which came from the first floor. The lower part of those levels contained less remains of walls (stones and plaques of coating or roof), suggesting a certain time of abandonment during which the external coating of the walls suffered a slow weathering before a general collapse, when the walls have lost their external protection and their cores started to collapse. The same feature was observed in nearly all the other rooms of the basement. Those levels are very irregular, thicker against the walls than in the middle of the rooms, which is quite logical as the disintegrated remains of the coating fall down at the feet of the wall they were covering.

Right above this first level of collapse, when the Mosque has started to fall into decay but the superstructure was still standing and the basement still reachable, two small layers of a short reoccupation were observed. At the corner of the walls B12-309 and B12-322, a layer of ashes (**UF3669**) with charcoals surrounded by a slightly rammed area is probably the testimony of a small hearth made by a one-night visitor. In the southern part, next to the gate of the room B12-R which was probably still reachable without major difficulty, a thin layer of small pebbles (**UF3719**) was unearthed, with concentration of ashes which can be the remains of hearths, later damaged by the above collapse. In this case, the reoccupation might have been a little longer.

After this small and final reoccupation, occurred the general collapse of the building. This massive level was artificially divided into several different parts to facilitate the location of the architectural remains on maps and databases, and thus help the restitution of the shape and decoration of the Mosque before its destruction. In the southernmost part, in front of the room B12-R, the lowest level of general collapse was registered as **UF3701**. It is a layer made of beige to gray silt coming from the disintegration of the mortar and coating and also probably from a natural windy deposit which gave to this level some sandy aspect from place to place. Many corals, limestone blocks and pebbles of all sizes were found there, coming from the collapse of the wall, and some plaques coming from the roof where also unearthed. The soil was browner and more powdery closed to the walls, because of a more important concentration of disintegrated coating. To the north, in front of the room B12-L, the collapse was registered as **UF3634** and is in all the way similar to the previous one, the distinction between them being only due to the protocol of excavation. The level also covered the highly damaged wall B12-309 which was separating the rooms B12-K and L, indicating that this area suffered an earlier and more important destruction than the others parts of the basement. There is actually no convenient explanation for this particularity. Northerly, in front of the room L, the collapse was registered as **UF3647**, which have exactly the same components and likeness. Those layers were containing the main part of the more massive architectural elements, including fragments of the octagonal columns which were standing on the first floor in the entrance hall.

The upper part of the collapse level was artificially divided into **UF3696** and **UF3625**, which are more or less of the same composition than the underneath levels, except that the large pebbles are rarer. Right above, the artificial level **UF3000**, which is common to all the building, correspond to the cleaning of the ground at the beginning of excavations until the unearthing of the top of the walls. Fragments of mortar and coating were still present and more remains of decoration were found in those levels. Also, large fragments of coated walls, some of them showing remains of niches, pilasters or jambs of gates, were also found, but they quite probably not come from the first floor right above but from the western wall which was dividing the first floor into an entrance hall and the prayer hall, the architectural remains having slipped down following the natural slope of the collapse towards the shore. In the same idea, the remains of decoration more likely came from the westerly prayer hall than from the entrance hall, where no decoration made of tiles was observed on the architectural remains. It is also the case for the few carved quarterfoils discovered there, which came from the arches of the prayer hall.

### I-B1c. Architectural elements **Fig 1-44**

All the architectural elements found in the collapse levels (registered as IsoArc) were registered in a database. They will not be described hereafter, except for the main ones which gave the more interesting information about the architectural fitting of the Mosque. More details are given below in the dedicated chapter and catalog.

The most impressive architectural remains unearthed in the span 1 were undoubtedly the fragments of the octagonal columns and their cubic basis which were supporting the roof of the entrance hall on the first floor, above the walls between the spans 1 and 2. They were very well-preserved in the north of the span, especially in the room B12-H and the northern extremity of the room B12-K, where they were all let *in situ*, in order to create some animation among the ruins for the visitors to come. Remains of those massive columns were scarcer in the other parts of the room B12-K and, until the very last days and the excavations of the southern extremity of the room, traces of the columns were frankly missing. It was, at a time, even assumed that this kind of columns were possibly absent in the middle of the row, or that the entrance hall was under reconstruction shortly before the seizure of the city by the Portuguese and that the central columns were not finished at that moment. But that hypothesis was rejected, especially because the Portuguese writer Bras de Albuquerque would have undoubtedly mentioned that fact in his description of the Mosque. Explanation was in fact much simpler. The northern columns were protected by a thicker level of collapse coming from the tower above the room B12-T and so protected from the disintegration while the southern ones were covered by a thinner level and so more exposed to the weathering. Remains of those columns were in fact found everywhere in the span 1 but the main part of them was completely disintegrated and only fragment of their core and coating were unearthed.

At least four columns were supporting the roof of the entrance hall, built over the buttresses B12-151, B12-185, B12-322 and B12-347 from north to south, and two other ones might be assumed partially engaged and embedded in the north and south side walls of the Mosque. Fragments found at the northern extremity of the room B12-H, at the feet of the external wall B12-133, are in favor of this hypothesis. In room B12-K, the **IsoArc688 (Fig 1-45)** found between the walls B12-376 and B12-301 could be a remain of this kind of column and, in that case, was probably built over the massive buttress B12-185. But the remains are highly damaged, not easy to identify and it is merely its components, mainly its strong gray mortar and pinkish white coating which allow this identification. Shortly to the south, between the threshold B12-360 and the gate to room B12-S, the **IsoArc714 (Fig 1-46)** and **IsoArc715 (Fig 1-47)** could also be the remains of the octagonal columns built over the massive buttress B12-322, but in that case also, the elements are badly preserved and the identification can be made with an absolute certainty.

It is simpler with the **IsoArc924 (Fig 1-48)**, more at south, which is enough preserved to be affirmative, the cubic basis and two fragments of the octagonal drum being preserved and clearly visible. It was found at the foot of the massive buttress B12-347 above which it was originally standing. The column did not strictly toppled from its original location but slipped down from it as the top of the buttress collapsed. Indeed, if the column had toppled, the basis would be closed to the buttress and the drum to the east, as it is the case of the IsoArc251/285 in room B12-H; but in this case the drum is near the buttress B12-347 and the basis further east. The same effect of slipping was observed in the prayer hall, especially in the south side near the south gate of B12-B with the engaged column B12-327.

Found in the immediate proximity of the threshold B12-300, the **IsoArc692 (Fig 1-49)** is the remain of an arch and the only remain of this kind unearthed in the room. It is very tempting, due to its location, to assume that the arch was originally at the top of the gate that gave access to the room from the beach but it can also come from another place of the Mosque and has followed the slope of the collapse. If the arch really came from the top of the gate, its size and curve might suggest that the gates in front of the beach were topped by segmented arches.

Unearthed right in front of the gate to room B12-S, nearly in the exact center of the span, the **IsoArc705 (Fig 1-50)** is a fragment of a wall showing a curve on its rear coating and a possible vertical bow, the remains being too fragmented to be affirmative for this last identification. It is very possible that this fragment is a remain of a vaulted opening (gate or window) or more likely a shallow niche. This fragment undoubtedly came from the wall that was dividing the first floor into prayer hall and entrance hall, above the long uninterrupted wall between the spans 2 and 3 where the architectural elements unearthed during the 2013b-2014a season had allowed to assume the presence of gates, niches (which could be considered as *mihrab*) and windows (see previous report and drawn restitution for further details). The **IsoArc829 (Fig 1-51)**, which is a fragment of an engaged pilaster, also comes from the dividing wall on the first floor, the same kind of fitting having been observed during the previous season. Those two architectural elements have slipped down following the slope made by the collapse. As they have slipped over the remains of the walls of the eastern part of the basement, it so means that most part of the

Fig 1-44 : Site plan of the main architectural elements







**Fig 1-45** : the architectural element IsoArc 688



**Fig 1-46** : the architectural element IsoArc 714



**Fig 1-47** : the architectural element IsoArc 715



**Fig 1-48** : the architectural element IsoArc 924, square basis and octagonal tambour of a pillar from the first floor



1-49



1-50



1-51

**Fig 1-49 :** the architectural element IsoArc 692, fragment of arch

**Fig 1-50 :** the architectural element IsoArc 705, possible fragment of niche

**Fig 1-51 :** the architectural element IsoArc 829, fragment of engaged pillar

entrance hall fell down into the basement and that the walls were covered by their own components when the dividing wall finally collapsed. The salty wind from the sea to the east could explain why the eastern part of the building suffered the first damages.

## I-B2. Rooms S, L and R (Span 2)

As mentioned above, nearly all the northern half of the span 2 was excavated during the 2013b-2014a season, when the room B12-G, accessible from the low courtyard through the room B12-W in the North Wing, and the room B12-Q, the northernmost of the room reachable from the room B12-K in span 1, were fully unearthed. The northern half of the room B12-Q was also completely cleared, except for its gate to the east where an architectural remain, which was chosen to be left *in situ* prevented a full excavation. The northern half of the room B12-S was also unearthed and the upper part of the collapse of the rooms B12-L and B12-R, till the appearance of the top of the walls, was removed.

### I-B2a. Architectural description (Fig 1-52)

#### Room B12-S

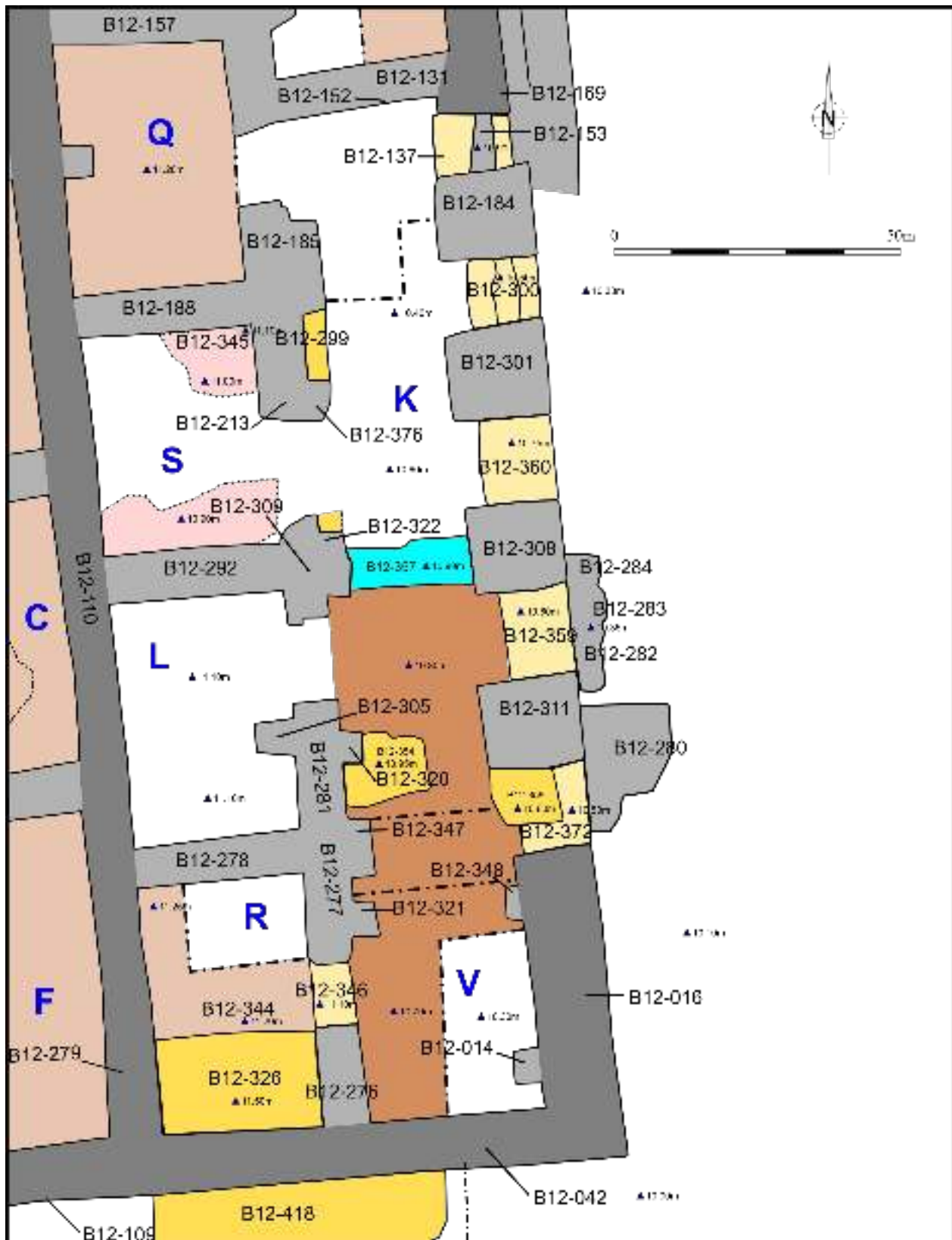
The room B12-S, in the middle of the span 2, was already partially observed in the long axial trench opened by the QP in 2009, and it is the most badly preserved among the rooms of the basement. There is in fact no really convenient explanation for this poor state of conservation, especially why the coated floor was so damaged here; one explanation could be that the room remained reachable, through room B12-K, for a longer time and so suffered a longer weathering.

The room B12-S has an internal length of 3.75m and an internal width of 2.90m, the useful space of the room thus being a little more of 11m<sup>2</sup>, access excluded. It is delimited, to the west, by the long uninterrupted wall **B12-110 (Fig 1-53)** which is here preserved up to around 2.50m high, to the north by the wall **B12-188 (Fig 1-54)**, 3m long by 0.80m wide and 2.30m high which separated the room B12-S from the northern room B12-Q, and at south by the section of wall **B12-292 (Fig 1-55)**, 3m long by 0.70m wide and 1.30m high. To the east, where is the gate from the room B12-K, the delimitation is made by the walls **B12-213 (Fig 1-56)**, 1.70m long by 0.80m wide and 1.30m high, and **B12-309**, which is more likely a jamb and very damaged, on both sides of the gate, in front of the eastern external gate with the threshold B12-360, which is now 1.60m wide but was probably originally narrower, the two jambs of the gate being destroyed nearly to the bottom. As this side is particularly badly preserved, it is impossible to give the original size of the gate, but according to the others gates of the span, it was probably around 1m. In the same way, it is very likely that the gate once presented a stepped threshold but nothing of it was enough preserved to suggested its original shape. All the walls are apparently bonded and built in the same way, with large limestone blocks at the bottom, sometimes with some large pebbles, and smaller limestone blocks and coral blocks of all sizes in the upper part, bonded by a gray mortar containing many small pebbles. All walls were also covered by a rough gray to beige coating which is variously preserved: in general, it is well-preserved in the lower and upper parts and missing in the middle, but it is also nearly all gone on the east side, due to the poor state of conservation of the walls.

A very small piece of coated floor **B12-345 (Fig 1-57)**, similar to the coating of the walls, was found in the north-east corner of the room B12-S, no more than 0.30m long and 0.25m wide. It was built over a layer of floor foundation (**UF3648** and **UF3796 (Fig 1-58)**) made by an indurated level of small pebbles bounded with a sandy beige silt. This level was observed in two places, in the north-east corner where it was unearthed directly under the small remain of the coated floor B12-345, and in the south part where absolutely no remain of floor was found, but it is obvious that the coated floor once covered the entire room. If the sounding made by the QP has destroyed some part of the coated floor in the center of the room, there is no convenient explanation for its missing in the others parts, especially compared with the room B12-Q to the north and B12-A and B12-C to the west where the floors are very well-preserved. A longer accessibility could be the reason. **Fig 1-59**



Fig 1-52 : Site plan and altitude of the main structures of the south-east part of the basement





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1-55



**Fig 1-53 :** the wall B12-110 in room B12-S

**Fig 1-54 :** the wall B12-188 in room B12-S

**Fig 1-55 :** the wall B12-292 in room B12-S



**Fig 1-56 :** the wall B12-213 in room B12-S

**Fig 1-57 :** the remains of coated floor B12-345 in room B12-S

**Fig 1-58 :** the foundation layer Uf3648

**Fig 1-59 :** internal view of the room B12-S at the end of excavations

#### ■Room B12-L

To the south, the room B12-L is better preserved than the room B12-S. Of an internal length of 4.20m by an internal width from 3.05m at north to 2.90m at south, the useful surface of the room is a little more than 12m<sup>2</sup>, buttress and access excluded. It is delimited north by the wall **B12-292** (Fig 1-60) common with room B12-S and already described, west by the long uninterrupted wall **B12-110** (Fig 1-61), which is here 4.30m long by 0.80m wide and 2.20m high, and south by the wall **B12-278** (Fig 1-62), common with room B12-L and which is 2.85m long by 0.75m wide and 2.30m high. To the east, the delimitation with room B12-K is made by the wall B12-309 at north and **B12-281** (Fig 1-63) at south, which is 2.20m long by 0.75m wide and 1.70m high, both being separated by the gate, in front of the eastern external gate with the threshold B12-359; its jambs are badly preserved, but no as badly as the room B12-S. The northern jamb, made by the wall B12-309, is more or less preserved and a rabbet was observed. The southern jamb, made by the wall B12-281, is more destroyed and the limit of the gate has only be guessed by the print of the mortar. The gate is so 1.35m long (rabbet excluded) and 0.75m wide, and a stepped threshold was also identified according to the stones uncovered and the scarce remains of mortar, but it was not enough preserved to be affirmative about its size and shape (Fig 1-63 bis). All walls are quoined and made in the same way, with massive limestone blocks and pebbles at the bottom and smaller stones and corals blocks in the upper part, bounded with a gray mortar containing many small pebbles. A rough gray to beige coating, similar to the one of the other rooms of the basement, was covering the walls. It is variously preserved, with important gaps in the middle of the walls and mainly missing on the eastern size.

At 0.25m south of the gate, a small buttress **B12-305** (Fig 1-64) was found against the west facing of the wall B12-281. It is 0.70m long by 0.65m wide and preserved 0.80m high, and made with medium limestone, coral and pebbles blocks, bounded with a rough gray mortar and showing the same coating as the walls on the north and south side. The west side is badly preserved and the buttress could have been a little longer. It has no architectural utility and was probably used for an internal fitting such as shelves.

Some remains of a pinkish-white coated floor, **B12-316**, were observed; it is heavily damaged, the small fragment could be removed simply by brush. This coated floor is best preserved at the foot of the walls and strongly cracked in the center of the room. It was built over a floor support (**UF3629**) made of small pebbles bounded in sandy pink mortar. (Fig 1-65)

#### ■Room B12-R

The room B12-R, the southernmost of the span 2, has a maximal internal length of 4.40m and a width of 2.90m, the useful area of the room B12-R being around 12.50m<sup>2</sup>, access excluded, and a little less than 8m<sup>2</sup> if the bench B12-326 is also excluded. It is delimited to the north by the wall B12-278, which is common with room B12-L and was already described, to the west by the long uninterrupted wall **B12-110** (Fig 1-66), which is here 4.30 long by 0.80m wide and 2.50m high, and to the south by the south external wall of the Mosque **B12-042** (fig 1-67) which is here 2.80m long by nearly 1m wide for a maximal preserved height of 0.80m above the bench B12-326. The east side is made by the wall **B12-277** in its north part, which is 1.60m long by 0.75m wide for 1.90m high, and by the wall **B12-276** (Fig 1-68) in its south part, which is 1.80m long by 0.80m wide for 1m high, both being separated by the gate which is the only one not to be in front of an eastern external gate. All walls are quoined and made in the same way as the walls of the other rooms and present remains of the same kind of coating, with the usual gap in the middle of the elevation of the walls.

The room B12-R is so only one accessible by the southern part of the room B12-K, which was assumed to be a more private part than the northern part of the room. The gate is better preserved than the other ones and the jambs, though destroyed in their upper parts, are complete in their lowest parts. A threshold (**B12-346**) (Fig 1-69) was uncovered, made of flat coral and limestone blocks bounded with an indurated reddish sandy silt, one of those stones being also part of the north jamb. The threshold B12-346 is 1m long by 0.70m wide, which is also the size of the gate, and it makes a small step about 0.20m high above the rammed earth floor UF3659 in room B12-K. It is partially covered by the coated floor **B12-344** (Fig 1-70) uncovered in nearly all the surface of the room except in the north-eastern corner where an architectural collapsed element was left in place, thus preventing a full excavation of the room. This floor is made of a fine pinkish mortar which appeared to be connected with the coating of the walls.

The south part of the room B12-R is occupied by a rectangular low bench **B12-326** (Fig 1-71), whose limit is in the alignment of the south jamb of the gate. This bench is 3m long by 1.80m wide for a height of 0.25m to 0.40m above the coated floor B12-344. The north edge of the bench is made by one course of stones and the inside, between this limit and the south wall B12-042 was filled by a mix of small pebbles, sand, small coral and limestone blocks, and rubbish (mainly shells and ceramics). The filling was afterward





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1-62

**Fig 1-60 :** the wall B12-292 in room B12-L

**Fig 1-61 :** the wall B12-110 in room B12-L

**Fig 1-62 :** the wall B12-278 in room B12-L





**Fig 1-63 :** the wall B12-281 in room B12-L

**Fig 1-63 bis :** the gate to the room B12-L

**Fig 1-64 :** the buttress B12-305

**Fig 1-65 :** Internal view of the room B12-L with remains of the coated floor B12-316 in room B12-L, in the center behind the scale and on top-left and bottom-right corners and underneath backfills Uf3629 in-between



1-66



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**Fig 1-66 :** the wall B12-110 in room B12-R

**Fig 1-67 :** the wall B12-42 in room B12-R

**Fig 1-68 :** the wall B12-276 in room B12-R





**Fig 1-69** : the threshold B12-346 in room B12-R

**Fig 1-70** : the coated floor B12-344, at bottom

**Fig 1-71** : the bench B12-326, the floor at south being uncovered

**Fig 1-72** : internal view of the room B12-R at the end of excavations

covered by small flat coral and limestone blocks, the whole being finally covered by a fine coating made by pinkish-white mortar. This bench can be looked as a resting place, either used for sleeping or eating, the same kind of fitting could be observed in old Omani house. No occupancy structure or layers were observed above this bench, which seems to mean that the top was frequently cleaned. The presence of this resting area could confirm the privacy status of the room B12-R and of the southern part of the room B12-K. (Fig 1-72)

### I-B2b. Stratigraphical analysis (Fig 1-73)

Because of the state of conservation of the floor in the room B12-S, no occupancy structure was observed, and there is no possibility to guess if there ever was some, especially postholes of the same kind which was found in the other rooms of the span. The first level uncovered right above the floor support UF3648-3796 was the level of collapse **UF3626** to the south and **UF3290** to the north; it is made of fragments of coating and mortar, coral and limestone blocks and many architectural elements, whose more interesting will be detailed below. Those levels, which are equal and only separated by the axial trench opened by the QP, surprisingly contained no remains of the roof of the first floor. The upper layers of collapse were excavated here during the 2013b-2014a season and were described in the previous report.

#### ▪ Mosque occupation

Many occupation structures were observed in the room B12-L, especially postholes which were dug through the coated floor B12-316 and the floor preparation level UF3629. It was not easy to determine which ones belonged to the occupation of the Mosque and which ones belonged to a later reoccupation, as the above layers were very mixed. However, it is possible to link some of them to the main occupancy, mainly regarding to their location. Nearly in the middle of the north side, at the foot of the wall B12-292, the posthole **B12-342** (Fig 1-74), 0.20m wide in average and 0.20m deep, is one of the biggest and presented one propping stone. Its size, shape and location, might indicate that it was used to support rows of shelves which would have occupied all the north side of the room. In the same way, the posthole **B12-319**, from 0.10 to 0.15m wide and 0.15m deep, could also have the same function for a row of shelves alongside the southern wall B12-278, though it is not exactly dug in the middle of the length. In this configuration, the west and east extremities of the shelves fixed on the central post would have been fixed on the walls by a small protuberance of coating. The two rows of shelves, on each side of the central post, would so have been 1.25m to 1.50m long.

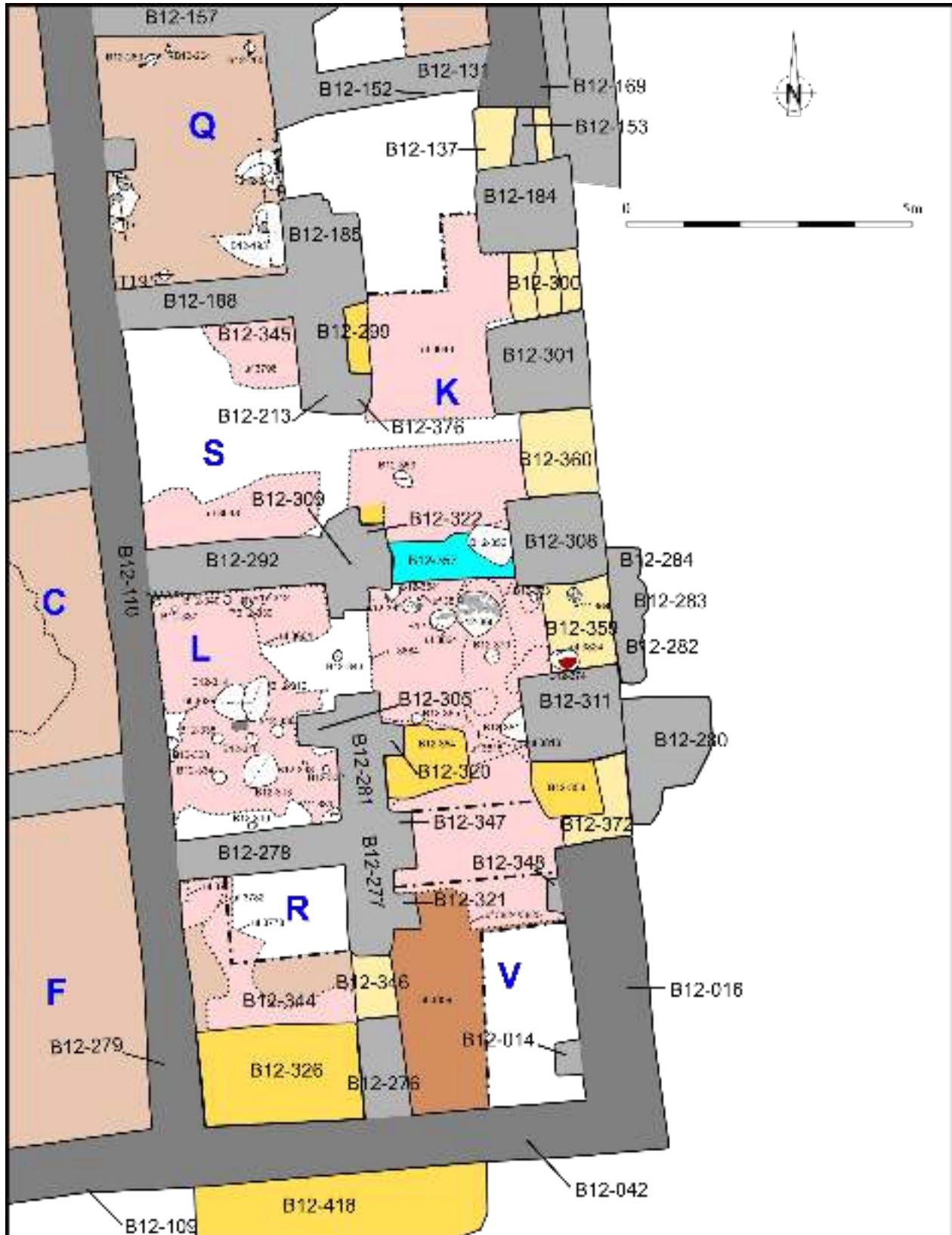
The three postholes **B12-328** (Fig 1-75), **B12-335** (Fig B1-76), and **B12-336** (Fig 1-77), all seizing around 0.25m for 0.20m deep, seem to work all together and most probably belong to the occupancy of the room. It is surely the case for B12-336, which was covered by a later low wall, and for B12-335 which was filled by the layer of the later reoccupation. It is less clear for B12-328, but as the three postholes are aligned together and also aligned with the small buttress B12-305, the four structures may have been used to create a separation in the room, nearly in its southern half. It is possible to imagine that those postholes were used to hang curtains for creating a private area but surely not to support some rows of shelves as they are not located along the walls. Located between the postholes B12-335 and B12-336 but slightly misaligned, the posthole **B12-318** (Fig 1-78), 0.20m wide and 0.15m deep, could also belong to the same fitting but evidences to link it to the phase of occupancy are doubtful.

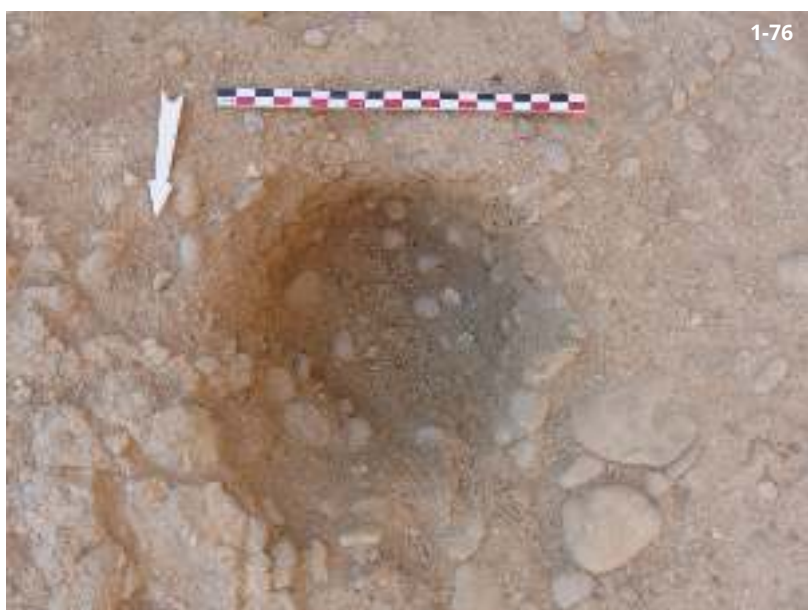
In the southern part of the room B12-L, the postholes **B12-332** (Fig 1-79), 0.15m wide by 0.10m deep, and **B12-334** (Fig 1-80), 0.20m wide and 0.15m deep, seem also to belong to the phase of occupancy as they were covered by the level of the next phase of reoccupation, but their function is less explainable than the aforementioned postholes. The first one is problematical because its location would have hindered the fitting of the assumed shelves along the wall B12-281 while the second one might have worked with the postholes B12-328/335/336 as it is creating a right angle with their alignment, but cannot be conveniently explained. In any way, the presence of the small buttress B12-305 and of several postholes located alongside the walls is a reminder of the room B12-Q where similar fitting were observed. In that case also, the presence of shelves was strongly assumed. It must also be noted that in the room B12-L, the presence of the usual sanitary floor made of some pebbles over the coated floor was not observed, to the contrary of most other rooms in the basement.

In the room B12-R, no occupancy structures were observed (apart from the bench B12-336) which would be built over the coated floor B12-344 or dug through it. The gaps in the coated floor allowed to explore a part of the underneath backfills, especially in the north-west corner of the room. The indurated level **UF3781** (Fig 1-81), which can be a rammed earth floor, was containing few ceramics which seem to indicate a dating of the late 15<sup>th</sup> century, which may suggest that the coated floor B12-344 was lately made and



**Fig 1-73 :** Site plan of the stratigraphical units and light structures of the south-east part of the basement





**Fig 1-74 :** the posthole B12-342, half excavated

**Fig 1-75 :** the posthole B12-328, half excavated

**Fig 1-76 :** the posthole B12-335, fully excavated





**Fig 1-77 :** the posthole  
B12-336, fully excavated

**Fig 1-78 :** the posthole  
B12-318, fully excavated

**Fig 1-79 :** the posthole  
B12-332, fully excavated



**Fig 1-80 :** *the posthole B12-334, fully excavated*

**Fig 1-81 :** *the possible former earthen floor Uf3781*

**Fig 1-82 :** *the sanitary level Uf3747*



can so explain why it looks different from the other coated floor. But excavations and evidences were too scarce to be fully affirmative. A sanitary level (**UF3747**) (Fig 1-82) made of small pebbles mixed with sandy beige silt was observed in the northern part of the room, spread above a level of backfill (**UF3778**), made of brown sandy silt and containing some stones which were used to level the subsidence of the coated floor. Though the ceramic material was too scarce to give an affirmative dating, there is no reason to doubt that the sanitary floor was spread in the same time as the other sanitary floors, which means in the beginning of the 16<sup>th</sup> century.

#### ▪ Main squatter reoccupation

As in the room B12-K, several traces of reoccupation were observed in the western rooms, though at a smaller scale and not in every places. In the room B12-S, absolutely no traces of reoccupation were found, the remains of the coated floor and the floor support being immediately covered by the layers of collapse. One explanation for this missing could be the poor state of conservation of the room or, more likely, that it suffered an earlier damage which made the room B12-S unsuitable for a squatter reoccupation.

Evidences of reoccupation are more important and evident in the room B12-L. A new layer (**UF3704**), made yellow sand containing few charcoals, pebbles and rare coral stones, was spread over the southern part of the room, leveling the cracks and subsidence of the coated floor B12-316 and covering some of the



postholes (B12-332, 334 and 335). A low wall (**B12-315**) (**Fig 1-83**) was also built right to the west of the small buttress B12-305. It is 0.65m long by 0.45m wide and only 0.15m high, i.e. one course of stones. But as it is made only with stones with no binder and no coating, it is possible that the wall was once higher and that it was not visible among the collapse until its bottom. This wall is associated with the floor UF3704 as it was marking its northern edge. It is quite probable that this wall was used to make a delimitation between a privacy space to the south, while the northern part of the room would have been used as a more domestic area. The postholes uncovered in the south-eastern corner (**B12-331**) (**Fig 1-84**), 0.15m wide by 0.10m deep, **B12-332**, 0.15m wide by 0.10m deep, and **B12-333** (**Fig 1-85**), 0.10m wide by 0.10m deep) could be the remains of a fitting in this area related to this phase of reoccupation, which cannot be determined. Also, it is possible that the posts in the holes B12-328 and B12-335 were still in existence, or the holes were reused, when the low wall B12-315 was made, as it is ending very close to B12-335. A closing by a curtain can still be imagined, though no strict evidence can be firmly given.

The northern part of the room B12-L seems to have been used as a domestic area, as a hearth (**B12-314**, around 0.65m wide) (**Fig 1-86**) was uncovered there. This hearth is contemporary with the low wall B12-315 immediately to the south, and some of its stones were burnt by the fire. Traces of the action of the fire were also observed over the underneath coated floor B12-316. It is possible to imagine that the roof above was partially damaged at the time the hearth was set to allow the evacuation of smoke. In that hypothesis, the other postholes uncovered in the northern part of the room (**B12-337**) (**Fig 1-87**), 0.10m wide by 0.06m deep, **B12-338** (**Fig 1-88**), 0.15m wide by 0.10m deep, **B12-339** (**Fig 1-89**), 0.10m wide and deep and **B12-340** (**Fig 1-90**), 0.15m wide by 0.10m deep) could have been used for supporting the remains of the roof along the northern wall B12-292, or for another kind of fitting yet not conveniently explainable. It is also very likely that the posthole **B12-343** (**Fig 1-91**), 0.20m wide by 0.10m deep, built in the middle of the gate from room B12-K was also dug during this phase of reoccupation and was used to support the wooden panels of a door.

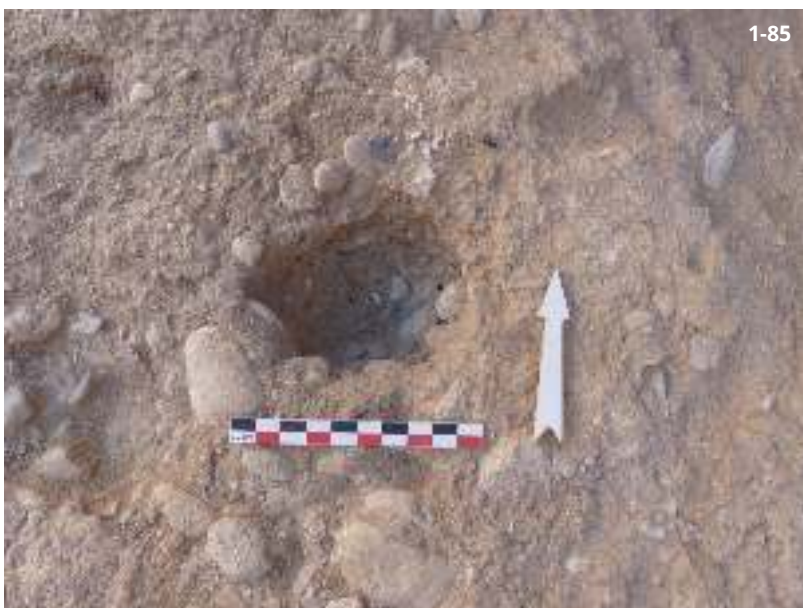
The dating of this first phase of squatter reoccupation, according to the ceramics found in the layers and structures, is from the 16<sup>th</sup> century, after the abandonment of the Mosque, and is probably contemporary to the main reoccupation of the room B12-K, with the benches and hearths, as it requires some important logistic similar to the one assumed in the easterly room.

#### ▪Further squatter reoccupation

A second phase of reoccupation was found in the room B12-L: a level of small pebbles bounded with gray brown sandy silt (**UF3693**) (**fig 1-92**) was spread nearly all over the rooms, covering all the structures mentioned above. Only one structure was uncovered relating to this second phase of reoccupation, a hearth (**B12-313**, 0.70 long by 0.60m wide) (**Fig 1-93**) set in the southern part of the room. In the north-east part of the room, over the floor UF3693, an area of ashes (**UF3664**) was also found, containing many charcoals, burnt corals, animal bones, ceramics and some nails probably coming from beam burnt in the hearth. It is quite probably the rejection area of the hearth B12-313 and the dating of ceramics indicates a broad 16<sup>th</sup> century. It is possible that this second phase of squatter reoccupation occurred shortly after the first one, while the structures of the main reoccupation in room B12-K were still in use, but the dating cannot be precise enough to be affirmative.

A third and last phase of reoccupation was observed in the room B12-L, which occurred when the building was partially falling into decay. The level **UF3663** (**Fig 1-94**) is made by small pebbles mixed with reddish soil which is quite probably coming from the disintegration of the coating and mortar of the walls. This reoccupation can be very close in time to the previous one, as the ceramic material dates it from the 16<sup>th</sup> century also. One hearth (**B12-312**, 0.80m long by 0.45m wide) (**Fig 1-95**) is probably contemporary with this final occupation.

In the room B12-R, there is no strict evidences of a later reoccupation, unless it is possible that the sanitary floor UF3747 above the coated floor B12-344 was spread after the abandonment of the Mosque, the dating by the ceramics could not be enough accurate. But as the coated floor in this room is the best preserved of the area, it is also possible that it maintained in a proper state of use during the main reoccupation phase in room B12-K. It is more probable that the sanitary floor **UF3697/3698** (**Fig 1-96**), made of small pebbles mixed with sandy brown to beige silt, which was found over the bench B12-326 to the south, leveling the subsidence of the bench and covering the gaps of its coating, dates from this reoccupation. Though the ceramic material found here was unable to give a more precise dating than a broad 16<sup>th</sup> century, as those levels were covering the gaps in the coating of the bench it is probably a later fitting, after an abandonment long enough for the coating to be damaged. In that hypothesis, the people using the room could either have walked over the remaining coated floor or the first layer of collapse made by the disintegration of the coating of the walls. Though there is no possibility to be strictly affirmative, it is



**Fig 1-83 :** the low wall B12-315 at the feet of the buttress B12-305

**Fig 1-84 :** the posthole B12-331, fully excavated

**Fig 1-85 :** the posthole B12-33, fully excavated



**Fig 1-86** : the hearth B12-314

**Fig 1-87** : the posthole B12-337, fully excavated

**Fig 1-88** : the posthole B12-338, fully excavated





**Fig 1-89 :** the posthole  
B12-339, fully excavated

**Fig 1-90 :** the posthole  
B12-340, fully excavated

**Fig 1-91 :** the posthole  
B12-343, fully excavated





**Fig 1-92 :** *the earthen floor*  
*Uf3693*

**Fig 1-93 :** *the hearth B12-*  
*313, hal excavated*

**Fig 1-94 :** *the earthen floor*  
*Uf3663*



**Fig 1-95 :** *the hearth B12-312, before excavations*



**Fig 1-96 :** *the sanitary floor Uf 3697 above the bench B12-326*

very likely that the bench B12-326 was still used as a resting place. No other evidence of another phase of reoccupation was observed in this room before the effective start of the collapsing of the building.

In the room B12-S, already partially excavated and registered during the season 2013b-2014a, only the lowest level of collapse (**UF3626**) was removed during this season, and it is an artificial division in the south part of the room. This level contained many limestone blocks, corals and pebbles of all sizes, together with fragments of mortar and coating and a powdery beige soil which is a mix of the disintegration of the coating and mortar and a probable windy deposit. Surprisingly, no remains of the roofs were found in this level, which can mean that the roof here collapsed very early, during or before the reoccupation phases, and that the fragments were removed by the later inhabitants.

#### ▪Collapse

In the room B12-L, the lowest level of collapse (**UF3649**) is made of a reddish brown soil, coming from the disintegration of the coating of the walls, and containing some medium stones, small pebbles also coming from the disintegrated coating. The ceramics found in this level date back to the second half of the 15<sup>th</sup> century, which is apparently the dating of the last refection of the coating. Several plaques coming from the roof were also found in this level, while the architectural elements are scarcer than in the above levels, indicating that the roof fell first, while the walls of the upper floor stood a little longer.

Above, the second layer of collapse (**UF3647**) is made by a beige soil, coming this time from the disintegration of the mortar from the core of the walls, and still contained some plaques of roof but also more fragments of mortar, larger stones and fragments of plasters probably coming from the decorative elements of the first floor. This level also contained more architectural elements and it was covering the main part of the eastern walls, including the small buttress B12-305, stating that those structures were already destroyed when the main part of the first floor, especially the wall separating the prayer hall and the entrance hall from which came the main part of the architectural elements.

The above level of collapse (**UF3637**) is similar to the previous one UF3647, artificially divided according to the general protocol of excavations. The soil was still beige but more sandy, which can be explained by a windy deposit, and it was also containing pebbles, limestone and coral blocks of all sizes, fragments of coating and mortar and some plaques of roof, and still some architectural elements of the walls of the first floor.

What appeared to be a squatting was observed above the aforementioned level of collapse. In the south-west corner of the room, in the corner of the walls B12-278 and B12-110 which were probably still emerging from the collapse, a thin layer (**UF3624**) made of indurated beige silt could be a rough earthen floor associated with the nearby layer **UF3623** made of small pebbles. Traces of ashes can suggest that people once made a fire and stayed a while among the ruins of the Mosque. This opportunistic reoccupation was quickly covered by other layers of collapse (**UF3618** and **UF3616**, similar but artificially divided), still made with a beige soil and containing many fragments of mortar and coating, limestone and coral blocks and many architectural elements which could come from any place in the western part of the Mosque as they could have slipped down following the slope made by the layers of collapse. Over this last level excavated during this season, the highest level of collapse here was excavated and registered during the previous season.

In the room B12-R, the lowest layer of collapse (**UF3742**) was only observed in the northern half of the room, above the floor B12-344 but not over the bench B12-346. This level is made by a reddish beige soil which came from the disintegration of the coating of the wall and containing some small limestone and corals blocks, some fragments of coating and roof. It is strongly possible that this level was a little leveled and used as a floor by the people who reoccupied the area while the coated bench B12-346 was still suitable. The first layer of collapse which covered the entire room (**UF3644**) is made of a beige soil containing many fragments of mortar and coating, small pebbles, plaques of roof in an important quantity, and some limestone and coral blocks. Ceramics found in this level also came from the coating of the walls and date back to the second half of the 15<sup>th</sup> century, which is so the time when the coating was repaired for the last time. Some architectural elements were found in this level but in little quantity compared to the levels above.

**Fig 1-97** : the possible late reoccupancy UF3643



A squatting occupancy was also observed in the middle of the room, where the layer **UF3643** (**Fig 1-97**) is made of small pebbles and charcoals and ashes. As in room B12-L, it seems that some people spend a little time in the ruins and made a rough hearth that was later damaged by the collapse above. The highest level of collapse excavated during this season (**UF3641**) is similar to the level UF3644, only separated from it by the short squatter reoccupation UF3643. It is also made with a beige soil and contained many limestone and coral blocks of all sizes, plaques of roof, fragments of coating and mortars and some massive architectural elements, most of them coming from the separating wall of the first floor. Some elements of beams were also uncovered, which might either come from the beam supporting the upper roof or from the columns where the wood was used to prevent the damages resulting of earthquakes. Above it, the highest level of collapse was excavated during the previous season.



I-B2c. Architectural elements Fig 1-98

Fig 1-98 : Site plan of the main architectural elements





All the isolated architectural elements (IsoArc) discovered in the area will not be described hereafter but only the main important ones, giving the most relevant information about the architectural and decorative features of the Mosque.

Most of the architectural elements found in the rooms B12-L, R and S came from the dividing wall separating the first floor into prayer hall and entrance hall. In the room B12-L, the **IsoArc689 (Fig 1-99)** appeared to be a blocking for an opening, quite probably a gate rather than a window according to its size. A vertical beam imprint was visible on one face of this blocking which could have been used for a door-frame, which might indicate that a original gate was reduced in size, a smaller door being created in the blocking. In the same room, the **IsoArc690 (Fig 100)** and **IsoArc694 (Fig 101)** are fragments of the separating wall, with remains of the white coating bearing traces of small engaged pilasters.

In the rooms B12-L and S, four massive architectural elements also coming from the dividing wall showed well-preserved features of the various opening which stood in the wall. The **IsoArc695 (Fig 1-102)**, in room B12-L, is a massive element with remains of coating and showing on one of its side a curved face which is the arch of an opening, more likely a gate than a window according to its size. In the same room, the **IsoArc696 (Fig 1-103)** is also the same kind of remain, with a curved side probably coming from an arched gate, but showing also a molding which is probably the mark of an upper horizontal cornice running along the wall above the top of the gates and large pilasters on each sides of the gates, as it was already assumed after the season 2013b-2014a. On IsoArc695, a small nick at the bottom of the curve of the arch is probably the imprint of a small beam that was framing the top of the wooden doors. In room B12-S, the **IsoArc512 (Fig 1-104)** and **IsoArc515 (Fig 1-105)** are both remains of the jambs of a gate showing a trapezoidal molding which was probably framing the gate. According to its location, those elements are probably coming from the main gate into the separating wall, set in front of the axis of the *mihrab*.

Five small isolated architectural elements discovered in rooms B12-L and R were very interesting, despite their small sizes. The **IsoArc746 (Fig 1-106)** and **IsoArc801**, in room B12-L, and the **IsoArc731**, **IsoArc733** and **IsoArc740 (Fig 1-107)**, in room B12-R, are all rectangular elements, nearly square, showing a concave curve on some of their sides, sometimes on the four sides, and remains of white plaster. Assembled together, those elements were probably making circular holes, more or less similar to *oculi*, to bring light and fresh air inside the building. It is possible that those *oculi* were assembled by three in a trefoil pattern, though it is difficult to be strictly affirmative, and they were quite probably set at the really top of the dividing wall under the roof of the prayer hall. As they were assumed to bring light and fresh air inside the building, it is very likely that they were at open air and so built above the roof of the entrance hall. In this hypothesis, it seems reasonable to assume that the roof of the entrance hall was lower than the room of the prayer hall. This hypothesis was already assumed at the end of the last season of excavations as no trace of arches were found in the entrance hall and the octagonal columns that supported the roof would have been very high to reach the same level as the roof of the prayer hall which was supported by vaulted arches. The discovery of the ventilation holes at the top of the separating wall between the prayer's hall and the entrance hall enhances this hypothesis.

It is possible to link this feature with the description made of the Mosque by Bras de Albuquerque. The Portuguese chronicler was indeed speaking of an entrance, which could be the entrance hall, surmounted by what he called a terrace overlooking the sea. It is possible that he was referring to the lower flat roof of the hall, probably reachable from the tower at the north-east corner of the building, which was facing the sea and which he interpreted as a terrace, the difference of height with the roof of the prayer hall to the west west, surmounted by the cupola, and the easy access by the stairs in the tower allowing the confusion.

### I-B3. General interpretation of the spans 1 and 2

At the end of excavations, it appeared that the three southern quarters of the spans 1 and 2 of the basement were working all together and creating a particular ensemble. The long room B12-K, reachable from the seashore by five gates, could be considered as an antechamber, or a vestibule, or nearly an entrance hall, to the western rooms B12-Q, R, L and S, which are only reachable through it. The floor of the room B12-K is also made of rammed earth to the south and by a sanitary level made of pebbles directly spread over the natural bedrock to the north, which is an unique feature in the whole basement and can be in favor a frequent circulation of people.

The western rooms B12-Q and B12-L, and possibly B12-S as the state of preservation can allow many interpretation, seemed to have welcomed several rows of shelves where something was stored, while the southern room B12-R and the southern extremity of the room B12-K could be considered as a private area, the room B12-R could be seen as a living room or even a bedroom, as the presence of the low bench might indicate.



**Fig 1-99 :** *the architectural element IsoArc 689, possible blocking for a gate*

**Fig 1-100 :** *the architectural element IsoArc 690, fragment of engaged pilaster*

**Fig 1-101 :** *the architectural element IsoArc 694, fragment of engaged pilaster*

**Fig 1-102 :** *the architectural element IsoArc 695, possible fragment of a vaulted gate*





**Fig 1-103 :** the architectural element IsoArc 696, possible fragment of a vaulted gate with engaged pillar

**Fig 1-104 :** the architectural element IsoArc 512, fragment of jamb of a gate with molding

**Fig 1-105 :** the architectural element IsoArc 515, fragment of jamb of a gate with molding

**Fig 1-106 :** the architectural element IsoArc 746



**Fig 1-107 :** the architectural element IsoArc 740

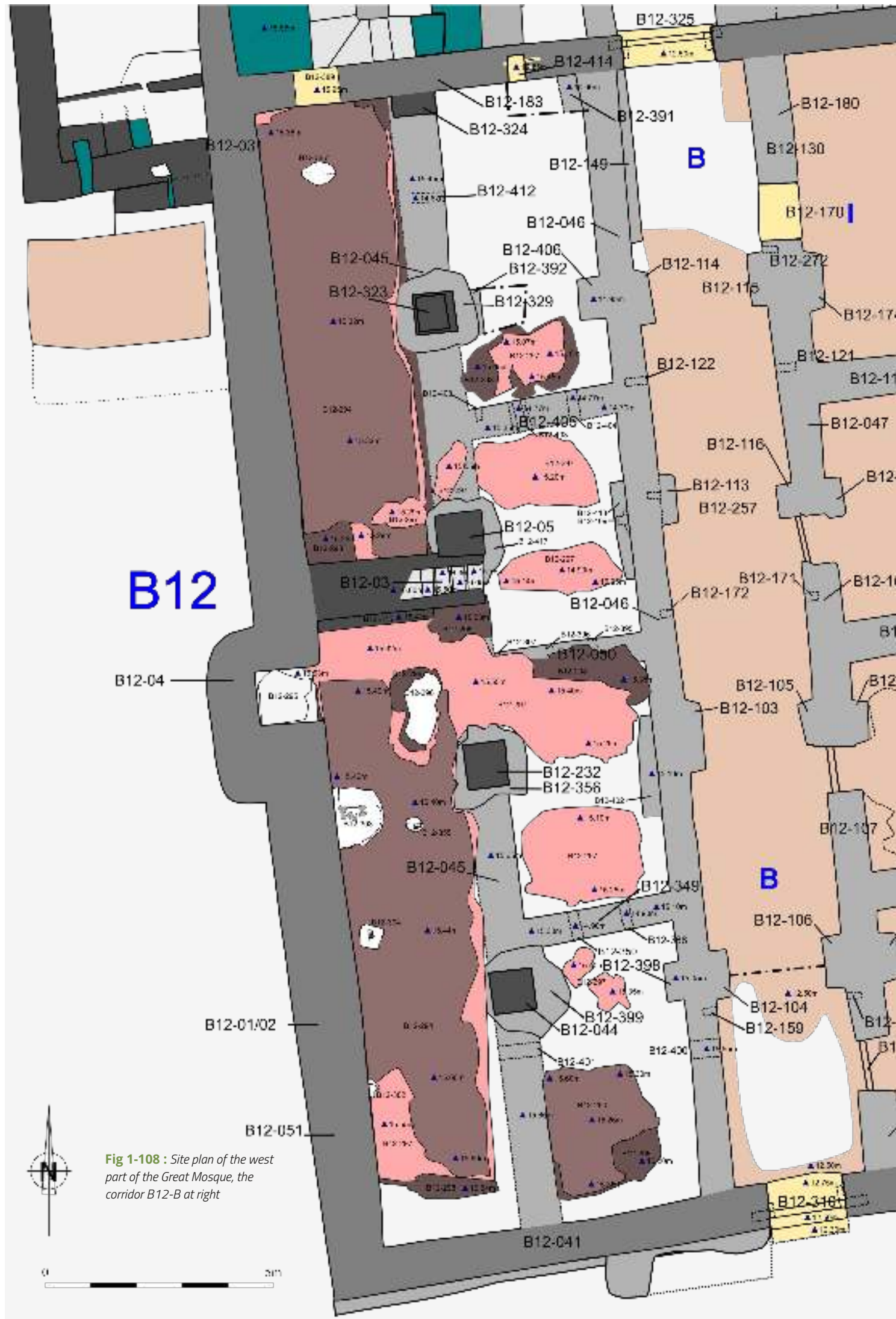
As the material discovered during the excavations was not typical enough to give an indication about the function of this area with certainty, only imagination can limit the possibility of interpretation. For example, the five rooms could have been used as *madrassa*, with the room B12-Q, R and S as a storing place for the religious books and the main part of the room B12-K as the school class, while the southern part of the room B12-K and the room B12-L as the apartment of the school's master. But it is also possible that the area hosted charity activities, with the rooms B12-Q, R and S storing this time food and the room B12-K welcoming the impecunious peoples coming to receive alms and dole. The southern part of the span 1 and 2 in this configuration would have been the living place of the people in charge of the distribution.

But it is also possible to imagine, due to the proximity of the seashore which was also the city's harbour, that the five rooms were used as the customs office of the city. This time the storing rooms B12-Q, R and S would then have been used to store the archives, while the room B12-K and B12-L would rather have been used as offices. Other hypothesis can easily be assumed as no undeniable evidences were found. But it is not exaggerated to state that this part of the basement was the most easily reachable of the whole building, directly from the beach without entering the Complex and not necessitating many circumlocutions to enter the rooms. By so, it can be assumed without much doubt that this area welcomed a more important human activity and attendance than the other parts of the building, and a non-religious use can be easily supposed.

It is also quite probably the proximity of the sea and the facility of access which explain the large reoccupation of the area, at least the southern part of it, when the Mosque was abandoned but still more or less standing, while the reoccupation in the other parts of the basement was at a much smaller scale and frequently occurred when the building had already started to collapse. An important logistic was necessary to create the new structures of this reoccupation, such as the small benches, or the raising of the new floors of pebbles, the new low walls or the many postholes possibly used to support the damaged roof, and it really seems that the people who made those fittings intended to stay a while in this area. The dating by ceramics indicates that this reoccupation occurred in the early 16<sup>th</sup> century, shortly after the arrival of the Portuguese and the sack of the city. It is possible to imagine that those fittings were made by the Portuguese invaders themselves who wanted to use the place as garrison's rooms for a small troop left here to control the city, but it is not the most relevant hypothesis, as the Portuguese were very few and soon went to Qurayat, Muscat and Hormuz, which were more strategic places and it is very likely that no Portuguese stayed in Qalhât after the seize of the city in 1508.

Moreover, the way of construction of the small benches or the hearth made with an upside-down jar are obviously more an Arabic pattern than a European one and it is more likely that those fittings were made by local inhabitants. It is however not possible to firmly state if those new residents were peoples from Qalhât who lived there immediately after the departure of the Portuguese, or by other Omani people coming from another places, for example people from the mountains or fishermen coming from elsewhere on the coast. Nevertheless, as the ceramics found in those levels can date back to the second half of the 16<sup>th</sup> century, it is very likely that the general superstructures of the Mosque remained standing, and more or less habitable, some decades after the departure of the Portuguese who did not actually, contrary to the statement of Bras de Albuquerque, burnt the Great Mosque of Qalhât entirely to the ground.





**Fig 1-108 :** Site plan of the west part of the Great Mosque, the corridor B12-B at right

## I-C : Completion of excavations at the span 4 (room B) Fig 1-108

### I-C1: Architectural description

At the end of the excavations of the 2013b-2014a season, the main part of the span 4, which is occupied by a long corridor (B12-B) giving access to four easterly rooms (B12-I, A, C and F) was unearthed, except for its north and south extremities. At north, the main part of the large gate that gave access from the low courtyard (B12-LC) was uncovered, but a low berm was left in place covering the lower part of the gate, where a threshold was expected. At south, the berm in place was higher, around 2m high, and still covering the access to room B12-F and the south end of the corridor, where a gate to the south street was strongly assumed.

In the south part of the room B12-B, several architectural elements were left in place at the end of the previous season, waiting for being methodically dismantled as they were too fragile to be preserved in one piece (Fig 1-109). The first days of the season 2015b-2016a were so devoted to the removal of those architectural remnants. They were mainly fragments of spandrels with decorated panels made of molded mortar (Fig 1-110). The panels, though variously preserved, were carefully removed from the core of the architectural elements and stored for further conservation and display (Fig 1-111). After this precise dismantling, place was free for ongoing excavations which quickly revealed the presence of a massive gate at the south end of the corridor B12-B, confirming the hypothesis of the long corridor crossing the entire basement from north to south.



**Fig 1-109 :** General view of the south end of the room B12-B with the collapsed architectural elements at the end of the 2013-2014 season



**Fig 1-110 :** Architectural element (capital and spandrels) with molded decoration before dismantling



**Fig 1-111 :** Molded panels after dismantling of the architectural elements

**Fig 1-112 :** the stepped threshold B12-310



Access to the basement, and afterward to the low courtyard, was so possible from the south part of the city through the gate **B12-379**, 1.75m long, opened through the south external wall of the Mosque. The western jamb is made by the end of the wall B12-041, which is here preserved 0.90m high and covered by a pinkish coating only preserved for around 0.40m high; the eastern jamb is made by the end of the wall B12-109, here also 0.90m high but showing no remains of coating. A three-steps threshold (**B12-310**) was unearthed (**Fig 1-112**), built over an indurated level made of small pebbles which were apparently leveling the natural bedrock.

The southernmost and lowest step, raising from the south street, is badly preserved and mainly guessable by the prints of mortar on its edges. The step was originally around 1.75m long by 0.30m wide for maybe 0.30m high, made by a peripheral course of small limestone blocs bonded with mortar, the internal part being backfilled with small pebbles and after probably covered with coating or mortar.

The medium step is 1.75m long by 0.42m wide and 0.15m high, made by small limestone and corals blocks bonded with a gray mortar, but no traces of mortar or coating was observed on the top of the stones, which could have been visible.

The upper step, set between the two jambs of the gate, is 1.72m long by 0.42m wide and 0.15m high. It is made partly with corals and limestone blocks bounded with a gray mortar, and partly with a reused tombstone (**IsoLap01**) (**Fig 1-113**). Though highly eroded, the gravestone presents in its central panel and its central pediment some carved letters which could not be deciphered until now. The central pediment is flanked by two small egg-shaped jars, more or less looking like a pomegranate. The gravestone was removed from the threshold to prevent further erosion and stored in proper condition.

Beamholes were uncovered in the threshold B12-310, suggesting a particular wooden fitting to support the door and frame (**Fig 1-114**). A long transversal beamhole was found, crossing the entire length of the threshold and running inside the two jambs at their feet, 0.45m deep at east and 0.24m deep at west. This long beam was strengthened by the addition of two perpendicular beams at the foot of the jambs, whose function was undoubtedly to prevent a possible sliding of the wooden frame of the door which, according to the size of the gate, was probably really heavy. Disintegrated pieces of wood were found and sampled inside the beamholes and, as the mortar revealed the prints of some curves and fittings, it is possible that the wood was reused, maybe from a boat, and not necessarily cut especially to be used in the door-frame.

**Fig 1-113** : the carved gravestone in reuse

**Fig 1-114** : detailed view of the wooden pattern in the threshold B12-310



It is very likely that two vertical beams were also put against the two jambs and attached to the ground beam and to an upper beam on top of the door. The two vertical beams were probably fixed to the jambs by a joint of mortar and the assumed upper beam might have entered the jambs by upper beamholes but the traces of this fitting were not observed, probably because of the bad state of preservation. According to the size of the gate, it is also very likely that a vertical post was put in place in the middle of the entrance, against which the two wooden panels of the door were leaning, as the gate seems to be too large to receive a door made of one single panel. The hinges for the panel were also probably fixed in the vertical beams as no fittings were observed in the remains of the jambs.

This kind of wooden fitting to support the frame-door is still visible today in many old Omani houses and was also observed in other places of the basement, especially in the gates of the rooms of the span 3. The only difference here is the size of the beams and the presence of the two small perpendicular beamholes. Those differences are obviously due to the important size of the door, which is here nearly twice longer than the other internal gates of the basement and could also have been higher, and so required a well-made and more complex fitting. As no remains of wood was found, it is impossible to say if the doors were decorated or not. Also, as no important layer of ashes was uncovered near or over the threshold, it is very likely that the door did not suffer a fire and so was not burnt by the Portuguese invaders. It is a possibility that the door survived the seize of the city and, though no proof can be given, that the wood was recuperated by the inhabitants after the abandonment of the building.

The threshold B12-310 was associated with a floor made of gray beige mortar (**B12-306**) (**Fig 1-115**) which was observed in the main part of the corridor B12-B. This mortar floor is well-preserved at the foot of the walls and near the northern face of the upper step of the threshold while it is missing in the middle of the passageway, showing the underneath backfills.

At the northern extremity of the corridor B12-B, the gate **B12-378** was uncovered during the previous season except for its bottom where a berm was left in place above the assumed threshold. Excavations during this season unearthed a threshold similar in shape to the one found in the southern extremity. The threshold **B12-325** (**Fig 1-116**), 2.06m long by 0.70m wide, is set between the two jambs made by the end of the wall B12-183 at west, and preserved for around 1.50m high, and by the end of the wall B12-29 at east, 0.75m wide and preserved for 1.20m high. The coating is not preserved.

Beamholes were also unearthed here, as in the threshold of the south end, with a long transversal beam, running for 0.40m inside the western jamb and for 0.27m inside the eastern one, with two smaller perpendicular beamholes at the foot of the jambs, around 0.35m long (**Fig 1-117**). The prints of the wood in the mortar also suggest that the wood was reused and the general pattern of the door is quite probably exactly the same as the southern one, except that the threshold here has no steps from the northern low courtyard. The threshold B12-325 is made by large limestone blocks covered by a gray mortar which is mostly missing in the middle and no strict connection was observed between the threshold and the coated floor observed southerly. There is however no reason to doubt that this two structures are contemporary, as they are in the south end of the corridor.

It is possible that the two thresholds at north and south are a late construction and did not date back to the foundation of the Mosque but there is no proof to be affirmative, as the evidences would have required the destruction of the thresholds to find traces of hypothetical former ones underneath. This destruction is however not planned as the conservation is preferred to a full excavation, but it could be possible that, during the conservative works lead by the World Monuments Fund, some evidences will be brought to light and will give more credit to this hypothesis or invalidate it.



**Fig 1-115 :** view of the remains of the coated floor B12-306, with the south gate B12-379 in the background

**Fig 1-116 :** the threshold B12-325

**Fig 1-117 :** detailed view of the wooden pattern in the threshold B12-325



### I-C2 : Stratigraphical Analysis

The stratigraphy over the north threshold B12-325 is rather simple as the berm which was left in place was very low, around 0.30m high. The only registered layer (**Uf3728**) is a level of collapse, made of gray beige soil coming from the disintegration of coating and mortar, fragments of mortar and plaster, pebbles, corals and limestone blocks of all sizes.

The south part is more complex, as the berm left in place was higher and larger. Right above the floor B12-306, a thin layer (**Uf3673**) made of soft beige silt is probably coming from the disintegration of the coating and mortar of the wall and was interpreted as a level of abandonment. A similar level (**Uf3681**) was observed above the threshold B12-310 but the silt is here more brownish and organic, with many small inclusions of disintegrated wood coming either from the vertical beams along the jambs or from the assumed wooden lintel above the doors. These two layers are obviously contemporary and date back to the abandonment of the building before it started to collapse.

The above layers are all levels of collapse, separately registered according to the protocol of excavations. They are all made of sandy beige silt with different concentration of mortar, stones and architectural elements. The lowest level (**Uf3668**), right above the levels of abandonment, contained traces of ashes, coming either from a possible squatting or the possible fire put by the Portuguese in the prayer hall, and fragments of the mortar floor of the prayer hall.

Right above, the level **Uf3662** contained many rectangular and square carved stones which undoubtedly came from the pillars of the prayer hall, and the above level **Uf3667** contained fragments of mortar plaques which can come from the floor of the prayer hall or from the roof above it. Finally, the upper level **Uf3642**, which is the level where excavations restarted in 2015, contained fragments of molds used for the decoration of the prayer hall and architectural elements probably coming from the spandrels and vaults of the arches that supported the roof.

### I-C3: Architectural Elements

Few architectural elements were found in the south end of the corridor B12-B, while none was found in the north end where the excavations area was very small. In the south part, the most interesting ones are the large remains of the decorated spandrels (**IsoArc325, 335 and 346**), mainly already unearthed during the previous season. After the careful removal of the decoration made by molded panels of plaster, those elements were destroyed as they were too fragile to be moved without cracking. Apart from this decorated remains, the others architectural elements uncovered in this area are only rectangular carved stones coming from the pillars and large fragments of floors and walls (**Fig 1-118**).

**Fig 1-118** : fragment of floor of the prayer hall fallen into the basement room B12-B



### I-D. The 2015b-2016a season – 3. Excavations of the prayer hall (Spans 5 and 6)

Only the western part of the prayer hall proper, in the first floor of the mosque, is now preserved, against the qibla wall. As the two westernmost spans (5-6) of the basement were backfilled, the superstructures of the hall collapsed here on the floor, instead of down inside the empty other spans to the east (1-4). The floors and lower parts of the masonries were therefore protected. (FIG 1-119)

At the end of the 2013b-2014a season, a small part of this area was unearthed and some structures were already known. The sounding opened by the Qalhât Project already discovered the *mihrab*, the *minbar* and the basis of two pillars of the prayer hall. The sounding was reopened in 2014 but the full excavations only started in 2015. The area was divided in two parts, north and south of the QP sounding opened in the axis of the *mihrab*. The south part was opened to excavations at the beginning of the 2015b session, with one team of workers, while the northern part was opened a little after, with two teams, when the excavations of the building B95 and in the corridor B12-B was finished. All the area was divided in artificial parts, using the pillars, either known or assumed, for the alignments of the separations.

The structures and stratigraphy observed in the north and south parts are the same, except for some little differences which often date back to the later phase of reoccupancy. The two parts will so be presented as a whole, only the registration numbers of the structures and levels are different even if the structure or the level are the same. The whole excavated area, including the part already excavated by the QP, is around 181m<sup>2</sup> and corresponds to the preserved western half of the prayer hall, the eastern half having fallen into the caves of the basement. (FIG 1-120)

#### I-D1. Architectural description

The preserved part of the prayer hall is bounded to the west by the wall B12-01/02/31/51, which is the *qibla* wall registered under various numbers according to the time of discovery, and where stands the *mihrab* B12-04. It is limited to the east by the wall B12-46, which is the retaining wall between the backfilled part of the basement and the corridor B12B; to the south by the wall B12-41 which is the south external wall of the Mosque and to the north by the wall B12-183 which separated the Mosque's building properly said from the rooms of the north wing. To the south and east, the walls are not preserved above the altitude of the preserved floor, while in to the north and west the preserved elevation can be higher than 1.50m.

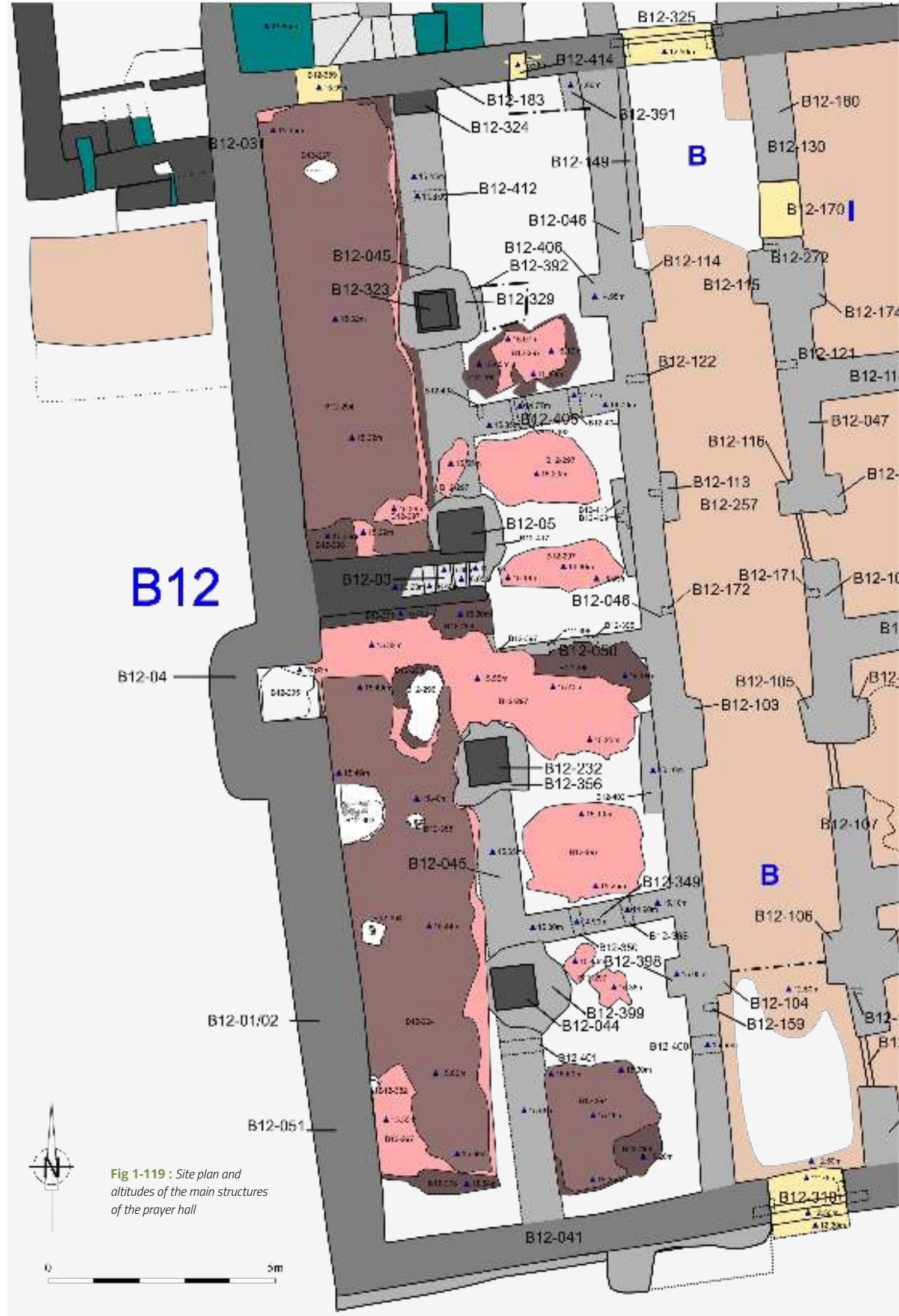
##### I-D1a. The surroundings walls and the basement

###### ▪ The west qibla wall (Fig 1-121 and 1-122)

The western *qibla* wall (hereafter only named **B12-01**) is around 25m long (internally) for a width that goes from 1.10m at north and south end to 1.50 in its center. Its preserved elevation also varies from the south, where the south-west corner has entirely disappeared, to the north-west corner where the elevation is preserved for about 1.50m above the floors of the prayer hall. As all the walls of the first floor, the qibla wall is built on top of the basement's corresponding wall, probably down to the bedrock, under the level of the floor of the prayer hall and the level of the actual surface of the high courtyard to the west, for more than 3m. Several repairs are visible on the wall and it is possible that it was thickened lately to give it its actual size, but the full comprehension of this evolution is impossible without the destruction of several parts of the wall and its coating, which is not possible.

The *qibla* wall is made with large corals and limestone blocks and some large pebbles, bonded with different types of mortar, from beige to black in color, presumably because of repairs. To the west, on its external face, the wall B12-01 is covered by a coating made of a strong dark gray mortar which probably dates back to the last phase of repair. Its eastern internal face is covered by a beige coating with some whitish parts, presumably resulting from the fact that the inside was covered with a white plaster now disappeared. The remains of a frieze (Fig 1-123) made of glazed tiles in the shape of stars and crosses fixed at the base of the wall are preserved on the north and south parts of the wall, the tiles having mostly vanished and being only visible by their prints in the mortar. The frieze originally rose around 1m high, at least in some places. Highly eroded and not well attached to the wall, this frieze is still partly visible to the south, but in the north it has fallen down during the course of excavations. Remains have been taken and stored for a possible later display. Fig 1-124

Other particular fittings were observed in the inside face of the wall B12-01, giving precious information about the general layout of the prayer hall and the architecture of the building. They will be described below, with the masonry of the prayer hall.



**Fig 1-119 :** Site plan and altitudes of the main structures of the prayer hall





**Fig 1-120** : general view of the prayer hall at the end of excavations, from the north

**Fig 1-121** : general view of the qibla wall, south part with the mihrab at right

**Fig 1-122** : general view of the qibla wall, north part at right, with the minbar in the background



**Fig 1-123** : remains of the frieze of the qibla wall, south part



**Fig 1-124** : remains of the frieze of the qibla wall, north part, after its fall

- The north and south walls

The south wall of the prayer hall, on top of the south wall of the basement **B12-41**, is entirely eroded under the level of the hall's floor. Nothing is left of the superstructure of the first floor on this side but it is quite probable that two engaged pillars were built against the internal face of the wall, at the south extremities of the western alignments of pillars, one preserved (between spans 5 and 6) and one assumed (between spans 4 and 5), as it is the case in the northern external wall. Moreover, one of those engaged pillars, which was between span 5 and 6 in the alignment of the preserved pillars, was found in the collapse of the south street, where it has slipped down and not toppled probably because of a weakness in the bottom of the wall.

To the north, the north wall of the prayer hall **B12-183**, (**Fig 1-125**) against the north wing, is preserved up to 1.50m at its western extremity at the corner with the *qibla* wall, and totally eroded to the west the superstructures fallen into the basement and the low courtyard. The lower part of the wall, at basement level, is made mainly with large pebbles, while the corals are more present in the elevation of the first floor. A quite well preserved pink coating was observed on the internal face but no trace of decoration, even prints of it, was observed.

The wall B12-183 is interrupted, more or less in the middle of the span 6, by an opening (**B12-389**) (**Fig 1-126**), which is 1m long by 0.75m wide and gave access to the prayer hall from the tower B12-J, which is occupied by a staircase. The two jambs of the opening are badly preserved, 0.75m high on the west side and 0.60m high to the east, and the possible coating has disappeared. To the north, the western half of the threshold is at the same level than the top of the staircase while its eastern half is overhanging the void, the lower steps of the staircase being more than 2m below. This strongly suggests that the stair landing was originally extended by a wooden floor which has disappeared. To the south, the threshold is about 0.50m higher than the floor of the prayer hall, and it is possible that steps once stood here but no remains of them have been observed. A wooden fitting might also be considered.

A second opening (**IsoArc925**) was also partially observed in the north wall B12-183, more or less in the middle of the span 5. It is not possible to clearly state if this opening is a gate, a windows or a niche, as only one jamb of this opening was found, incompletely preserved and having possibly slightly slide down from its original location. Parts of the jamb were found covered by a fine pinkish beige coating. A small curve at the rear of the coating might identify this structure as a niche but remains are too scarce to be affirmative. A gate or a window going to the floor can also be easily considered. In any case, this opening was blocked in a later refitting. **Fig 1-127**

Another particular fitting was observed right under this opening in the south face of the wall B12-183 and under the altitude of the floor of the prayer's hall. This fitting (**B12-414**) is visible in the facing of the wall by two vertical lines in the layout of the stones, joint by a horizontal line at their bottom (**Fig 1-128**). It seems reasonable to consider that an opening or a hole once stood here and was lately blocked. The structure blocked could be considered as a beamhole but it is not the most relevant hypothesize, firstly because of its shape. The opening before being blocked was about 0.40m wide and 0.60m high, which is a quite unusual height for a beam. Also the bottom of the cavity is nearly 0.90m below the floor of the prayer's hall, which would have so required to use a very large beam to support the floor. And moreover, the bottom of the structure B12-319 is nearly 0.20m lower than the others beam cavities observed elsewhere in the others walls of the basement visible under the prayer's hall, which is nonfunctional in a beam-framework. The best hypothesis is to consider this structure as a hole for aeration, crossing the entire width of the wall. Similar fittings were observed in other parts of the walls of the basement under the prayer's hall and it is possible that similar holes for aeration once stood in the upper part of the vanished walls of the basement, to bring fresh air into the rooms. Further hypothesis regarding the life and change of the building involved by the presence of those holes in the walls of the span 5 of the basement, yet entirely backfilled, will be described below.

- The underfloor east terracing wall between spans 4 and 5

To the east, the wall B12-46, which is separating the backfilled span 5 of the basement from the empty span 4 occupied by the corridor B12-B, was already described on its eastern face in the previous report. The wall never raised above the level of the floor, where it was surmounted by a row of pillars, but the collapse of some parts of the floors and the backfill underneath allowed a partial vision of the western face, where many interesting fittings were observed.





**Fig 1-125 :** view of the north wall B12-183

**Fig 1-126 :** the stepped opening B12-389

**Fig 1-127 :** remains of a possible opening with a late blocking at left



**Fig 1-128** : the blocked opening B12-414

The wall **B12-46** is around 24.75m long internally and between 0.70 to 0.80m wide. Its height is unknown on its west face but is around 3m on its east face and it probably goes down to the bedrock. Several buttresses and thickening were also uncovered, built against the west face.

Against the north wall B12-183, at the north-east corner of the preserved first floor, a sounding was opened into the backfill of the basement. It appeared that the wall B12-46 was strengthened by the addition of the thickening **B12-391** (**Fig 1-129**). This masonry, made of large corals and pebbles bonded with a beige mortar and built against the west facing of the wall B12-46, is 0.40m wide and was observed for 0.85m long (the length of the sounding) but it goes on southerly for an unknown distance.

Shortly to the south, the vacuum of the floor also permitted to observe the presence of a massive buttress (**B12-406**), 0.90m long by 0.50m wide for an unknown height as it was only unearthed in its upper part (**Fig 1-130**). It is made with corals and limestone blocks bonded with mortar and covered with a rough gray coating where fingerprints are still visible. Though badly preserved, it appears to be quoined with the wall B12-46 and, as it is built just opposite the buttress B12-114 in the corridor B12B, under the east-west alignment of the pillars of the prayer hall, its architectural function was obviously to support the heavy weight of the pillars and arches above.

Southerly again, the masonry **B12-413**, which was superficially uncovered, can be considered as a massive buttress or a thickening, or maybe both (**Fig 1-131**). It is a construction, at least 2.15m long by 0.30m wide, made with corals and medium limestone blocks bonded with beige mortar and apparently without coating. It seems to be quoined with the wall B12-46, at least in the northern part while it is less clear in the south part, because of the state of preservation. It is most probable that the north part of this structure, which north limit is in the same alignment than the easterly buttress B12-113, was used to support the pillar built above, but the south part can also be a later thickening, although its state of preservation and the presence of a preserved floor did not allow a certainty. At the top of the structure, a print (**B12-409**) was observed which can be the trace of a hole for a beam or for a strengthening wooden element (**Fig 1-132**).

The same kind of structure, mixed of a buttress and a thickening, was also observed in the south part of the prayer hall, on the other side of the *mihrab* axis. The masonry **B12-402**, at least 2.20m long by 0.40m wide, is made of medium corals and limestone blocks bonded with gray mortar, and fragment of coating were observed. The northern part of this structure was certainly used to support the pillar built above, as the northern limit is nearly in alignment with the easterly buttress B12-103 and the others traces of the rows of pillars, but it extends southerly until a limit which is not known, and this part could be seen as a thickening of the wall B12-46. It is also possible to consider that those two structures are only buttresses originally intended to be larger than the other ones, as the pillars above had to support also the weight of the central cupola but in that case, it is architecturally strange that the extensions were both built to the south and not on either side of the center.

More to the south, the masonry **B12-398** is undoubtedly a buttress. It was only cleared in its upper part, 0.80m long by 0.40m wide for an unknown height, made with medium corals and limestone blocks bonded with gray mortar and covered by beige coating. It is quoined with the wall B12-46 and, as it is in front of the easterly buttress B12-104, it was also used to support the pillar built above.



**Fig 1-129** : the thickening B12-391 (under the scale) of the wall B12-46 behind

**Fig 1-130** : the buttress B12-406

**Fig 1-131** : the buttress or thickening B12-413





**Fig 1-132** : the print of a wooden steering B12-409

Finally to the south, more or less in front of the gate between the rooms of the basement B12-B and B12-F, a possible thickening was more guessed than observed, because of the state of conservation, and the conditions of safety weren't adequate to allow a sounding.

- The underfloor intermediary wall between spans 5 and 6

Parallel to the wall B12-46, the wall **B12-45**, which runs under the preserved row of pillars of the prayer hall, under the floor between the two backfilled spans 5 and 6, was partially observed where the floors have cracked or collapsed (**Fig 1-133** and **Fig 1-134**). It is 25m long for an assumed width around 1m, and was- observed for 0.50m high in average under the level of the floor. It is quoined with the wall B12-183 to the north and presumably with the wall B12-41 to the south, but the state of preservation is not good enough to be affirmative. The wall is made with medium pebbles, corals and limestone blocks bonded with a powdery brown mortar, apparently mainly made with soil. No trace of coating was observed. **Fig 1-135**

One buttress was found to the north, in front of the buttress B12-406, and other are strongly assumed under the other pillars but the excavations did not uncover them because of the need of conservation. The buttress **B12-329** is at least 0.90m long and at least 0.60m wide for an unknown height. It is similar to the buttress B12-406 in shape and components, with the same fingerprints visible on the coating (**Fig 1-136**). A rough masonry was built over it and similar constructions were observed under all the preserved pillars but, as it seems to be a later strengthening, they will be described below.

Two holes were observed in this wall, one in the northern part and the second one to the south. The northern one (**B12-412**) is 0.30m wide for 0.30m wide and runs for at least 1m inside the wall B12-45, the supposed width of this wall (**Fig 1-137**). The size and shape of this hole, and its location nearly halfway between two rows of pillars, suggest that it is a beam-hole that once hosted an east-west beam, but the corresponding beam-hole into the opposite wall B12-46 was not found. The state of preservation however can explain this lack. The southern hole (**B12-401**) is similar in size, 0.30m wide, at least 0.27m high and running for at least 0.90m inside the wall B12-45, and is probably also a beam-hole, and also without a corresponding in the wall B12-46. A small print (**B12-400**), 0.40m wide, was observed right at south of where the corresponding of B12-401 should have been. It is possible that the beam-hole in front of B12-401 has disappeared and that B12-400 would have hosted a second beam running east over the corridor B12-B.

Other beam-holes were partially observed or assumed elsewhere in the wall B12-45 but as it was not intended to destroy the floor of the prayer hall and to empty the whole basement under the span 5, the presence of a beam-frame under the floor in this span only remains a highly probable hypothesis.



**Fig 1-133 :** the intermediary wall B12-45 under the row of pillars, visible by the cracks of the floors, in the south part



**Fig 1-134 :** the intermediary wall B12-45 under the row of pillars, visible by the cracks of the floors, in the north part



**Fig 1-135 :** visible elevation of the intermediary wall B12-45, in the south part

**Fig 1-136 :** the buttress B12-329, at the bottom, the upper part under the collapsed pillar, being a later addition





**Fig 1-137** : the beamhole  
B12-412

- The underfloor shear walls in span 5

The two walls B12-45 and B12-46, whose function is both to maintain the backfill of the basement in spans 5 and 6 and to strengthen the pillars built above, are linked by three east-west walls, which are all more or less in the same alignment as the walls separating the rooms B12-I, A, C and F in span 3. There must yet be said that a surprising symmetry can be seen on each side of the long corridor B12-B, with perpendicular walls and massive buttresses more or less in the same alignment. Further descriptions below will lead to an interesting yet unproved hypothesis.

To the north, the wall **B12-405** is 3.45m long by 0.60m wide and was uncovered for 0.50m wide (**Fig 1-138**). It is quoined to the walls B12-45 and B12-46 and made with medium corals and limestone blocks bonded with powdery brown mortar and no coating was observed. It is pierced in its upper part by three holes which do not seem to have the same function. The westernmost, **B12-408**, is 0.15m wide and high and runs into the wall for 0.40m, meaning it does not cross the entire width of the wall (**Fig 1-139**). Its shape and size, the organic sediment found inside it and some wood prints observed on the mortar clearly suggest that this hole is a beam-hole. It was probably not the case for the two easterly holes, **B12-403** and **B12-404**, which are both crossing the wall and where no organic sediment or wood prints were observed (**Fig 1-140**). They are both of the same size, 0.25m wide and around 0.30m high. At the top of B12-403, prints of small wood planks were observed, which were quite probably used to cover the top of the cavity. Similar fittings must have been in existence over the cavity B12-404, and presumably over the other similar structures observed in the other walls, but they probably vanished following the dilapidation of the building. It is very likely that those cavities were used as aeration holes.

The same pattern was observed in the wall **B12-50**, which is built in the middle of the span and was already uncovered in the QP sounding. This wall, 3.25m long by 0.60m wide and uncovered for around 0.50m high, is made with medium corals and limestone blocks bonded with a powdery brown mortar and is quoined to the wall B12-45 and B12-46. Here also no coating was observed and three similar cavities were uncovered at the top of the wall. The westernmost, **B12-397**, set at the corner with the wall B12-45, is 0.10m wide and 0.13m high and, though not entirely unearthed, it does not seem to cross the entire length of the wall. Its function is not absolutely certain but it could be a little beam-hole. To the east however, the larger cavities **B12-395** and **B12-396** are more likely aeration holes. They are both 0.17m wide and around 0.40m high and they cross the entire width of the wall B12-50 (**Fig 1-141**).

Finally to the south, the third wall **B12-349** is similar to the previous one and shows the same fittings (**Fig 1-142**). This wall is 3.25m long by 0.60m wide and was uncovered for around 0.40m high. It is quoined with the walls B12-45 and B12-46 and made with medium corals and limestone blocks bonded with a powdery brown mortar. Scarce remains of a beige coating were observed on the south side, near the junction with the wall B12-46. The wall is also pierced at its top by two cavities, **B12-350** (**Fig 1-143**) and **B12-368** (**Fig 1-144**), crossing its entire width. They are both of the same size, around 0.20m wide for a minimal height of 0.40m as the top is not preserved. Some organic sediment were found inside those holes, which suggest that they were originally covered by small wooden planks. Here also, those cavities are more likely aeration holes rather than beam-holes.





**Fig 1-138** : the shear wall B12-405 visible by the disappearance of the floors



**Fig 1-139** : the assumed beamhole B12-408



**Fig 1-140** : the openings B12-403 (at right) and B12-404 (at left) in the shear wall B12-405

**Fig 1-141** : the shear wall B12-50 with the openings B12-395 (at left) and B12-396 (at right)





**Fig 1-142** : the shear wall  
B12-349 visible by the  
disappearance of the floors

**Fig 1-143** : the opening  
B12-350

**Fig 1-144** : the opening  
B12-368

It can be surprising that aeration holes were put in place in a span of the basement that was backfilled and so not reachable. One explanation could be that the top of the backfill and the bottom of the floor support above were separated by an empty space and that the aeration holes were used to ventilate this empty space and avoid the deterioration of the wooden beams. Nevertheless, it seems, as it will be detailed below, that the top of the backfill reached the level of the beams and that the floor support was set right above it and that no empty space ever existed between them. Another explanation could be that the span 5 of the basement was firstly intended to be left empty and used as rooms, as it is the case in the east part of the basement, and that the builders changed their mind during the course of construction and filled it. This hypothesis is based on the symmetry of the spans on each side of the corridor B12-B, which could have originally be set to give access to 8 rooms, 4 on each side, more or less similar in size. It can be objected that the walls B12-405, B12-50 and B12-349 are compartmentalization walls to maintain the backfill, but in that case it is also surprising than the span 6 of the basement was not built with the same compartmentalization walls, as none was observed or even deduced on the *qibla* side. It so seems that those perpendicular walls were not intended to maintain the backfill but to make separation between different rooms. This hypothesis is also enhanced by the presence of the aeration holes, which are all more or less in the same alignment, and which presence is more logical in case of empty rooms rather than backfilled compartments. It is also very likely that similar aeration holes originally existed in every rooms of the basement above the actual preserved elevation.

Moreover, the presence of the various thickenings against the west facing of the wall B12-46 could also be an argument to confirm this hypothesis. As mentioned above, the masonry B12-402 and B12-413 are located in front of the gates to the rooms B12-A and B12-C, where could have stood the accesses to the original assumed empty rooms in span 5. The southern extensions of those masonries may have been used to strengthen the blocking of the gates, which were walled up when it was decided that the span will not be accessible but backfilled, and built against or with the northern extremities which were architecturally used as buttresses. Similar inside blocking of possible gates could be in existence to the north, in the non excavated area in front of the gate to room B12-I, and to the south in front of the room B12-F where such kind of masonry was presumed, but not excavated. **Fig 1-145**

This hypothesis, though possible, could only be proved by the removal of the coating of the east facade of the wall B12-46, where the facing of the jambs of the gates will be visible on the elevation, if they once existed. Such work is supposed to be done by the World Monuments Fund in the future and a precise observation at that time will give arguments to confirm this hypothesis, or invalidate it. But in that case, the presence of the aeration holes will remain problematical.

In any case, if the span 5 of the basement was intended to be completely filled since the beginning or if the backfilling was decided in the course of the construction, it seems that the backfill, which is made of all kind of material including rubbish, was raised until the bottom of the beam-frame. The thickness of the beam-frame was then filled up with a small pebbles (Uf3914 to the north and Uf3821 to the south, see below), until the top of the beams. The floor support, made of cement (described below), was then spread over the level of pebbles and the top of the beams, some of the pebbles adhering to the floor support. It seems that the beam-frame was made to avoid the sinking of the floor of the prayer hall after the predictable subsidence of the underneath backfill. As it will be explained below, it did not work.

Few ceramics were found in the level of pebbles or in the disintegrated parts of the floor support, but they are dating from the end of the 13<sup>th</sup> century or the beginning of the 14<sup>th</sup> century. It so appears that the span 5 was backfilled since the foundation of the Mosque and not several years later, and also that the floor support also dates back from the really beginning of the building.





Fig 1-145 : possible evolution in the basement of the Mosque

## I-D1b. Standing architectural elements of the first floor

## ▪The mihrab

The most characteristic structure of the prayer hall, the *mihrab*, was already excavated by the Qalhât Project and registered as **B12-04** at that time (**Fig 1-146**). Refitting was also assumed then and the observations made during the 2013b-2014a and 2015b-2016a seasons confirmed this hypothesis.

The *mihrab* is located 12.10m from the north wall B12-183 and 11.60m from the south wall B12-41. It is so not exactly centered in the *qibla* wall but the misalignment is not noticeable. Traces of a former *mihrab* (registered as **B12-386**) were observed in the preserved masonry and the general pattern of this first *mihrab* can be assumed. The opening of the niche in the *qibla* wall was around 1.80m wide, but the back of the niche was apparently smaller, around 1.55m. It is quite probable that the north and south sides were not parallel but slightly convergent, probably in order to increase the impression of depth. Possible recesses assumed on both sides might also have enhanced this impression. At the base of the structure, under the bottom of the actual visible *mihrab*, the vertical profile of two small tiles are visible on each sides (**Fig 1-147**). They were probably part of the decoration of this first *mihrab*, which was afterwards covered by the actual one and the later floors. It is very likely that this first *mihrab* was the one made at the foundation of the Mosque and the one seen and described by Ibn Battuta.

The actual visible *mihrab* (**B12-004**) is simpler in plan and shape. It is a rather square niche, 1.20m wide (north-south) and 1.40m deep (east-west), whose walls are preserved for more than 1m and covered by rectangular plaques of mortar fixed against the walls of the former *mihrab*. Those plaques are now strongly eroded and nothing is visible on them, but it is quite probable that they once showed a molded decoration. Small pilasters also can be speculated on both sides of the niche, but the state of preservation is too poor to be affirmative. On each side of the opening, rectangular plaques of mortar were also fixed on the *qibla* wall, partially covering the former frieze at the bottom of the wall, for nearly 0.50m long northwards and southwards (**Fig 1-148**). As the bottom of the plaques is nearly 0.20m above the level of the coated floor, the gap being filled by the levels put in place to raise the last floor of the Mosque (see below), it seems reasonable to admit that this refitting occurred very lately, only several years before the seize of the city.

The external projection of the *mihrab*, which is covered by a strong gray to black mortar, also belongs to the last stage of repair and the original projection may have been smaller and different in shape, but traces of it were not observed (**Fig 1-149**). The projection is rectangular in plan with roundish corners, 3.90m long and projecting from the *qibla* wall from 1.30m to the north to 0.90m to the south. The center of this projection is not aligned with the central axis of the niche of the *mihrab* inside, but it is shifted for around 0.60m to the south. In other words, the distance between the south internal face of the niche and the south external face of the projection is 0.60m longer than the distance between the north internal face of the niche and the north external of the projection. There are different possibilities to explain this little shift to the south. It could have an architectural purpose, for example to strengthen a weakness in the upper parts of the wall. It could also simply be a mistake of the builders about the exact location of the central axis. But this misalignment could also be intentional. Indeed, the south external side of the projection is 11m away from the south-west corner of the building, which is merely the same distance as the one between the north side of the projection and the junction of the *qibla* wall and the southern wall of the staircase B12-E which is built against the north-west corner of the building. So the projection was probably voluntarily extended to the south to compensate the presence of the room B12-E. If the projection would have been exactly aligned with the inside central axis of the *mihrab*, it would have looked from outside as off-centered, slightly shifted to the north. The southwards extension of the projection was probably decided to cancel this impression and let look like the *mihrab* was exactly centered.

## ▪The minbar

Around 1m north of the *mihrab* **B12-04** and leaning against the *qibla* wall **B12-01**, the yet visible *minbar* was already uncovered by the sounding of the QP, but the remains of a former one were found this season, and several stages of constructions of the actual one have been observed (**Fig 1-150**).

The remains of the first *minbar* **B12-375** were partially observed at the foot of the south face of the actual one: this is a small plinth made with a fine white coating, 0.10m wide and high, which was clearly visible for 2.10m long but more or less discernible for 2.70m long, against which the coated floor B12-297 (which is a later addition, see below) was leaning. North of this plinth, between it and the south side of the actual *minbar*, six small square holes were uncovered, from 0.07m to 0.09m wide and 0.06m to 0.10m deep, with a regular interval between them (**Fig 1-151**). Disintegrated piece of wood and charcoals were found inside



**Fig 1-146 :** the mihrab excavated during the QP soundings

**Fig 1-147 :** the vertical profile of a tile (shown by arrow), probable element of decoration of the first stage of the mihrab

**Fig 1-148 :** the decoration of the first stage of the mihrab, including Kashan tiles, covered by the plaques of mortar of the second stage, south side





**Fig 1-149** : outside projection of the mihrab, last stage

**Fig 1-150** : aerial view of the minbar B12-03 at the end of excavations

**Fig 1-151** : the small plinth B12-375 with its square holes, probably hosting the first wooden minbar

their filling. Those holes so most probably hosted vertical wood beams which made an internal structure for an original wooden *minbar*. Black traces and ashes found over the plinth and inside the holes might suggest that this first *minbar* was destroyed by fire.

Though it is not possible to be strictly affirmative without destroying the actual floors, the general stratigraphy and other observation strongly suggest that this first *minbar* was the one made at the foundation of the Mosque and that it was contemporary with the first stage of the *mihrab* (B12-386). Nothing can precisely be said about this first *minbar*, except that it was probably 2.70m long and about 1m wide (the distance between the border and the northerly pillar which is probably contemporary) and that it was probably not highly decorated, or at least not so beautiful as the wooden *minbar* of Kairouan for example, as Ibn Battuta would have quite undoubtedly mentioned it if it was one of the most beautiful examples he ever seen.

The yet visible *minbar* (B12-03) is so a later construction and its dating cannot be affirmed with certainty. The new *minbar* was made with masonry and two stages of refitting were observed. It is rectangular in plan, 3.80m long by 1.10m wide and perpendicular to the *qibla* wall. Its preserved elevation is around 1.30m in average and four steps are still visible at east, 0.50m long by 0.35m wide and 0.30m high in average. Small grooves are present at the top of the masoned steps and the coating of the sides make a little projection at their contact, indicating that they were originally covered with wood planks (Fig 1-152). The steps are lined to the north and south by a masoned handrail which was probably inclined. It is not possible to know precisely the original height of the structure but at least 8 steps may be assumed and so the minimal height was probably around 2m. It is also possible that the *imam* stood and preached in a small niche set inside the *qibla* wall and in that case the structure could have been higher.

The *minbar* is mainly made with corals bonded with a strong gray mortar and covered on all sides by a fine pinkish beige coating. The south face, on the *mihrab* side, is decorated by a frieze made of 8 panels of molded plaster, which is partially covered by the coating and does not extend until the eastern end of the *minbar* (Fig 1-153). It is also possible to distinguish, behind the groove of the third steps, a coated face with some glazed tiles. Those two elements strongly suggest that the *minbar* was originally shorter, probably as long as the preserved frieze, around 2.80m, which is also the distance between the *qibla* wall and the west face of the pillar right at north. The *minbar* was so afterward extended to the east by the addition of two more steps. This extension was built against the pillar to the north, whose south face is partially included into the masonry of the *minbar*. The yet visible coating was only applied afterward and partially covering the top of the molded panels, which were also at that time probably covered at their bottom by the raising of the last floor (see below). This last *minbar*, the one yet visible, was very simple, without decoration, and the general stratigraphy of the prayer hall suggest that it was made during the last stage of repair of the building, at the beginning of the 16<sup>th</sup> century (Fig 1-154). The assumed former masoned one underneath, which had replaced the first wooden *minbar*, appears to be more decorated, with molded panels and glazed tiles, and it is quite reasonable to consider that it was built during an important stage of repair that was observed elsewhere in the prayer hall and which seems to have occurred in the middle of the 15<sup>th</sup> century, but only the destruction of the actual *minbar* could confirm both its presence and dating.

#### ▪ The pillars

Four square basis of pillars of the last row, variously preserved, were uncovered in the prayer hall, built over the underfloor wall B12-45 between spans 5 and 6. A fifth, engaged, pillar was also found against the northern wall B12-183 and a sixth one was also present to the south, bonded to the wall B12-41, which was found collapsed into the south street. They are all more or less of the same size and built the same way, and distant for around 4m, sometime a little less, sometime a little more.

The core of the preserved basis is made of medium rough corals and limestone blocks bonded with a very strong black mortar for most of them (Fig 1-155). The north, west and south facings are made with rectangular carved whitish limestone blocks, with no standard dimensions. The east facing, which is in front of the access from the forehall and facing the praying assembly, is treated differently. Only the bottom and the edges are made of carved limestone blocks, framing a mortar panel with inlaid crosses and stars glazed tiles. This decoration, very fragile, is not preserved everywhere and mainly the prints are now more or less visible.

The bottom of all pillars shows a groove, around 0.10m high, that runs around the base under the four facings. Moldings and wood prints in the mortar indicate that these grooves originally hosted wooden sticks, more or less square in section, which were jointed together by nails at the four angles of the basis, some nails having been found in some grooves. Curved and rectangular prints observed in the mortar also indicate that the internal side of the sticks, facing the core of the pillars, were not straight and flat but irregular (Fig 1-156). It is possible that these irregularities are due to the fact that the wooden sticks were



**Fig 1-152 :** *the remaining steps of the minbar B12-03, with the prints of wooden planks*

**Fig 1-153 :** *the frieze made of molded panels on the south side of the minbar B12-03*

**Fig 1-154 :** *the north side of the minbar B12-03, last stage of use, without decoration*





**Fig 1-155** : the internal core of the pillar B12-323 made with black mortar



**Fig 1-156** : moldings and prints visible in the groove, at the bottom of the pillar B12-05

reused elements, maybe coming from boats. But as the irregularities are more or less the same on many of the pillars, it is also possible that it is an intentional setting to increase the attachments of the sticks to the pillars. Those strappings were probably used to prevent the effects of a possible earthquake, the plasticity of the wood allowing a gentle move of the masonry and so avoiding cracks. They also could have been decorated and so participate to the general decoration of the prayer hall.

The northernmost pillar (**B12-324**) is a half-pillar bonded to the wall B12-183, 0.90m long by 0.45m wide for a preserved elevation of around 0.90m (**Fig 1-157**). On the east facing, a whitish coating was observed, which extends northwards some centimeters beyond the assumed alignment of the south facing of the wall B12-183, suggesting that an opening or a niche was in existence immediately to the east of the pillars (**Fig 1-158**). It was probably associated with the masonry B12-414/IsoArc925, already described above. As already mentioned, it is impossible to firmly determine whether this fitting was a niche, a window or a gate. However, as elevated constructions might have stood in the north wing, on the other side of the wall, a window is unlikely. A gate could be a little more likely, giving access from the north wing, but as another access exists shortly to the west (B12-189) this hypothesis is not totally convenient. The proximity of the north main gate of the prayer hall could be an argument to identify this fitting as a niche, where holy books used for the prayer might have been stored.



**Fig 1-157** : the northern pillar B12-324, half-engaged



**Fig 1-158** : the exceeding with the coating on the east side of the pillar B12-324, at right of the scale

A little less than 4m to the south, the pillar **B12-323** is the less-preserved of all pillars of the row, most of its facing having collapsed around (**Fig 1-159**). The basis and the groove are preserved, 0.90m long and wide, but only the core of the pillar is preserved, for around 0.50m high. The third pillar, **B12-05**, was already uncovered by the sounding of the QP and it is one of the best preserved (**Fig 1-160**). As mentioned above, the eastern extension of the *minbar* was built against the south facing of the pillar which was so not visible, while its other facings are made with carved rectangular limestone blocks. Its width, length and preserved elevation are 0.90m. Around 4.10m further south, the fourth pillar **B12-232** is also well-preserved (**Fig 1-161**), especially on its east facing where the remains of decoration are the best visible. It is also 0.90m wide and long and preserved for around 0.70m high. Three nails (IsoMet27, 28 and 29) were found on the corners of the groove and they were obviously used to fix the wooden sticks together. As no nail was found elsewhere, it is possible that this setting only occurred in this basis of pillars and that, on the other ones, the fixing was made by using wooden nails. Finally, the last preserved pillar (**B12-44**), 4m south of the aforementioned one, was also partially uncovered by the QP soundings (**Fig 1-162**). It is quite similar to the other pillars, 0.90m wide and long for a preserved elevation around 0.80m, except that its east facing, probably decorated, has disappeared and that prints of tenons and dowels in the mortar in the groove might suggest that the assemblage of wooden sticks was probably made here with wooden elements rather than iron nails.

To the south, the half-pillar that was bonded to the wall B12-41 was not preserved as the elevation above the floor level had fallen into the south street. A rectangular masonry found in this area (**Fig 1-163**), in the north-south axis of the row of pillars, probably came from it, but more likely from the upper part of the pillar and not from its basis, as the element was found covered with coating, which was not observed on any of the basis of the remaining pillars.

Under all pillars, except the northern engaged one, a rough and quickly made reinforcement was observed, more or less circular in plan around the basis of pillars, and built over the wall B12-45 and the buttresses observed under most of the pillars. It is under the pillar B12-323 that this reinforcement (**B12-329**) was the best observed (**Fig 1-164**). The masonry, which is irregular, is mainly made with plaques of masoned floors and fragments of walls bounded with a strong gray mortar containing many small pebbles and fragments of ceramics. It is very likely that this reinforcement was made by cutting the masoned floors, digging a more or less circular pit around the basis of the pillar. It was afterward filled with this coarse masonry which was probably encompassing the underneath buttress B12-392 whose upper end was probably partially destroyed to allow a better fixing between it and the reinforcement. It is also possible that the above pillar was repaired at the same time. To the south, a similar reinforcement (**B12-417**), made in the same way, was also observed under the pillar B12-05, but mainly in plan as no major sounding was opened around it. The reinforcement **B12-356**, under the pillar B12-232, was better studied (**Fig 1-165**): in plan where the masoned floors were destroyed, and partially in elevation with a small sounding at its foot. It is made with large corals and rough limestone blocks, bounded with a compact gray mortar, and the fittings presented no facing, suggesting that the stones were put loose in a foundation pit. Finally, the reinforcement **B12-399**, under the pillar B12-44, was also mainly observed in plan and very partially in elevation. It is also a rough masonry made with all sizes corals and limestone blocks, bounded with a gray to black mortar.



1-159



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1-161

**Fig 1-159 :** the pillar B12-323, highly damaged

**Fig 1-160 :** the pillar B12-05, with the minbar at left

**Fig 1-161 :** the pillar B12-232





**Fig 1-162** : the pillar B12-44

**Fig 1-163** : the architectural element IsoArc808 found in the south street, probable element of the southern half engaged pillar

**Fig 1-164** : the reinforcement B12-329 under the pillar B12-323



**Fig 1-165 :** the reinforcement B12-356 under the pillar B12-232

It is very unlikely that those reinforcements were made at the foundation of the Mosque, as the general construction is rather well-made, which is not the case of those masonry. It is more likely an underpinning, which was probably made to create a wider and more stable foundation for the high pillars above, to prevent a sliding or topple, which might have already started when the reinforcements were made. It is possible that the Mosque had known a weakness of construction, maybe because of the weight of the elevation that was greater than expected at the beginning, and that the pillars had started to move from their original axis. The reinforcements would have prevented the ongoing of this movement. But it is also possible that this stage of repair followed a damage due to a natural event, such as an earthquake, which could have destroyed some parts of the pillars, which then needed a strengthening for being efficiently repaired. It is yet impossible to state between this two hypotheses, neither to determinate if the above pillars were also repaired or rebuilt at that time, and on what scale if they did.

However, the few ceramic material found in the layers that leveled these reinforcements or filled the foundations pits suggest that these important stage of repairs occurred in the course of the 14<sup>th</sup> century, and most probably in its second half, and so only a few decades after the foundations of the Mosque. This relatively short time give a little more credit to the hypothesis of a damage of natural origin, as it is reasonable to think that the builders of Qalhât were able to build important buildings which can last for more than 50 years.

#### ▪ The qibla wall

On the *qibla* wall B12/01, around 1m south of the south corner of the *mihrab*, two small rectangular holes (**B12-384** and **B12-385**) were observed. 0.60m apart, they are both 0.08 m long and 0.06 m high, and the northern one (B12-384) runs for 0.45m deep inside the wall, while the southern one (B12-385) goes for around 0.30m now, but originally for more than 0.40m when the original facing was in existence (**Fig 1-166**). Both at same altitude, they are built about 0.40m high over the original floor level. They are too small and too low to consider that they were used as holes for scaffolding and they must be part of an architectural fitting. As they are in the same general alignment than the pillar B12-232 to the east, and as the plaques of mortar which make the decoration of the late *mihrab* end vertically very close to them, the better explanation for these holes would be that they were used to strengthen the link between the *qibla* wall and a vanished engaged pillar, probably rectangular, supporting an east-west arcade between it and the eastern pillar B12-232.

An architectural element (**IsoArc911**), undoubtedly coming from the upper part of an arch and found against the north face of the *minbar* B12-03, in the alignment of the pillar B12-05, also suggests that an arcade once existed to the north (**Fig 1-167**). Though the proofs are very scarce, it is reasonable to assume that an east-west arcade once existed in the middle of the prayer hall, framing the *minbar* and *mihrab*, aligned with the pillar B12-05 to the north and the pillar B12-232 to the south, until the separating wall between the prayer hall and the forehall, where a door must have stood. This central nave had an architectural purpose by strengthening the four pillars that supported the central cupola, and also be part of the internal fitting by creating a decorated way between the main gate from the forehall and the *mihrab*, the focal point of the Mosque. This configuration meets some echoes with the description made by Bras de



1-166



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**Fig 1-166** : the two small beamholes B12-384 and B12-385, suggesting the presence of a half engaged pillar against the qibla wall

**Fig 1-167** : the architectural element IsoArc 911, remains of the upper part of an arch, against the north side of the minbar

**Fig 1-168** : the floor support B12-298 (under the scale) visible in the pit B12-296



1-168



Albuquerque, who wrote about a central nave developing into arcades on each side. This central nave would have been the east-west one in the axis of the *mihrab*, while the arcades on both sides would have been the three north-south rows of pillars and arches. This assumption also indicates that Bras de Albuquerque entered the prayer hall through the forehall, which he thought to be the main gate of the Mosque.

#### ▪The floors

Three different levels of masoned floors were observed in the prayer hall, quite well-preserved to the west over the span 6, and more lacunar to the east over the span 5 where the main part of them had slid and collapsed into the basement. Other earthen floors have also been assumed.

Built over the wooden beam-frame and the backfills of the basement, a floor support (B12-298) (Fig 1-168) is quite probably dated to the foundation of the Mosque, contemporary with the first stage of the *mihrab* (B12-386) and the original wooden *minbar* (B12-375). If this masonry once extended evenly over the spans 5 and 6, and also over the spans 3 and 4, it is now variously preserved. It is still preserved over the span 6, except to the south where it has fallen into the south street, but it is fragmentary over the span 5, and especially to the north where it has entirely disappeared. The floor support was made by spreading a strong beige mortar over a level of backfill made of ceramics and small pebbles, which covers the underneath earth backfill of the basement. This slab of mortar was afterward covered with a layer of small flat corals, bonded to the underneath mortar, and covered in turn with a third layer made of really strong gray mortar, which is nearly concrete.

This very strong floor support made of three layers of material, some fragments of which were found collapsed into the basement to the east, was used to support the first floor of the Mosque (B12-297) made of a strong pinkish-white mortar, only 0.04m thick (Fig 1-169). It is the original floor and it was associated with the wooden *minbar* B12-375 as it is leaning against its plinth, and with the first *mihrab* B12-386 as it goes under the plaques of mortar of the second *mihrab* B12-04. It was so made at the very beginning of the 14<sup>th</sup> century and has remained in use until the destruction of the first wooden *minbar*, as small traces of fire observed near the actual *minbar* could testify of the fire that destroyed it later in the same century.



**Fig 1-169** : the floor B12-297 partially visible under the floor B12-294, in south part

This first floor B12-297 and the floor support B12-298 suffered a subsidence, probably due to the slight drop of the underneath backfill, which was more important to the east than to the west (Fig 1-170). In span 6, the subsidence is around 0.10m deep and, even if some cracks are visible, the floor is still more or less in good state. In span 5, the floor is far more cracked and the subsidence can reach 0.30m, the subsidence effects being well visible against the walls of the basement. Explanations for this difference of subsidence effects can be the quality of the backfill, which could have been rammed to the west and/or more airy to the east, or that some part of the backfill under the span 5 slowly infiltrated through the separating wall with the easterly corridor B12-B. In any way, the first floor was too damaged and irregular over span 5 to be properly used and a second masoned floor was made.

This second floor (B12-294), even if cracked, is still present over the main part of the span 6, covering most of the former floor and floor support, but preserved to the east, over span 5, only at the south extremity (Fig 1-171). The rest of it has disappeared, washed away by erosion or fallen into the basement in corridor B12. This second floor B12-294 is separated from the first floor B12-297 by a thin layer of small pebbles (Uf3839) leveling the subsidence of the lowest floor, inside which the material was too scarce to allow a dating. It is made by a rough gray mortar containing many small pebbles and its thickness varies from 0.03m to 0.11m, following the more or less importance of the subsidence of the underneath floor. As it is leaning against the north face of the first masoned *minbar*, it is very likely that this floor was put in place at the same time, in the course of the 14<sup>th</sup> century.

A certain time after this date, while the subsidence was still ongoing, the span 5 underwent an important stage of refitting, by the removal of the wooden beam-frame and the raising of a new floor. The ancient floors are all cut by trenches, in the eastern front of each pillar except the southernmost, which were probably opened to recover the large beams which were originally supporting the floors between the walls B12-45 and B12-46 of the basement (Fig 1-172). It is possible that these beams were broken, increasing the subsidence effect, but it is also possible that the beams were still in place and that the floors slid down against them. The shape of the remains of the masoned floors, and the small ascent they made along the border of the trench where the beams have stood, is in favor of the second hypothesis. In that configuration, the upper part of the beams was probably around 0.20m, or more, higher than the subsided floors, so being a problem for a refitting. Moreover, it is very likely that the removal of the beam-frame occurred at the same time than the strengthening of the pillars with their underpinning reinforcements (see above), and that the beams were precisely removed to let place for the making of these reinforcements. The material found in the backfill of the recovery trenches was not enough characteristic to give a more precise dating than a large 14<sup>th</sup> century but it can be assumed that the stage of repairing occurred in the second half of the century.

It seems also that, after this time, the floor of the prayer hall was made of beaten earth, at least for the span 5, the former masoned floor possibly remaining in use over the span 6. It is less possible to state about the floor over the eastern empty spans 1-4, and to know whether the same refittings of the floor also occurred there or if the original masoned floor was well-made enough to endure a longer lifetime. It can be reasonably considered that, at some times, different kinds and types of floor were simultaneously in use in the prayer hall, which was possibly covered with carpets.

After the removal of the beam-frame and the reinforcement of the pillars, the floors of the prayer hall were only made with rammed earth and leveling backfills, variously preserved and observed and partially vanished by the sliding of some of them into the eastern corridor B12-B.

To the north was uncovered a flat and indurated level (Uf3725) made of compacted brown orange silt, containing small charcoals and gravels. It was also observed elsewhere to the north and registered as Uf3950, and in the south half of the prayer hall where it was registered as Uf3746, 3799, 3800 and 3801. This level is probably an earthen floor made after the large refitting of the Mosque, or the circulation level contemporary of it (Fig 1-173).

A last earthen floor was finally observed, mainly over span 6 while it has disappeared over span 5, if it ever was in existence here. Different backfills were used to create a flat level: to the north, Uf3949 made of small pebbles and Uf3787 and Uf3948 made with compacted silt mixed with pebbles, charcoals and plaster; to the south Uf3633 and Uf3804 made with small pebbles. Above those backfill levels was found a white indurated level, made of compacted plaster and crushed white mortar mixed with some gravels and charcoal, variously registered as it was seen in different places without connection between them. Shortly to the south of the *minbar*, where it was mainly observed, it was registered as B12-293 while it was registered as Uf3718, 3883, 3884 and Uf3947 (Fig 1-174). Though lacunar, this last floor was quite probably the one in use during the last stage of the *mihrab* and the *minbar*, and may have lasted until the arrival of the Portuguese.



**Fig 1-170 :** *subsidiencies of the floors of the prayer hall, in north part*

**Fig 1-171 :** *general view of the floor B12-294, in north part*

**Fig 1-172 :** *the trenches opened through the floors (shown by arrows), probably to recover the beams*



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Minor repairing may however be assumed. Only present in the north-west part of the prayer hall, the **Uf3836** is made with beige silt, mixed with small pebbles, charcoals and crushed mortar; it could be a punctual repair. In the south part, a thin layer of compacted brown silt (**Uf3628/3650/3666**) could also be a later earthen floor, only present in the south part.



**Fig 1-173** : the earthen floor Uf3950, half excavated, above the floor B12-294



**Fig 1-174** : the late floor B12-293, made of plaster, in the south part (the shape is due to the excavations)

## I-D2. Stratigraphical analysis

### I-D2a. The post-Mosque periods

#### ▪ Squatter occupation and destruction

No occupancy layers properly said were found in the prayer hall, a normal fact as the building had no domestic use. Several structures and layers however indicate that the prayer hall was shortly occupied as a squat before the beginning of the collapse. In the north-west corner of the prayer hall the structure **B12-367** is quite certainly the remain of a damaged hearth (Fig 1-175). Around 0.80m long by 0.50m wide, it was made directly over the possible late floor Uf3836 which had burnt under it.

In the south part, six different pits or holes were found. They were dug through the levels of the masoned floors and, though it is difficult to date them precisely, they were all made during the last stage of occupancy or shortly after the abandonment. Three small holes were found, which are quite similar in shape and so probably similar in use and dating, all dug through the floor B12-294 but only partially into the lower floor B12-297. The northern one (**B12-355**), 0.40m long by 0.30m wide, goes down for around 0.35m through the floor B12-294 but only for 0.15m into the floor B12-297, with a pointy bottom where the prints of the tool used for digging are visible (Fig 1-176). To the south, the second hole (**B12-304**) is a little larger through the upper floor, around 0.50m, but similar in size and shape into the lowest floor (Fig 1-177). The third one (**B12-382**), to the south against the *qibla* wall, is more irregular and now piercing the two floors, but this can result of a bad state of preservation (Fig 1-178). Those three holes were possibly used for posts at the end of the occupancy of the Mosque, maybe to support the damaged roof of the prayer hall. They might also have been laid before, as a scaffolding during a stage of repair.

Three larger and deeper pits, in the *mihrab* area, were also dug through the masoned floors and the underneath backfill. Occupying all the bottom of the niche of the *mihrab*, the pit **B12-295** was already uncovered and described by the Qalhât Project and interpreted as a possible plunder made by the Portuguese invaders (Fig 1-179). In front of the *mihrab*, the oval pit **B12-296** (Fig 1-180) is 1.50m long by 0.80m wide while the third pit, **B12-303**, is half oval, 1.30m long by 1m wide and dug at the foot of the *qibla* wall (Fig 1-181). They were both dug through the levels of collapse and must so be considered as later plunder, when the main part of the Mosque had already collapsed. Some part of the *mihrab* might though have remained emerging from the collapse, indicating to the plunderers where to dig.

Scattered from place to place, mainly in the south part of the prayer hall, several isolated lenses of ashes were observed, possibly resulting of a fire just before the abandonment of the Mosque (Fig 1-182). Concentrated on the north-west corner, the thin ash level **Uf3741** is the only witness of this possible fire in the area. They are more numerous to the south, with the levels **Uf3679** and **Uf3780**, made of ashes and scarce remains of burnt beams, which came probably from the roof. The levels **Uf3621**, **3632**, **3627**, **3645** and **Uf3739**, made of compacted brown silt with reddish shading possibly resulting of a fire, could also be part of the same moment of burning, or a level made by the slow disintegration of the coating and mortar of the walls after the abandonment.

Though the levels of ashes were very scarce and much altered by the upper levels of collapse, and though no traces of fire were especially observed on the walls or other masonry in the prayer hall, it is possible that the Mosque suffered a fire, accidental or voluntary, in the last days of its occupancy. This assumed fire may have been at a small scale, concentrated for example on the possible textile mats and carpets which could have been set on the floor, and not reaching the whole building, as a fire at a greater scale would have made more visible damages. Bras de Albuquerque wrote that the Portuguese willingly put fire to the prayer hall and burnt the Mosque to the ground. If the complete destruction of the building is an overstatement, it is reasonable to admit that the invaders effectively tried to burn the Mosque but did not succeed to destroy it entirely.



**Fig 1-175** : the hearth B12-367 before excavations

**Fig 1-176** : the pit B12-355, fully excavated

**Fig 1-177** : the pit B12-304, half excavated at bottom

**Fig 1-178** : the pit B12-382, fully excavated





**Fig 1-179 :** *the plunder pit B12-295*

**Fig 1-180 :** *the plunder pit B12-296*

**Fig 1-181 :** *the plunder pit B12-303*

**Fig 1-182** : *lenses of ashes in the north-west corner of the prayer hall*



▪ Collapse

The level of collapse in the prayer hall, which was around 1m thick, was artificially divided in several parts, both in plan and in elevation, according to the protocol determined at the beginning of the excavations.

The lowest level of collapse, registered as **Uf3702, 3795, 3807** and **Uf3711** in the north half and as **Uf3639, 3715** and **Uf 3806** in the south half, is made of brown reddish soil, which can come from the disintegration of the coating, mixed with fragments of mortar, crushed coating and plaster, few burnt corals and many plaques coming from the roof of the prayer hall. Several architectural elements were also unearthed in this level, but the main part of them was found on the upper level of collapse, suggesting that the pillars and arches of the prayer hall remained standing after the fall of the roof.

The upper level of collapse, registered as **Uf3740, 3744, 3703, 3695, 3733, 3777** and **Uf364** in the north half and **Uf3275, 3638, 3622, 3713, 3636, 3732** and **Uf3779** in the south half, is made of beige to gray soil containing many small fragments and crushed mortar, less plaques coming from the roof and more massive architectural elements than the underneath level. It is in this level that was found the most part of the architectural elements and the plaques of decoration, some of them well-preserved and other completely cracked and destroyed. A careful excavation and recording however allow a convenient restitution of the fittings and decoration of the prayer's hall.

## I-D2b. Collapsed architectural elements of the prayer hall

**Fig 1-183**

Many collapsed architectural elements were found in the prayer hall. Most of them were small isolated ones, such as square or rectangular carved stones or quaterfoils coming from the pillars or the arches, but many were enough preserved to allow guessing their original shape and provenance and to bring new information about the pattern of the prayer hall. Many remains of decoration were also uncovered, mainly isolated glazed tiles but also some fragments of ornamented panels still attached to the underneath masonry.

Found near or on the *qibla* wall, nearly halfway between the north-west internal corner and the north side of the *mihrab*, the **IsoArc912** and **IsoArc977** are remains of a niche (**Fig 1-184**). The first one, already seen by the QP, was showing one side, the rear face and the upper vault of the niche, with a small neck visible at the junction of the vault and the side face. The core of the masonry was made of medium corals and limestone blocks bonded with a beige mortar, and two stages of coating, one pinkish and the second whither, suggest that the niche was extended and refitted at one time. As the architectural element has slid down, the niche was most probably located very closed to where its remains were found. Shortly to the north, the second element also presented a curved side covered with pinkish coating and is probably also part of a niche. It is quite difficult however to state if this element came from the same niche as the first one, or from a second niche set north of the first one.

Uncovered in the middle of the northern part of the span 6, the two architectural elements **IsoArc913** and **IsoArc914** present the same features, dimensions and decoration, and undoubtedly come from the same location (**Fig 1-185** and **Fig 1-186**). They both come from a rectangular engaged pillar with a decoration made of glazed tiles in the shape of crosses and stars, bonded with a beige mortar coating, while the fragment of the *qibla* wall attached to it is covered with a whither coating. On the **IsoArc914**, a small curve suggests the start of the intrados of the arch, and therefore that this element was originally located high on the *qibla* wall. As they were found nearly halfway between the *minbar* and the north wall near the pillar B12-323, they may have toppled from an important height and so felt at a certain distance from their original location. They so could have originally stood southerly, near the *minbar*, and have received the arch of the assumed central nave in front of the pillar B12-05. Already uncovered by the QP against the north side of the *minbar* and near the pillar B12-05, the **IsoArc911**, which was identified as a fragment of the upper part of an arch, could have been part of that central nave.

The architectural elements **IsoArc976** and **IsoArc983** (**Fig 1-187** and **Fig 1-188**) are both fragments of the intrados of an arch bearing the same decoration made of crosses and stars with a protruding border as observed on the engaged pilaster **IsoArc913/914** and could have been associated with it. The same decoration was also observed on the architectural element **IsoArc915**, which also presented other types of decoration made with fittings of fragments of glazed tiles and moldings of mortar (**Fig 1-189**). The element came from the low part of the arch, where it joined the top of the pillars, and showed the decoration of the intrados and the spandrels.

In the south part of the prayer hall, the architectural elements **IsoArc706** and **IsoArc807** are also the fragments of the intrados of an arch, with the same decoration made of stars and crosses and the same protruding borders (**Fig 1-190** and **Fig 1-191**). At the rear of the first element, the presence of a groove suggests that the arches were internally strengthened by the addition of square beams.

Even if these elements were too fragile to be kept and stored, their decorated parts have been carefully removed, unfortunately not without some cracks, and properly stored for a possible restoration and display.

Many remains of the decorated pillars and arches were also found elsewhere in the prayer hall but they were much too fragile to be moved, sometimes already cracked. It is the case for the architectural elements **IsoArc1019**, **1093** and **IsoArc734** which were identified as pillars by the alignment of their carved stones, but the core of the masonry had entirely disintegrated and the different elements were no more bonded together (**Fig 1-192** and **Fig 1-193**). The main part of the decoration was also detached from the masonry as the glazed tiles were found all around. In same case anyway, especially with the **IsoArc1093**, some panels of decoration of the spandrels were found well-preserved and were successfully removed and stored (**Fig 1-194**). In the same way, the carved stones from the pillars or arches were also all registered and stored. If it looks impossible to rebuild all the collapsed arcades, it will probably be possible to recreate a part of it by using some of the isolated elements.





**Fig 1-183 :** Site plan of the main architectural elements found in the prayer hall



**Fig 1-184 :** the architectural element IsoArc912, remains of a niche

**Fig 1-185 :** the architectural element IsoArc913, in situ

**Fig 1-186 :** the architectural element IsoArc914, after removal



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**Fig 1-187 :** the architectural element IsoArc976, after removal

**Fig 1-190 :** the architectural element IsoArc706, in situ

**Fig 1-188 :** the architectural element IsoArc983, in situ

**Fig 1-191 :** the architectural element IsoArc807, after removal

**Fig 1-189 :** the architectural element IsoArc915, after removal





**Fig 1-192 :** *the architectural element IsoArc1093, guessable by the alignment of carved stones*

**Fig 1-193 :** *the architectural element IsoArc904, hardly guessable among the collapse*

**Fig 1-194 :** *the decoration recovered after the removal of the IsoArc904*

### I-D3. General interpretation of the prayer hall

#### Fig 1-195

The construction of the Mosque building, at the end of the 13<sup>th</sup> century or the beginning of the 14<sup>th</sup> century started by the construction of the basement and the surrounding walls, probably based on the natural bedrock. It is possible that the basement of the span 5 was firstly intended to remain empty and be occupied by four rooms reachable from the eastern corridor B12-B, while the west span 6 was intended to be backfilled since the beginning. During the construction, shortly after the completion of the compartmentalization's walls of the basement, the span 5 was filled and a beam-frame was set at the top of the wall. The top of the backfills and the space between the beams was filled by small pebbles, above which was made a cemented floor-support and the first plastered white floor.

At that time, the prayer hall was reachable to the east through several doors from the forehall, and to the north by the main gate on span 4 from the terrace on the roof of the north wing. A small door was also located near the qibla wall, coming from the staircase B12-J built against the north-east corner of the mosque, and probably restricted to a private use. A niche was set between the two north accesses, a second niche was seemingly located in the middle of the north part of the *qibla* wall, and another one was probably set symmetrically, south of the *mihrab*.

Twelve pillars, and six engaged half-pillars to the north and south, supported three north-south lines of arcades and two east-west lines in the middle of the prayer hall, demarcating a central nave in front of the *mihrab*. The pillars of the central nave and the ones to the north and south were differently decorated and the same difference may have occurred in the upper part of the vaulting. The roof was supported by the arcades and by east-west beams linking the pillars and, according to the description by Bras de Albuquerque and the testimony of a single small fragment of wood decorated with carving and golden paint (Fig 1-196), these beams may have been carved and highly decorated.

It seems reasonable to assume that the general features described above may have remain in use until the end of the occupancy of the Mosque and, even if some important repairs occurred afterward, the pillars, the vaulting and the beam-frame of the roof were not entirely lately rebuilt.

The original *minbar* was about 0.20m southerly than it is today and made of wood, while the first *mihrab* was a little bit wider than the actual one, possibly with small engaged pilasters et apparently decorated with glazed tiles, including Kashan ones. Both were framed by two engaged pillars, receiving the western vault of the central nave.

In the course of the 14<sup>th</sup> century, the white floor suffered a subsidence, mainly in the span 5 probably because the backfills were less rammed and well-made, and a second mortar floor was made, leveling the former one. As the subsidence continued, a third mortar floor was built, on span 6 but maybe not over the entire length of the span 5.

A certain time later, in the second half of the 14<sup>th</sup> century or near its end, a important stage of repairs and refitting occurred in the prayer's hall, maybe because the subsidence of the backfills created a weakness for the whole building or that it was damaged by a natural disaster. The beam-frame, which may have cracked, was removed and rough reinforcements were built under the basis of the pillars between the spans 5 and 6. It is possible that some parts of the pillars and the arches were highly restored and that the remains of decoration found in the collapse date back from this stage of repair.

Maybe at the same time, or a certain time later, the first wooden *minbar* disappeared, probably destroyed by fire, and a new masoned one was built, about 0.20m north of the first one. At that time, it seems that the floor of the prayer hall was made by a mix of earthen floors, mainly on span 5, and masoned floors of the previous stage, mainly on span 6 and probably on the spans 3 and 4 above the empty part of the basement, where the floors may have suffered no or less subsidence. It is also reasonable to think that the niche in the middle of the north part of the *qibla* wall was refitted at that time, as in the gate at the north-west corner where a new threshold was raised. Also, the niche, or window, between the two northern accesses may have been blocked or refitted in the same stage.

#### Fig 1-197

By the end of the 15<sup>th</sup> century or at the beginning of the 16<sup>th</sup> century, the last stage of repair occurred to give the prayer hall the aspect it has today. The *mihrab* was reduced and redecorated with plaques of mortar and the *minbar* was extended to the east with the addition of two steps, then recovered by a rough

coating. A new floor of plaster was also made and, as molds were found, some of them still attached to the architectural elements uncovered, it is possible that the decoration was under repair in the prayer hall at the arrival of the Portuguese.

The invaders may have dug the pit in the bottom of the *mihrab*, probably searching for an hypothetical treasure, and they apparently tried to put fire to the building with a relative success, as the main structures of the Mosque were apparently still standing at the departure of the Portuguese. Though the roof may have collapse shortly after the abandonment of the building, and maybe right after the fire made by the invaders, the remains of the pillars, arches and possibly the *mihrab* emerged for a while from the levels of collapsed, allowing the identification of the building as a rich and important one, and could so explain the presence of two plunder's pits in the *mihrab* area.

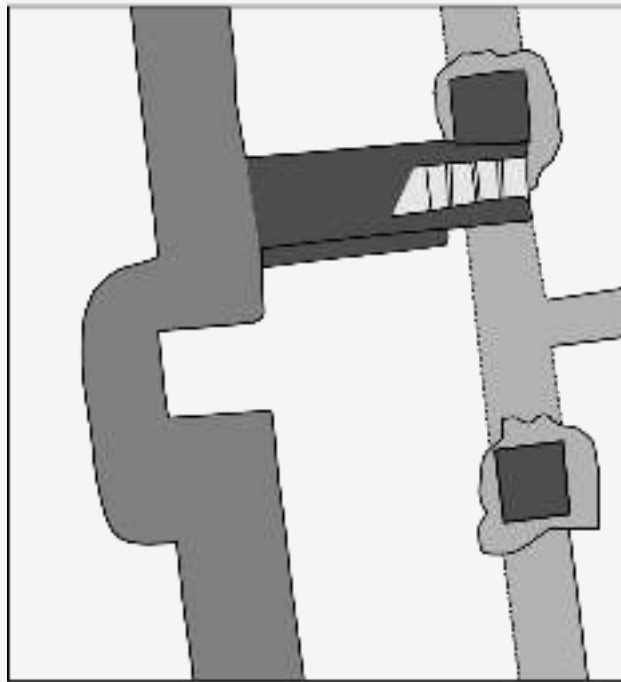


**Fig 1-195 :** General view of the prayer hall at the end of excavations

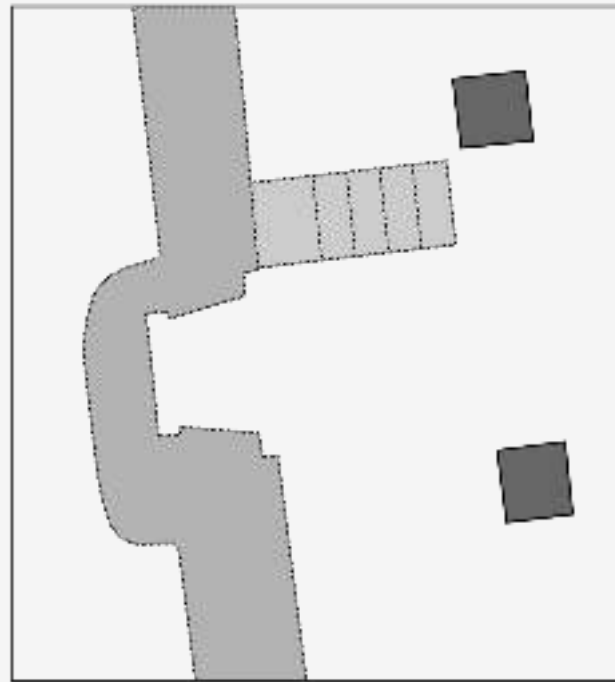


**Fig 1-196 :** fragment of carved and golden painted wood






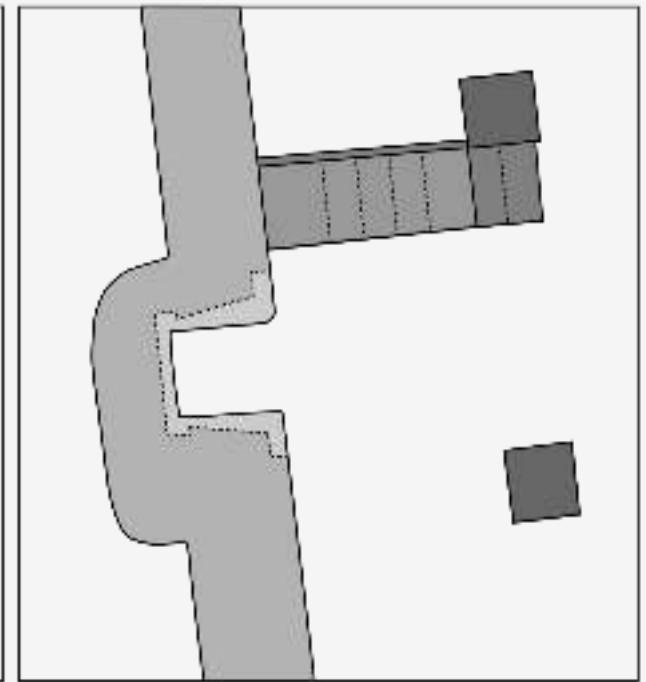


Actual state



First stage of mihrab and the wooden minbar

-  Qibla wall and mihrab (Hypothetical course)
-  Wooden minbar (Hypothetical course)
-  Pillars



Second stage of mihrab and the two stages of the masoned minbar






-  Qibla wall
-  Second stage of mihrab
-  Masoned minbar First stage
-  Masoned minbar Second stage
-  Pillars

Fig 1-197 : Hypothesis of evolutions for the mihrab and the minbar

## I-E. THE 2015B-2016A SEASON – 4. THE NORTH COURTYARD

**Fig 1-198**

At the end of the 2013–2014 seasons, most of the layers of collapse in the north low courtyard were removed but no circulation floor was observed yet. Some massive architectural elements were observed, especially the IsoArc044 and IsoArc1155, which presented curved facings and were so interpreted as remains of arches. According to the position of the large architectural element IsoArc044, it was assumed that the arch was oriented north-south, leaning against the north walls of the north wing, maybe in the alignment of the north-south dividing walls of the basement. This arch, with others built at west, was supposed to support a terrace at first floor, above the south part of the low courtyard, which gave access to the main gate of the prayer hall at first floor and to the staircase shaped as a low tower above the room B12-J and the staircase of the minaret above the room B12-T, both probably giving access to the roof. There was also a small porch with a small decorated cupola, above the room B12-W, where a gate was probably giving access to the forehall, and a particular setting right before the main gate to the prayer hall, above the gate to room B12-B, might also be considered.

The purpose of the excavations of the 2015b–2016a season was to find the circulation floors of the north courtyard and the remains of the foundations of the arches. If several floors were observed, no foundations were found in the soundings opened. However, several scarce hints suggest that the terrace was partially destroyed a certain time before the abandonment of the Mosque and that part of the collapse was removed to maintain a suitable circulation area.

### I-E1. The remains of the terrace above the low courtyard

At west, at the foot of the retaining wall B12-67 which is the east limit of the inner high courtyard B12-D, two small remains of walls, running under the wall B12-67, were found but, as they were covered by the last circulation floor, they were not entirely excavated. It is possible that they continue eastward, but they could also have been destroyed and the material removed for being reused.

The southern wall, B12-479 (**Fig 1-199**), 0.60m wide and observed for 0.75m long, is made of large and medium limestone blocks and was probably associated to the easterly wall B12-75 with which it is aligned in the north side, both being on each side of the access to the corridor B12-B. The wall B12-75 (**Fig 1-200**), made of large and medium limestone blocks, was found under the structure B12-192 which was built above and extends westerly for an unknown distance as it is covered by later floors which were left in place. Though the connection between the two structures was not observed, it is very likely that it is the same wall, as the two parts are built in the same way and are apparently aligned. This wall could have been used as a step to compensate the difference of altitude, at least 0.50m and probably more, between the earlier floors of the low courtyard and the threshold of the room B12-B, and also to receive the south abutment of the arch.

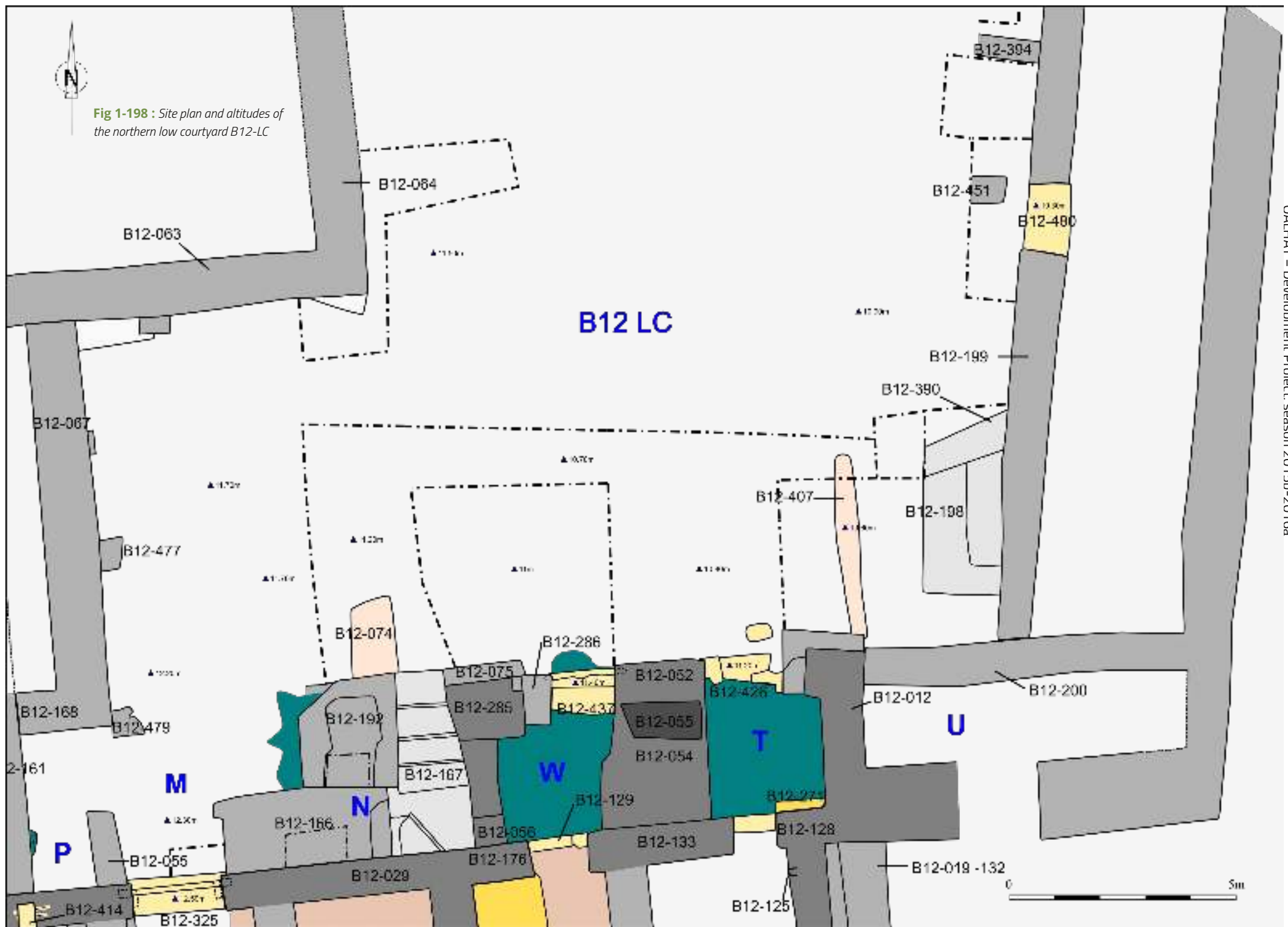
Around 3m north of the wall B12-479, the small remains of wall B12-477 (**Fig 1-201**), about 0.70m wide, is also running under the wall B12-67 and, though it was only partially unearthed for only 0.50m long, it seems to be parallel with the wall B12-479. As it was not found in the sounding opened in the middle of the low courtyard, it is very likely that most of its material was recovered, but it originally probably extended easterly, at least until the north-east corner of the Mosque building.

Two other walls, covered by the late circulation floor, might also be part of the foundations of the terrace. Perpendicular to the wall B12-75 and apparently quoined with it, the wall B12-74 (**Fig 1-202**), about 1m wide and 0.40m high for a preserved length around 1.70m, is made of massive pebbles and limestone blocks, and could have been partially recovered at north. It could have been linking the missing parts of the walls B12-477 and B12-479, and be used to strengthen the foundations of the vaulted terrace.

Set at the north-east corner of the Mosque and partially running under it, or at least under of thickening or a repair of the north wall of the building, the wall B12-407 (**Fig 1-203**) could have had the same use of strengthening the foundations. Made of massive pebbles and limestone blocks with no binder preserved, it is now 4m long by 0.50m wide but it appears that its eastern half was recovered to be reused. The fact that this wall is ending at north more or less in the same alignment that the north side of the wall B12-477 is in favor of this hypothesis. In this configuration, it is possible that the terrace was ending, at east, plumb with the line of the wall B12-407.



Fig 1-198 : Site plan and altitudes of the northern low courtyard B12-LC







**Fig 1-199** : the scarce remains of the wall B12-479, under the retaining wall of the high courtyard

**Fig 1-200** : the wall B12-75 (behind the scale) under the staircase in area B12-N

**Fig 1-201** : the scarce remains of the wall B12-477, under the retaining wall of the high courtyard



**Fig 1-202** : the remains of the wall B12-74, with the staircase in area B12-N in the foreground



**Fig 1-203** : the remains of the wall B12-407, with a possible recovery trench at left and the north-east corner of the Mosque in the background

As the architectural remains of the arches were found above the layers of collapse and above the last circulation floor, it appears that the eastern arches remained standing and probably in use until the abandonment of the Mosque. As no remain was found at west in the access to the corridor B12-B, it is quite probable that the west part of the terrace collapsed at a certain time, its remains removed and small basic repairs made, probably using wood to maintain the access to the main gate of the prayer hall. **Fig 1-204**

As the retaining wall B12-67 is built over the walls B12-477 and B12-479, it is also possible that the inner high courtyard B12-D was extended to the east after the collapse of the terrace, maybe to ease the access to the prayer hall over the weakly repaired part. It is also very likely that the terrace was still in existence, though variously preserved and repaired, at the arrival of the Portuguese. A claustra or a pergola, probably made of wood, was possibly lining the terrace in its northern part, and still standing when the city was seized, explaining why Bras de Albuquerque is writing about the seven aisles of the Mosque. He might have considered that the two staircases-towers on each side of the north wing, maybe linked by a colonnade, and the assumed northernly pergola were two aisles of the Mosque which, added to the five internal east-west aisles of the prayer hall and forehall, give the total number of seven. If this hypothesis is very tempting, there is fact no factual elements to be strictly affirmative, but it has to be mentioned as an assumption.





## I-E2. The circulation floors of the low courtyard

In the sounding opened at north at the foot of the eastern rooms of the north wing (B12-T and B12-W), at least two stages of floors were observed, made of indurated earth and separated by backfills layers, mainly made of small pebbles and rocks ; as they were very similar, it was not always easy to distinguish one from the others. Also, a long time weathering has greatly damaged the floors, which are more preserved at west but almost entirely vanished at east. Several pits and postholes have also been unearthed but their function remained unclear for most of them.

### The first stage of occupancy

#### Fig 1-205

Though the ceramic material was too scarce to give a precise dating, the lowest floor observed in the soundings was quite probably in function in the first stage of the Mosque and the circulation floor used when the terrace was in use and not damaged. Observed at east along the wall B12-199, the floors **Uf5895 (Fig 1-206)** and **Uf5896 (Fig 1-207)** are earthen floors, with some small pebbles inserted into the floor which could be an infiltration from the upper layers. Built above these floors, the wall B12-451, 0.60m wide and observed for 0.75m long, probably belonged to the same stage of occupancy but its function is still unknown. It is only preserved for one course of stones but it could have been higher and the upper part recovered.

North of the rooms B12-T and B12-W, the earthen floors **Uf5822** and **Uf5823** probably belonged to the same stage and must be the same floors as Uf5895/5896, though their connection was not excavated (**Fig 1-208**). Many postholes were found in this sounding, probably belonging to the same stage. Three of them are aligned, **B12-440 (Fig 1-209)**, **B12-441 (Fig 1-210)** and **B12-442 (Fig 1-211)**, all around 0.30 m wide and 0.20m deep and, as they are more or less aligned with the wall B12-477, they could have been part of the settings of the terrace, for scaffolding or strengthening. North of them, the smaller posthole **B12-443**, 0.15m wide and 0.15m deep, was dug through the same level and could belong to the same stage, but its function is more problematical.

Four other postholes were unearthed north-west of the gate to the room B12-W : **B12-427 (Fig 1-212)**, 0.35 m wide by 0.25 m deep, **B12-422 (Fig 1-213)**, 0.15m wide by 0.10m deep, **B12-423 (Fig 1-214)**, 0.25 m wide by 0.20 m deep and **B12-444 (Fig 1-215)**, 0.20m wide by 0.15m deep. For all of them, their use is unknown. On the contrary, the large posthole **B12-435 (Fig 1-216)**, around 0.40m wide by 0.30m deep, against the wall B12-286 and near the threshold B12-437 which give access to the room B12-W, was probably made to host the vertical pivot of the assumed door which closed the gate. Though it was dug through the earthen floor, it can also belong to a later stage of occupancy but its top was not seen in the upper layers.

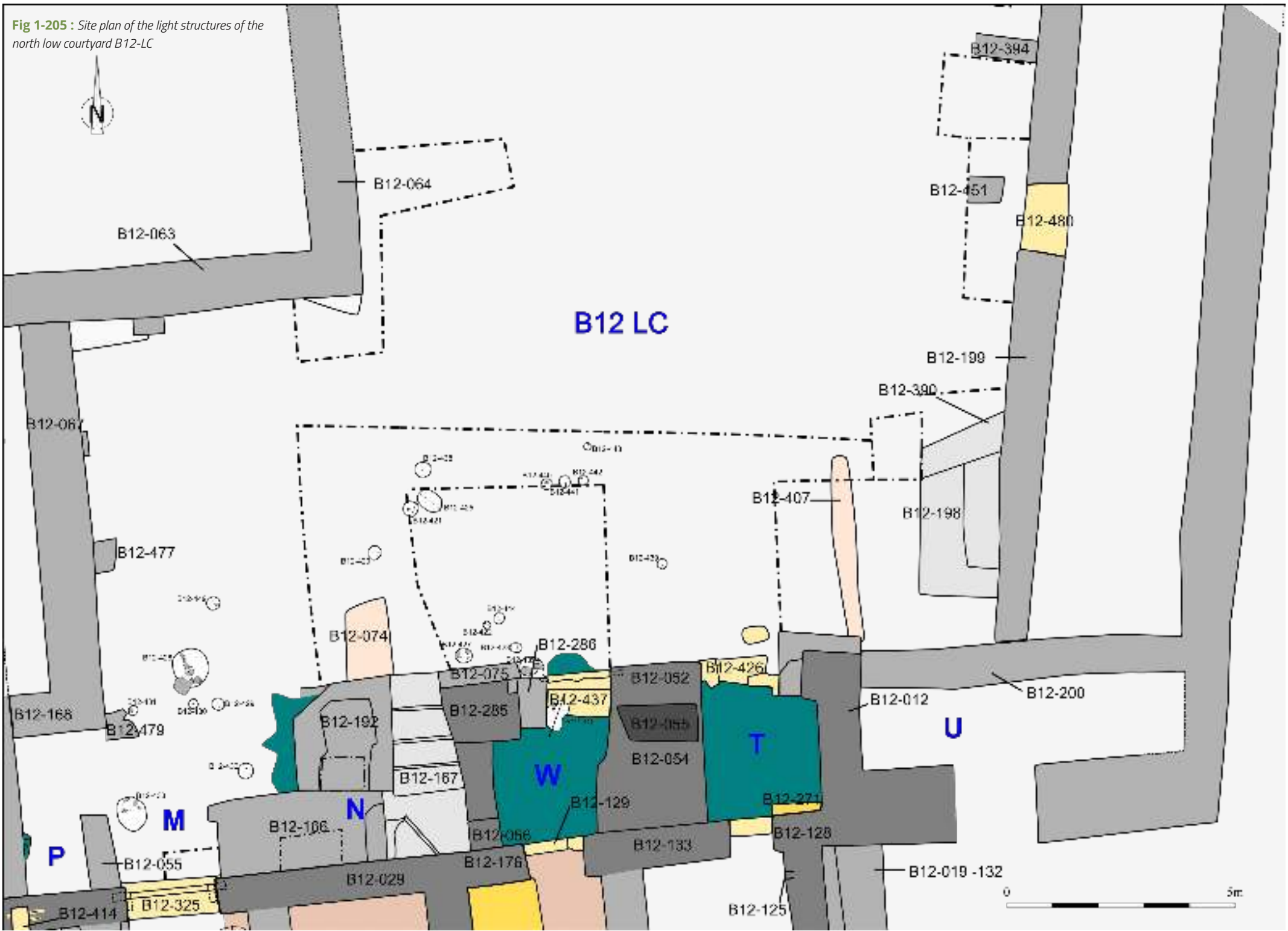
Finally, north of the staircase B12-167, three postholes (**B12-420 (Fig 1-217)**, 0.30m wide by 0.20m deep, **B12-421 (Fig 1-218)**, of the same size and **B12-438 (Fig 1-219)**, around 0.35m wide and 0.05m deep) and an oval pit (**B12-425 (Fig 1-220)**, 0.60m long by 0.40m wide and deep) were also dug through the earthen floor, but here also their functions remained unknown.

### The second stage of occupancy

The second stage of floors was apparently set after the partial destruction of the terrace as the backfills and the level of floor covered the foundation walls and their removal. At east, it is probably at that time that the wall **B12-199 (Fig 1-221)** and its probable threshold **B12-480 (Fig 1-222)** were built, as they were made by cutting the previous floor and backfills (**Fig 1-223**). It is so a possibility that the low courtyard originally extended at east until the wall B12-11 and that it was afterward reduced. As the stair B12-198/390 is partially quined with the wall B12-199 and built over the backfills covering the wall B12-407, it was obviously built at this time, probably to create an access to the terrace from the east. Though there is no remain to be affirmative, it is possible to imagine that a former stair once stood nearby, maybe related with the southern room B12-U.

Right at north of the threshold to the room B12-W, the floor **Uf5854 (Fig 1-224)**, made of dark gray mortar built over a layer of plaster, probably belonged to the same stage of occupancy, even if it is now isolated and not connected to the other remains of the floor.

Fig 1-205 : Site plan of the light structures of the north low courtyard B12-LC





**Fig 1-206 :** the earthen floor Uf5895 (cut by the construction of the wall B12-199 at right) with the low wall B12-451 in the background

**Fig 1-207 :** the earthen floor Uf5896 (cut by the construction of the wall B12-199 at right) with the low wall B12-451 in the foreground

**Fig 1-208 :** the earthen floors Uf5822 and Uf5823, pierced by several postholes





**Fig 1-209** : the posthole B12-440, half excavated

**Fig 1-210** : the posthole B12-441, half excavated

**Fig 1-211** : the posthole B12-442, fully excavated



**Fig 1-212 :** the posthole  
B12-427, half excavated

**Fig 1-213 :** the posthole  
B12-422, half excavated

**Fig 1-214 :** the posthole  
B12-423, half excavated





1-215



1-216



1-217

**Fig 1-215 :** the posthole B12-444, half excavated

**Fig 1-216 :** the posthole B12-435, half excavated

**Fig 1-217 :** the posthole B12-420, half excavated





**Fig 1-218** : the posthole  
B12-421, half excavated

**Fig 1-219** : the posthole  
B12-438, half excavated

**Fig 1-220** : the oval pit  
B12-425, half excavated

**Fig 1-221** : the wall B12-  
199





**Fig 1-222 :** the assumed threshold B12-480 in the wall B12-199

**Fig 1-223 :** the foundation trench of the wall B12-199, cutting the previous floor and backfills

**Fig 1-224 :** the earthen floor Uf5854

At east, in front of the opening to the corridor B12-B, the floor **Uf3999** (Fig 1-225), made of a thin layer of gray mortar above rammed soil, is the last circulation floor of the low courtyard. An iron cannonball (Fig 1-226) was found over this floor and, as the iron cannonballs are supposed to be of European origin while the Arabic ones were of stone, it is very likely that this floor was the one in existence at the arrival of the Portuguese. Five postholes and two pits were unearthed above this floor. Three of them are aligned (**B12-430** (Fig 1-227) and **B12-431** (Fig 1-228), around 0.20m wide and deep and **B12-429** (Fig 1-229), around 0.30m wide and 0.20m deep) and located between the walls B12-479 and B12-75. Their location might indicate that they were used for wooden posts to support the above terrace which was presumably here repaired with wood (Fig 1-230). It might also be the case for the posthole **B12-432** (Fig 1-231), around 0.35m wide and 0.10m deep, located near the corner of the staircase B12-166 and the construction B12-192 but this is less obvious. At north, the posthole **B12-449** (Fig 1-232), 0.30m wide by 0.20m deep, could also be the trace of a repair of the northern part of the terrace but could either be an isolated structure not related with the others.

The two pits dug through the floor Uf3999 are more problematical. The first one, **B12-433** (Fig 1-233), 0.75m long by 0.60m wide and 0.50m deep, is located in area M, in the passageway to the corridor B12-B and, if it was in existence during the use of the basement, it would have greatly reduced the size of the entrance. The second one, **B12-428** (Fig 1-234), 0.80m wide and 0.25m deep, is located just at north of the aligned postholes B12-429, B12-430 and B12-431, were it was also greatly blocking the circulation. They could so have been dug after the abandonment of the Mosque, but their use and function will remain unexplained.

The staircase B12-166/167, with its associated structure B12-192, is partially built over the floor Uf3999 and was so built afterward, but maybe a very short time after, and both stairs and floor have worked together. According to the dating of the staircase (see previous report), it appears that the staircase, and so the floor Uf3999 and the stair B12-198, were built and raised in the second half of the 15<sup>th</sup> century, and maybe near its end. It remained in use until the arrival of the Portuguese invaders, as revealed by the discovery of the iron cannonball, though small punctual repairs may have occurred in certain place. At north and east, where it was not protected by the collapse layers above, most of the floor Uf3999 has disappeared because of the rain weathering.

#### Fig 1-235





**Fig 1-225** : the mortar floor Uf3999 pierced by several postholes, with the corridor B12-B in the background

**Fig 1-226** : the iron cannonball (IsoMet34) over the floor Uf3999

**Fig 1-227** : the posthole B12-430, half excavated



**Fig 1-228** : the posthole B12-431, half excavated

**Fig 1-229** : the posthole B12-429, fully excavated

**Fig 1-230** : the three postholes B12-429, 430 and 431, with the course of the foundation walls B12-75 and B12-479 (dotted lines)





**Fig 1-231** : the posthole B12-432, half excavated

**Fig 1-232** : the posthole B12-449, half excavated

**Fig 1-233** : the pit B12-433, half excavated





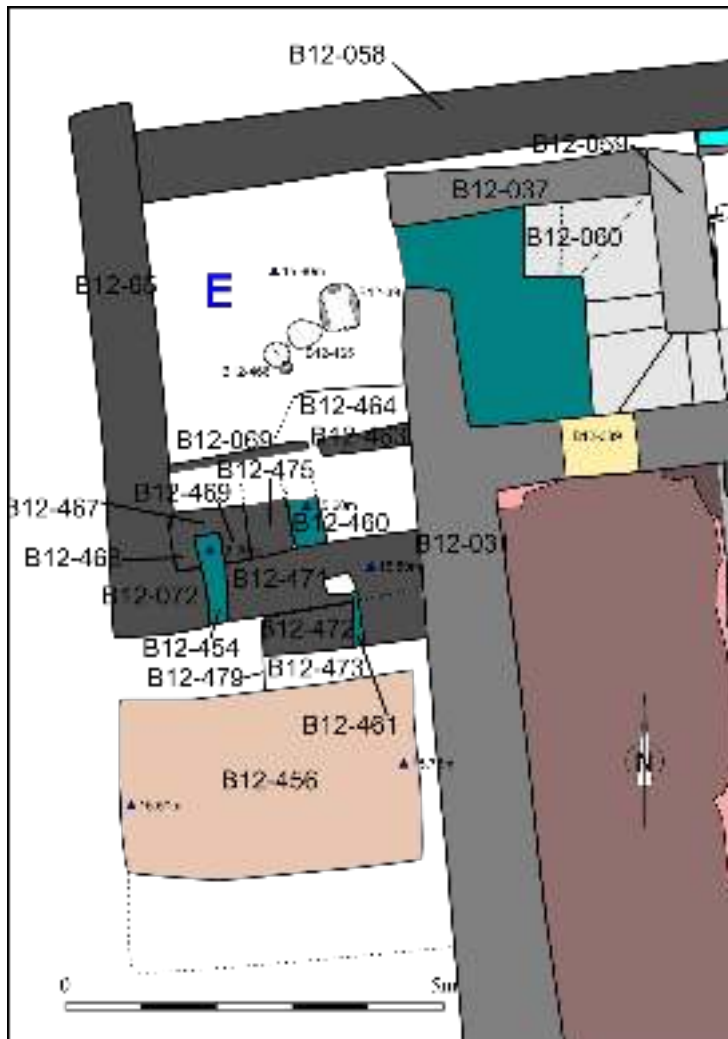
**Fig 1-234** : the pit B12-428, half excavated

**Fig 1-235** : general view of the north low courtyard, nearly at the end of excavations, with the first floor at left and the second one at right



## I-F. The 2015b-2016a season – 5. The associated structures

### I-F1. The ablution area in the high courtyard (Room B12-E) (Fig 1-236)



**Fig 1-236 :** Site plan and altitudes of the structures in the room B12-E

Set outside the north-west corner of the Mosque building and marking the western end of the north wing, the small room B12-E was already half excavated by the soundings of the QP and during the 2013-2014 season, and the discovery of small basins indicated the presence of an ablution area. The complete excavation during the 2015b-2016a season allowed to refine the plan of the room and the circulation but didn't solve all the questions about the use of this area.

The excavations focused on the south half of the room, as the north part was already unearthed until the last floor, made of small pebbles (see previous report). As the remains of constructions were nearly apparent, only two layers were removed. The lowest one (**Uf5891**) was covering the structures inside the south half of the room B12-E and was made mainly of organic sediment, charcoals, ashes and various archaeological material mixed with fragments of collapse (stones, plaster, mortar...), suggesting that the room was used as a rubbish area shortly after the abandonment of the Mosque. But, as a (heap of ?) masoned mortar apparently used to produce the plaster which was probably used for the refecton of the building was found above this layer, there is a possibility that it was not rubbish but voluntary backfill to fill the room and maybe raise a new floor that was not found or never made. It is also possible that the masoned mortar is part of the rubbish and was thrown away after its use and was so not found at the place where it was used.

The rubbish layer Uf5891 and the top of the remaining structures were covered by a thin layer of collapse (**Uf5890**) containing the usual components (limestone and corals, disintegrated mortar) mixed with sand probably from a windy deposit. As the layer of collapse was not very high, it seems that the room B12-E was only one storey high and quite probably lower than the nearby Mosque's building.

The south limit of the room is made by the wall **B12-471 (Fig 1-237)**, which is leaning at east against the outside facade of the *qibla* wall (here registered as B12-31). It is very damaged and it is quite certain that a gate once stood here though no remain of threshold was preserved, as the general organization of the room and its surroundings indicates that the most convenient place for an access is here. The wall is now 2.60m long by 0.80m wide in average, for a maximal preserved elevation of 0.65m though some part of this elevation was originally not visible. It is made of medium limestone and corals blocks bonded with a badly preserved mortar and the internal core is very powdery. No coating was found in the south external face while the coating observed on the north internal face is linked with the northerly fittings (see below). Nearly in the middle of the wall, a gap in the masonry, though very badly preserved, could be the remain of an internal vertical gutter to drain the rainwater from the roof to the ground of the high courtyard. However, the remains are not well enough preserved to be affirmative.

The wall B12-471 is outlined at south by the wall **B12-472 (Fig 1-238)** which is also leaning against the *qibla* wall. It is 2.20m long by 0.55m wide and only 0.15m high. It is very badly preserved especially at east where its limit with the wall B12-471 is nearly invisible. Nearly in the middle of the wall, a small groove (**B12-461**) with its bottom covered with strong gray coating, probably waterproof, was observed, crossing the width of the wall until the assumed vertical gutter in the wall B12-471, enhancing this interpretation. It is quite probable that the groove was originally covered and could so be interpreted as an internal canalization. The wall is also bordered at south by some kind of trench (**B12-473**) which could be a drain to evacuate the water.

The rest of the south limit on the south-west corner of the room B12-E is made by the masonry **B12-72**, linked with the western wall B12-65, already excavated and described in the previous report. The walls B12-471 and B12-72 are separated by a narrow groove (**B12-454 (Fig 1-239)**) which goes northerly inside a U-shaped masonry (**B12-467/468/469**) built in the internal south-west corner of the room. The wall B12-72 is 1.30m long by 0.75m wide and around 0.80m high and made with medium limestone and corals blocks bonded with earthen mortar and without external coating observed. The U-shaped masonry B12-467/468/469 is 1m long for a preserved elevation around 0.80m high and its width varies from 0.75m to 0.35m, the difference being the depth of the groove into the masonry. It is made of all sizes limestone and corals blocks bonded with yellowish mortar (**Fig 1-240**). The groove B12-454 is 1.20m long and its width varies from 0.35m to 0.25m and a strong with (white ?) grayish coating was found at the bottom of the structure. The most reasonable identification is a vertical gutter to evacuate the rainwater from the roof but it may look surprising that the evacuation was not at north to collect the rainwater for the ablation, as the water is lost in this configuration. Another identification could be a conduct for a latrine at first floor but it is problematical as the excrement would have fall on the floor level of the high courtyard and not into a sanitary pit, and very close to the *qibla* wall. If the presence of toilets is not impossible in the precinct of the Mosque, it is more problematic to set them so close to the most sacred place of the building. The inside of the gutter was filled with rubbish layers (**Uf5903**) suggesting that it was used as a rejection place, and by collapsed stones at south (**Uf5905**) which were undoubtedly covering the canalization between the wall B12-72 and B12-454 (**Fig 1-241**).

The location of the masonry B12-467/468/469, built against the walls of the room B12-E, might indicate that it is a late refitting and that the east end of the wall B12-72 was originally the western jamb of a former gate to reach the room B12-E, afterward reduced, but this assumption can only remain hypothetical.

In the south interior of the room, several damaged structures related with the northern remains of the basins were unearthed. The structure **B12-460 (Fig 1-242)**, 0.65m long by 0.40m wide and 0.15m high, is built against the south wall B12-471, around 1.20m west of the *qibla* wall. It is entirely covered with strong gray coating, probably waterproof, and can be identified as a step or more likely an edge of the basin, to receive the water for ablation and drain it to the north basin. It was associated with the structure **B12-475 (Fig 1-243)**, built at west against the masonry B12-467/468/469, made with various sized limestone and corals blocks bonded with a disintegrated mortar and covered, in the lower part, with the same strong gray coating as the structure B12-460. Preserved for 0.65m long by 0.60m wide and 0.60 high, the structure B12-475, though badly preserved, was quite undoubtedly a low bench, where people were sitting during the ablation.

It is very probable that the bench B12-475 and the edge B12-460 were originally extended at north until the structures B12-69 and B12-463, which marked the south limits of the northern basin, but there is in fact no reasonable explanation for the disappearance of these northern extensions. They were not destroyed by the excavations, and it is difficult to explain why the northern parts would have been destroyed by the collapse while the south parts were not. It is possible that the north parts were voluntary destroyed shortly before the abandonment and the beginning of the collapse of the building but there is no valuable reason to explain this action.





**Fig 1-237** : the wall B12-471, under the scale

**Fig 1-238** : the wall B12-472, outlying the wall B12-471, with the groove B12-461 just at right of the scale

**Fig 1-239** : the groove B12-454, from above

1-240



1-241



1-242



**Fig 1-240** : the north side of the wall B12-467, inside the room B12-E

**Fig 1-241** : small porcelain (IsoCer22) found in the filling of the groove B12-454

**Fig 1-242** : the step or bench B12-460, under the scale





**Fig 1-243** : the structure B12-475, possible remains of bench

It is also very likely that a floor once existed between the *qibla* wall, the south wall B12-471, the edge B12-460 and the limit B12-463 of the basin, but it was not found during the excavations. It was also probably destroyed at an unknown time.

South of the room B12-E, a large plaque of mortar **B12-456** (Fig 1-244), nearly 4m long and between 3.75m to 2.50m wide, was found under the layers of collapse of the *qibla* wall. A single course of medium limestone and corals blocks without binder, set in the alignment of the west wall of the room B12-E, was retaining a backfill layer which was covered by a strong gray mortar containing many small pebbles and gravels and partially covered with a yellowish coating. This surface presents an important slope from west to east and was quite probably used as a ramp to reach the room B12-E from the level of the courtyard. It was destroyed at east by the trench B12-474 which was made for the last stage of repair of the *qibla* wall and it is separated from the room B12-E by the trench B12-473 which was probably in use to evacuate the rainwater coming from the gutters B12-454 and B12-461.

In the northern part of the room B12-E, three postholes were found, dug through the floor of pebbles which covered the basins in the last stage of use of the building. The posthole **B12-39** (Fig 1-245), 0.60m long by 0.50m wide and around 0.50m deep, was already partially observed by the QP. Its size and the presence of three large stones used for propping strongly suggest the presence of a massive post that was quite probably put in place to support the roof of the room that was damaged. The two smaller postholes **B12-465** (Fig 1-246)(0.40m long by 0.35m wide and 0.40 deep) and **B12-466** (Fig 1-247)(0.35m wide and 0.20m deep) were also probably made for supporting the roof but there is a possibility that these three postholes were not strictly contemporary and that the smaller ones were made first before the setting of the main post, or they could also have been made after if the main post had shown some weakness.

**Fig 1-244** : the large plaque of mortar B12-456, with the *qibla* wall in the background







**Fig 1-245** : the posthole B12-39, fully excavated

**Fig 1-246** : the posthole B12-465, fully excavated

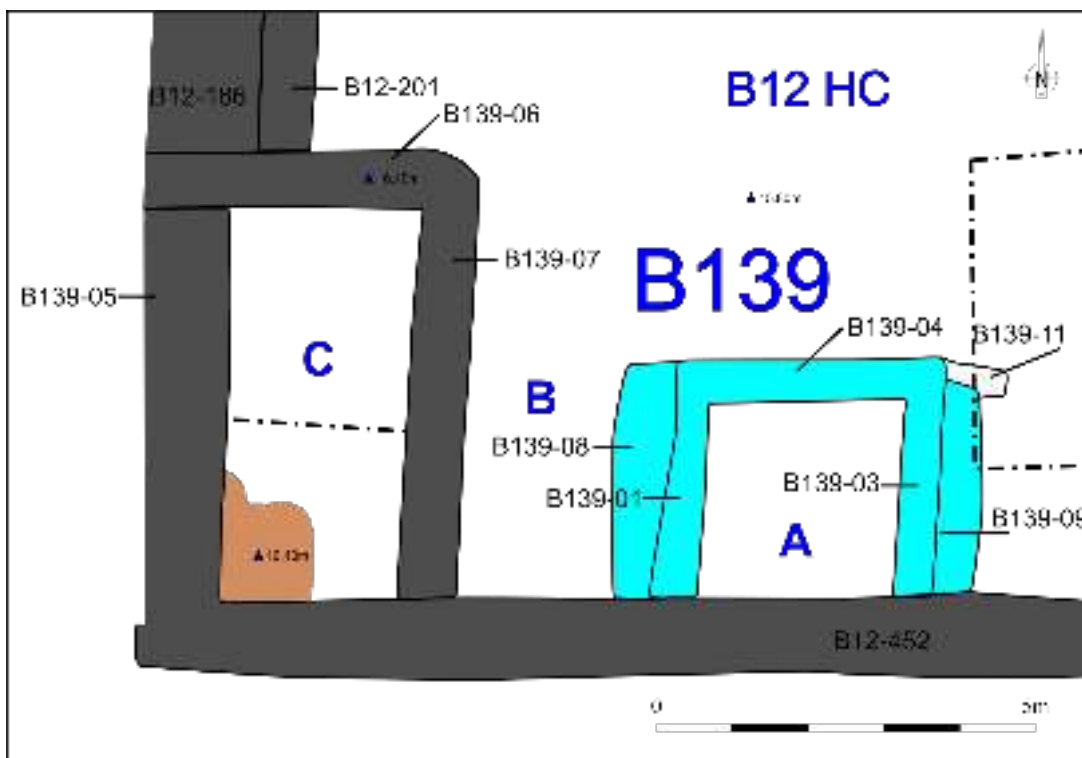
**Fig 1-247** : the posthole B12-466, half excavated

**Fig 1-248** : general view of the room B12-E at the end of excavations

## I-F2. The south side of the high courtyard and buildings B139 and B255

Along the south enclosure wall of the Mosque Complex, two groups of massive heaps of stones and earth were observed and excavated. The first one, nestled in the internal south-west corner of the high courtyard, was registered as the building B139 ; it was partially excavated during the season 2013b-2014a and three rooms were then cleared. The complete excavation was achieved during the season 2015b-2016a, until the circulation floor was observed, and the general shape and chronology of the range of buildings have been refined. The second group, located against the south external side of the enclosure wall, was registered as building B255 and excavated during the 2015b-2016a season, but only partially. The upper layers of collapse only were removed, to unearth the layout of the walls but not until the occupancy layers, which can be very deep below the actual adjacent surface of the site. The aim was to know if the building was part of the Mosque complex, an assumption due to their close vicinity.

### I-F2-1. The building B139



**Fig 1-249 :** Site plan and altitudes of the structures and floors of the building B139

During the 2014–2015 season, three different areas have been observed in the building B-139 and described, the rectangular room B12-C in the south-west corner of the high courtyard and a nearly square room B139-A at south, made with low walls built against the south enclosure wall and over a sandy level, both being separated by a narrow recess B139-B.. (Fig 1-250)

During the 2015b season, an est-west trench was opened right to the north of B139-A and through the area B139-B until the east wall of B139-C, giving important information for the chronology of the area. After excavations, it appeared that only the western room B12-C was in use simultaneously with the Mosque building while the eastern room B12-A was a later reoccupancy made in two stages.

The lower layers observed in this north trench were made of unorganized and various sized limestone and corals blocks mixed with earth (Uf3937, Uf3938), gravels and pebbles without earth (Uf3936), ashes and charcoal layers (Uf3935), all being backfill layers set to raise the circulation surface of the high courtyard in its south part. The east wall of the room B139-C is built over this layer of backfill, which is leaning against an earlier wall B139-10 probably part of an unknown fitting at east.

The layers of backfill are covered by an important layer of gravels and small stones in a sandy matrix (Uf3934), with a nearly flat and indurated top which was used as the final earthen floor of the high courtyard. The ceramic material found in those levels was very mixed, containing material from the 13<sup>th</sup> century to the end of the 15<sup>th</sup> century. It so appears that the high courtyard was backfilled and leveled to

**Fig 1-250** : general view of the building B139 at the beginning of excavations during the 2015b season



raise a new floor, at least in the south part, a few time before the seize of the city and the abandonment of the Mosque. It is very likely that this stage of works occurred in the late 15<sup>th</sup> century, after the damages made by the earthquake and possibly to cover and repair the damaged structures which could have existed in the area. (Fig 1-251)

The west room B12-C was built at that time, either as a simple repairing or as a general refitting of the south side of the high courtyard. Is also appeared that most part of the actual south enclosure wall B12-452 is built over the same kind of backfill and must so be part of the same stage of refitting. Nearly entirely excavated during the previous season, the room B12-C is 5.10m long north-south by about 2.40m wide in average. The south and west sides are made by the south and west enclosure walls of the Complex, which were here registered as respectively **B139-05** and **B12-452**, both being quoined and around 1m thick for a preserved elevation between 1m to 1.60m high above the surface of the courtyard .

At west (east ?), the wall **B139-07** is leaning against the wall B12-452 and built over the last layers of backfill. It is made with medium limestone and corals blocks bonded with earthen mortar and remains of a strong gray coating have been observed in its lower part. It is 5.90m long by 0.80m wide and a little more than 1m high, and though the wall is a little damaged and collapsed, the actual flat top of the wall could be original and intentional ,meaning that the upper part of the wall was possibly made of adobe. The earthen facies of the layers of collapse is in support of this hypothesis. Fig 1-252

The north wall **B139-06** is more badly preserved and strangely appeared to be built between two different sections of the west enclosure wall B12-186 and B139-05, suggesting important refitting in this area. The wall is around 3.60m long by 0.75m wide, and preserved for nearly 1m high at west, near the enclosure wall, but only one course of stones at east, where the gate must have stood.

In the south-west corner of the room, an earthen floor (**Uf3952**) was uncovered for 1.70m long and 1.20m wide, well-preserved, but it has been destroyed by the collapse or weathering in the other parts of the room, where the underneath backfills are now visible.

This occupancy floor and the floor of the courtyard at east are covered by a thin layer of collapse (**Uf3933**) near the wall B139-07 and by layers of windy sand (**Uf3930**, **Uf3932**) sometimes mixed with layers of small pebbles (**Uf3931**), all coming from an eolian or rainy natural activity and testifying of a stage of abandonment of the area.

Two small walls were built over the sandy eolian levels, **B139-08** (Fig 1-253) around 2.70m east of the room B12-C and **B139-09** 3m east, whose foundation is not horizontal but follows the slope of the heap of sand accumulated against the south enclosure wall (Fig 1-254). They are both made with medium limestone and corals blocks bonded with earth, 3.10m and 2.80m long by 0.40m wide and between 0.40m to 0.30m high. The two walls created the first stage of the room B12-A, which was opened at north at this time and, according to the ceramic material found in the windy natural layers, the construction occurred in the course of the 16<sup>th</sup> century, a certain time after the abandonment of the Mosque.





**Fig 1-251** : the sounding opened at north of the building B139, with the room B12-C at right

**Fig 1-252** : general view of the room B12-C at the end of excavations

**Fig 1-253** : the wall B139-08

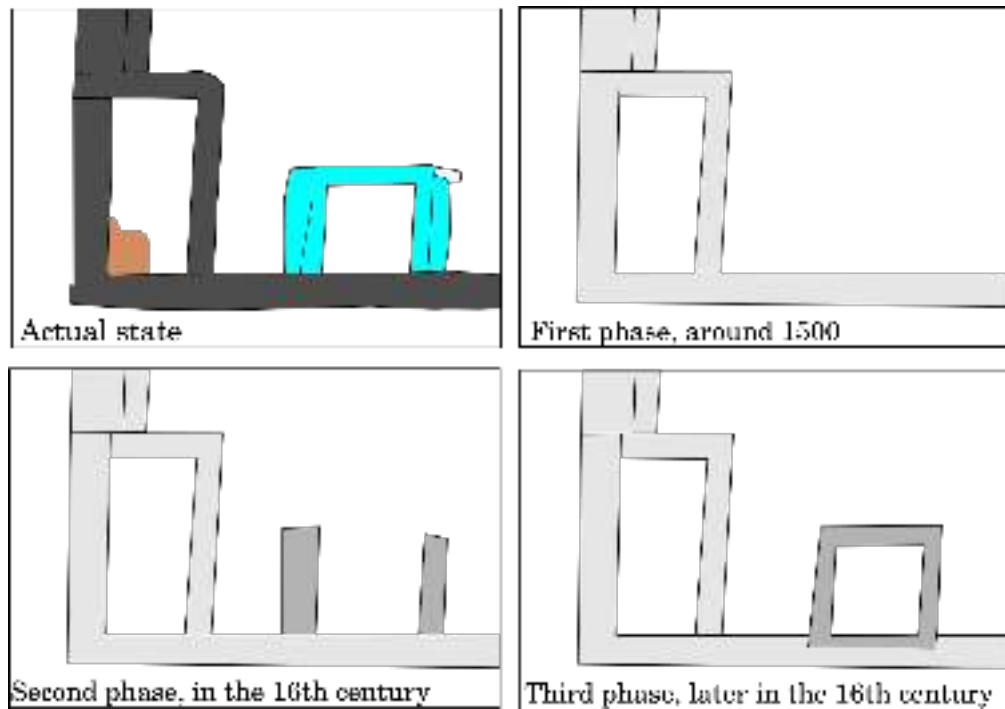
**Fig 1-254** : the wall B139-09 built over sand, visible behind the white arrow



After the setting of the first stage of the room B139-A and its occupancy, of which no trace was found, a second sequence of rain and wind deposited layers of sand (Uf3655), sometimes mixed with small pebbles (Uf3654) or with earthen mortar probably coming from the nearby walls (Uf3653). These natural layers slowly covered the elevation of the walls of the room B139-C and the first stage of the room B139-A but the top of the walls remained visible.

The second stage of the room B139-A occurred afterward by the construction of the walls B139-01, 03 and 04, already described in the previous report. They are built partly over the top of the walls of the first stage and partly over the natural accumulation of eolian sand and so followed a natural slope. According to the ceramic material, the second stage must have occurred also during the 16<sup>th</sup> century, most probably near its end.

**Fig 1-255** : Hypothesis of evolution of the building B139



After the last stage of occupancy of the room B139-A, a final stage of eolian deposit occurred, firstly mixed with elements of collapse from the walls (Uf3652) and after only made of sand (Uf3651) covering all the remnants of masonry.

## I-F2-2. the building B255

### Fig 1-256

Set alongside the outside face of the south enclosure wall, more or less in its middle, a massive heap of stones and earth was assumed to be a building (B255) which could be part of the Mosque Complex, according to its proximity and the possibility that the actual south wall B12-453 could be a late refitting. The aim was to excavate only the upper part of the walls in order to check their layout and eventually find gates and accesses to the Complex, without going down until the occupancy layers; only the levels of collapse and abandonment were therefore removed.

No access was found in this area or elsewhere on the south side of the high courtyard. At one time, a threshold was assumed at east near the Mosque building but it was a wrong interpretation for the reuse of plaques of mortar, set horizontally in the elevation of the wall B12-453. In fact, no other access than the south gate of the corridor B12-B was found on the south side of the Complex.

Different areas were uncovered in the building B255, three closed rooms, one corridor and a possible courtyard, which are apparently from a building separate from the Mosque but, as no occupancy layers were excavated, its functions is still unknown. It is also very badly preserved, many gaps being observed on the excavated facings.

The largest room, B255-B (Fig 1-257), is internally just a little more than 4m<sup>2</sup> and no access was found, though the elevations are here best preserved than in the other rooms. It is delimited at north by the wall **B255-10**, which is apparently leaning against the enclosure wall B12-453, at east by the wall **B255-07** (Fig 1-258), at south by the wall **B255-08** (Fig 1-259) and at west by the wall **B255-09** (Fig 1-260). All walls are around 2m long internally and 3.40m externally for an average width of 0.90m and they were uncovered for at least 0.80m high. They are made with unorganized and variously sized limestone and corals blocks bonded with a strong mortar and no traces of coating were observed.

The inside of the room B255-B was filled with a level of collapse (**Uf5603/5604**) around 1m thick. A sounding opened in its south-east corner revealed a brown indurated level made with silt mixed with small fragments of mortar and plaster which was probably a level of circulation for the room. One quarter of a central pit (**B255-11**) (Fig 1-261) around 1m wide was also excavated and its filling Uf5605 contained small fragments of decoration coming from the Mosque, including Kashan tile. It so seems that the building is at least contemporary of the last stage of use of the Mosque.

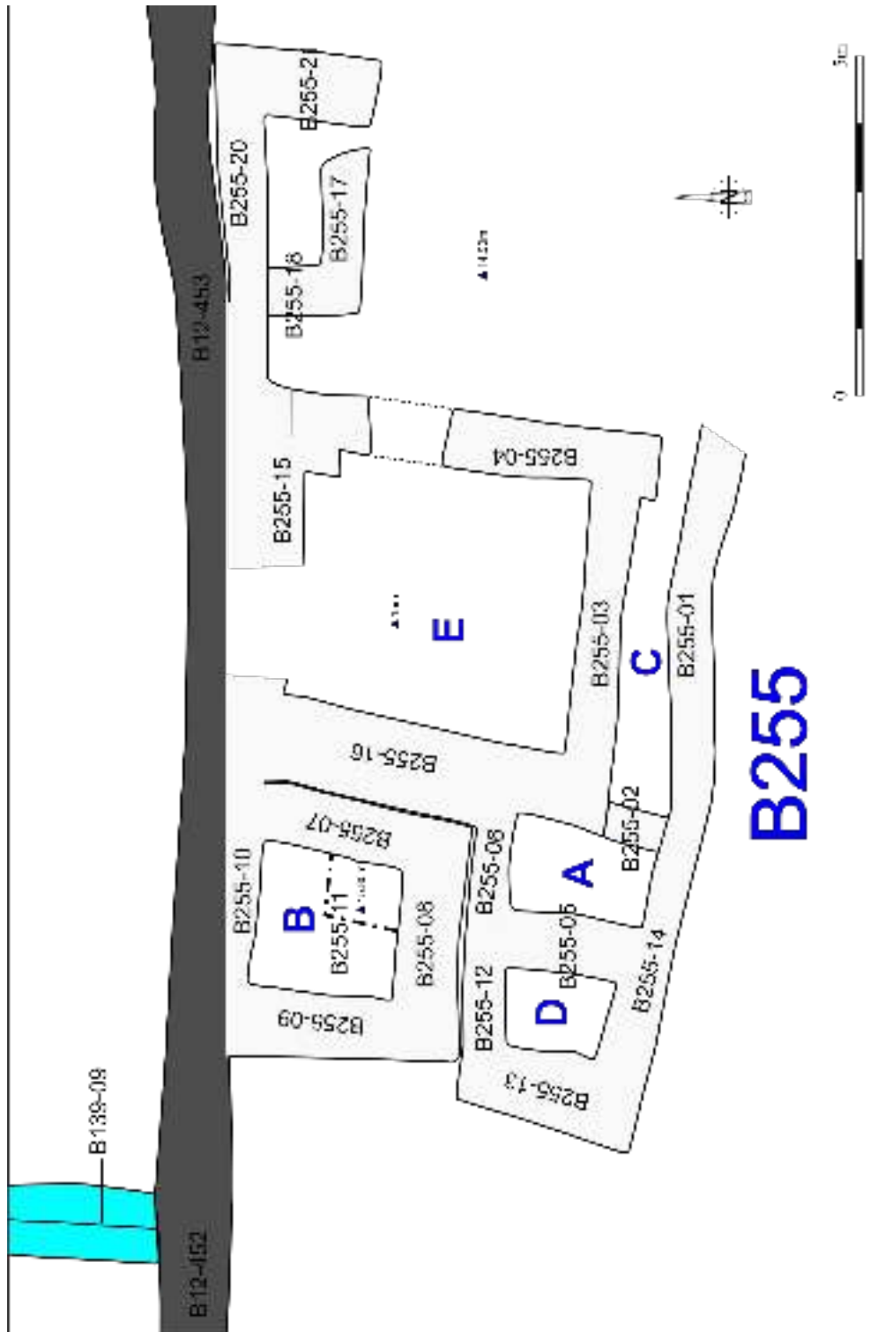
South of the room B255-B and built against it, two smaller rooms B139-A and B139-D were also partially unearthed. This part of the building is very badly preserved and also badly built, with misaligned walls of various widths.

The western room B255-D (Fig 1-262) is delimited at north by the wall **B255-12** (Fig 1-263), 0.60 m wide and internally uncovered for around 0.20 m only, at west by the wall **B255-13** (Fig 1-264), 2.65 m long by 1 m to 1.20 m wide and externally excavated for more than 0.40m, and at south by the wall **B255-14** (Fig 1-265), common with room B12-A, around 5m long and 0.80m wide for the room B12-D and 0.60m for the room B12-A and uncovered for 0.60 to 1 m high. The rooms B255-D and B255-A are separated by the wall **B255-05** (Fig 1-266), 1.60 m long by 0.90 m wide and only uncovered for less than 0.40 m high in the room B12-D. All walls are made with medium limestone and corals blocks bonded with a nearly disintegrated beige mortar and remains of a strong dark coating have been found on the external facings of the wall B255-13. The internal useful space of the room B12-D is only 1.80m<sup>2</sup> and, as the internal facings were badly preserved, excavations stopped very early in the upper part of the collapse (**Uf5609**) while they went deeper externally into the collapse (**Uf5602**) as the external facings were best preserved.

The eastern room B255-A (Fig 1-267) is delimited at south and west by the walls B255-14 and B255-05 already described, and at north by the wall **B255-06** (Fig 1-268), equal to the wall B255-12 and 0.50 m wide. At east, the limit is made northward by the wall **B255-16** (Fig 1-269), here 1.80 m long and 1m wide and high. A small access, 0.80m wide, might have existed to the south, before it was blocked by the construction of the wall **B255-02** (Fig 1-270), 0.80 m long by 0.50 m wide and around 0.60 m high. All walls are made with medium limestone and corals blocks bonded with a nearly disintegrated beige mortar. Important remains of a strong gray possibly waterproof coating were unearthed in the lower part of the inside of the room B255-A, which could indicate that the room was used as a cistern after the construction of the blocking B255-02. Around 2m long by 1.20 m wide, the use of the room B255-A remained unknown it its first stage. It was internally filled with a layer of collapse mixed with rubbish, including nearly complete ceramics and small fragments of the decoration of the Mosque (**Uf5600**).



Fig 1-256 : Site plan and altitudes of the building B255





**Fig 1-257** : general view of the room B255-B

**Fig 1-258** : the wall B255-07, inside elevation

**Fig 1-259** : the wall B255-08, inside elevation

1-260



1-261



1-262



1-263



**Fig 1-260** : the wall B255-09, outside elevation

**Fig 1-261** : sounding in room B255-B with one quarter of the pit B255-11

**Fig 1-262** : general view of the room B255-D

**Fig 1-263** : the wall B255-12, inside elevation





**Fig 1-264** : the wall B255-13, outside elevation

**Fig 1-265** : the wall B255-14, outside elevation

**Fig 1-266** : the wall B255-05, inside elevation in room B255-A



**Fig 1-267** : general view of the room B255-A

**Fig 1-268** : the wall B255-06, inside elevation

**Fig 1-269** : the wall B255-16, outside elevation in room B255-E, with the room B255-A at left

**Fig 1-270** : the badly preserved wall B255-02, inside elevation in room B255-A

The room B255-A was probably originally reachable by the winding narrow corridor B255-C (Fig 1-271), 0.60m to 0.90m wide, which is delimited at south by the wall **B255-01** (Fig 1-272), 6m long by 0.65m wide in average and externally uncovered for about 0.40m high, and at north by the wall **B255-03** (Fig 1-273), 4.50m long by 0.60m wide for an unearthed elevation of more than 1m at north. The inside of the corridor was only excavated down to the upper course of the walls and excavations were so stopped on artificial layers. The walls are made with small limestone and corals blocks bonded with a grayish mortar badly preserved and it is possible that their winding shape is accidental and due to the pressure of the collapse or possible backfills. The room B255-C was identified as a corridor because of its shape and location, but further excavations could reveal another identification, as a staircase for example.

North of the corridor B255-C, the large room B12-E (Fig 1-274), 4.15m long north to south by 3.80m wide east to west, could possibly be the main room of the building B255, but it is also wide enough to be a small courtyard. Without further excavations, the precise identification of this space remains hypothetical.

At south, the room is delimited by the wall B255-03, common with room B255-C, with an important gap in the internal north facing. At east, the room is delimited by the badly preserved wall **B255-16**, which is built against the walls of the room B255-C and quoined with the walls of the rooms B255-A and D. It is 4.20m long internally and around 1.20 m wide and mainly preserved by its core, most of the east facing having collapsed.

The north limit is made by the wall **B255-15** (Fig 1-275) which is incompletely preserved, most of its facing having collapsed at west. It is built against the south enclosure wall of the Mosque B12-453 but the delimitation is very difficult to observe. It has been observed for 1.40m long by around 0.80m wide and a maximal preserved elevation of less than 0.90m.

The south east limit of the room is made by the wall **B255-04** (Fig 1-276), 3.10m long by around 0.90m wide and uncovered for less than 1m high. At north, a gap in the masonry could be the remains of an opening or simply due to a baddest preservation.

Only layers of collapse have been removed, registered as **Uf5610** to **Uf5612** according to their location.

The building B255 was probably extending eastwards, where the uncovered wall B255-20 and B255-21 probably belonged to a fifth room. In the same area, the walls B255-17 and 18 have been observed on the ground and must be part of an internal fitting (Fig 1-277). As the building B255 appeared to be distinct from the Mosque Complex and was so no more a priority, the excavations did not continue here and the plan of this hypothetical room was not searched.

All the walls are made with medium sized limestone and corals blocks bounded with rough grayish mortar and no traces of coating were observed. The masonry is in general of a poor construction, with rough binder and winding walls and few right angles. It was so probably not an important building and, as some remains of decoration have been found in the rubbish layers of the fillings of the rooms B255-B and B255-A, it is very likely that the building was disused before the final abandonment of the Mosque. (Fig 1-278)

### I-F2-3 : the south street

South of the Mosque building, the excavations tried to reach the level of the south street which was outlying the south side of the Complex. But the remains were here very damaged because of the long-time weathering of the rainfall which transforms the street into a small *wadi*. For safety reasons, it was also not possible to go down without extending the excavations southwards until the building B150, which was not planned. After the removal of most of the collapse, excavations so stopped on an intermediary level, which is more likely the level of abandonment of the area, made by a mix of stones and pebbles moved by the water flow, rather than the street level itself.

In the western part of the area, west of the south gate to corridor B12-B, the south wall of the Mosque **B12-41** (Fig 1-279), already described with the prayer hall, is very badly preserved. No parts of the walls of the upper floor were preserved, and most of the external facing of the wall of the basement has also collapsed, probably because of the pressure of the backfills inside the basement. The facing is variously preserved, around 1m high at the south-west corner where it was not entirely unearthed, to more than 2m closed to the gate to the corridor B12-B, where the wall was uncovered until its foot. In the center however, only the lower courses of stones are still in place sometime only 0.30m above the final floor of abandonment.





**Fig 1-271** : general view of the assumed corridor B255-C, unexcavated

**Fig 1-272** : the wall B255-01, outside elevation

**Fig 1-273** : the wall B255-03, outside elevation in room B255-E

**Fig 1-274** : general view of the room B255-E



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1-277

**Fig 1-275** : the badly preserved wall B255-15, inside elevation

**Fig 1-276** : the wall B255-04, outside elevation

**Fig 1-277** : the walls B255-20 and B255-21 (in the background) and the walls B255-17 and B255-18 (in the foreground) which could belonged to another building





**Fig 1-278** : general view of the building B255 at the end of excavations

**Fig 1-279** : the south wall B12-41 of the Mosque, badly preserved, emerging from the collapse in the south street



The south wall of the basement B12-41 appeared to be outlined by a doubling wall or a protruding foundation, around 0.30 m wide and made with some massive pebbles which are fewer in the upper part of the elevation. This protruding foundation could have been made since the beginning or be a later addition, in order to strengthen the south wall or protect its foundation by diverting the water flow running down the street in case of rain.

It is also possible that a massive buttress, around 3.60 m long by 1 m wide, may have existed right at west of the gate to the corridor B12-B. Protruding masoned stones and imprints in the mortar and coating of the wall strongly suggest that hypothesis (Fig 1-280) but it would have been necessary to excavate down to get more information about the lowest fittings of the wall. As already mentioned it was not possible to do so in proper state of safety without widely extending the excavations to the south.

Two layers of collapse were removed (Uf3660 and Uf3671), containing various sized limestone and corals blocks with fragments of mortar and coating and a relatively important part of sand probably resulting from a natural weathering. Compared to other parts of the Mosque, there was also less architectural or decoration remains, such as carved stones or glazed tiles; it is very likely that they have slide down the slope until the beach.

In the middle of the south wall B12-41, in the alignment of the inside dividing wall between the spans 5 and 6, a large rectangular architectural remain (IsoArc808) (Fig 1-281) was unearthed, which was badly



preserved and too cracked to be moved. It is undoubtedly the remains of the rectangular engaged pillar which was built against the north facing of the wall at first floor, aligned with the remaining pillars of the prayer hall. Prints of the decoration were observed and glazed tiles found around, but most of the upper parts of the pillar has disappeared.

In comparison, the south-east part of the wall **B12-42/109** is better preserved (**Fig 1-282**), as it did not had to support horizontal pressure from the north, where the rooms of the basement were empty. However, due to the natural weathering, the preserved elevation is more important at west, near the gate to the corridor B12-B, where it is around 2m high, than at east where it is only preserved for 0.60 m high.

The layers of collapse (registered as **Uf3721**, **Uf3737** and **Uf3798**) were removed until the appearance of a level of indurated pebbles, which is a mix between the original street level and the afterward levels subsequent to the runoff of the rainwater. This long-time runoff has also greatly damaged the floors and structures of the street. However, an alignment of massive pebbles around 1.40 m south of the external wall (**B12-418**), which is built over a level of pebbles covering the bedrock and containing small pebbles partially covered by a coating, especially near the wall, is probably the remain of some kind of a streetwalk (**Fig 1-283**). It was observed for 5.10 m long but it could have extended westerly up the street until the gate to the corridor B12-B and the circulation floor was probably following the same natural slope.

After one of the heavy rains which occurred during the Fall 2015, the difference of wetness in a section at west of the assumed streetwalk revealed a possible small ditch (**Fig 1-284**), oriented west to east, parallel to the south external wall around 1.50 m to the south. This assumed gutter was dug through a layer of pebbles, and was subsequently also filled with pebbles coming from the weathering. It is therefore impossible to distinguish the gutter when the soil is dry and it was so only discovered after the rain. The gutter, which is around 0.60 m wide, was probably running alongside the streetwalk B12-418 and seems to have extended westwards until the gate of the corridor B12-B, where it was discernible in the small sounding, and maybe even further west up the street.

It is not possible to state whether the gutter was opened and visible or covered by large stones or wooden planks. In fact, it is even possible that this gutter did not result of a human activity but may be of natural origin, resulting of the weathering of the rainwater course.

At south, several alignments of stones observed on the actual surface suggest that the bordering buildings are very close of the mosque and that the street was originally very narrow, no more than 3 m wide in average.



**Fig 1-280** : imprints in the mortar of the wall B12-41, suggesting the presence of a disappeared buttress



**Fig 1-281** : the architectural element IsoArc888, remains of an engaged pillar in the prayer hall



**Fig 1-282 :** the south wall  
B12-42/109 of the Mosque

**Fig 1-283 :** the possible  
streetwalk B12-418

**Fig 1-284 :** the difference of  
wetness (marked by yellow  
dotted line) suggesting the  
presence of a small ditch in  
the south street

### I-F3. The main entrance and building B95

#### Fig 1-285

During the 2013b-2014a season, most of the building B95 and the nearby main entrance B95/B13 were excavated, all the collapse being removed and the occupancy layers in the western part of the room excavated. The first month of the Fall 2015 session was devoted to the completion of work in the area and its extension eastwards along the south side of the building B13, to make more comprehensive the northern border of the Mosque Complex.

#### I-F3-1 : The building B95

At the end of the 2013-2014 season, nearly the western two-third of the room B95 were excavated, down to the level of coated floors (B95-28 and B95-34), where appeared the levelling course of earlier walls (B95-32, B95-34 and B95-37) which were then believed to belonged to the internal fitting of the building. The last eastern third was uncovered until earthen floors (Uf3537, Uf3552, Uf3553 and Uf3557) which were only partially observed and excavated at that time. (Fig 1-286)

Further clearing and investigation revealed that the yet visible remains and the leveled walls and coated floors were belonging to two different buildings. At west, a layer of dark brown silt mixed with ashes (Uf3571) was covering most of the coated floor B95-28 and was used as a foundation layer for the western wall of B95 (B95-04). A north-south sounding east of the room, already opened by the QP, has also revealed the presence of a foundation trench (Uf3582), which was made to build the south wall B95-01 and cut the coated floors B95-28 and B95-34 and the leveled walls B95-32 and B95-38.

It is very likely that the actual walls B95-04, B95-01 and the east wall B95-02, which are all quoined, were built after the destruction, dismantling and leveling of the former building whose shape is preserved by the leveled walls and coated floors. As the range of small pillars on the north side of the room (B95-07 to B95-11 and B95-17 and 18) (Fig 1-287) are also partially built over the coated floors and the leveled walls, they were also part of the second building. But as the walls B95-02 and B95-04 and the range of pillars are all built against the north wall B95-03, it is possible that the northern wall of the building B95 was part of the first building and reused by the second building.

It is not yet possible to state if the first building was accidentally destroyed, for example by fire or after an earthquake, or voluntarily dismantled after a complete refection of the area, in order to change the size and use of the building. It is however very likely that the rebuilding in the area were at a large scale as the west enclosure wall is leaning on the wall B95-04 and was so refitted at that time. Important change may also have simultaneously occurred at north in the main entrance (see below).

According to the ceramics found in the filling of the foundation trench, the backfills and occupancy layers of the second building, it is very likely that the reconstruction of the area occurred between the end of the 14<sup>th</sup> century and the beginning of the 15<sup>th</sup> century, and so around one century after the foundation of the Great Mosque. It could be possible that this important phase of repairs is contemporary to the important phase of repairs observed in the prayer hall but the dating is not enough precise to be affirmative. In this hypothesis however, the damages resulting of a natural disaster, such as a typhoon or an earthquake, is more likely as it has affected different distant parts of the Complex.

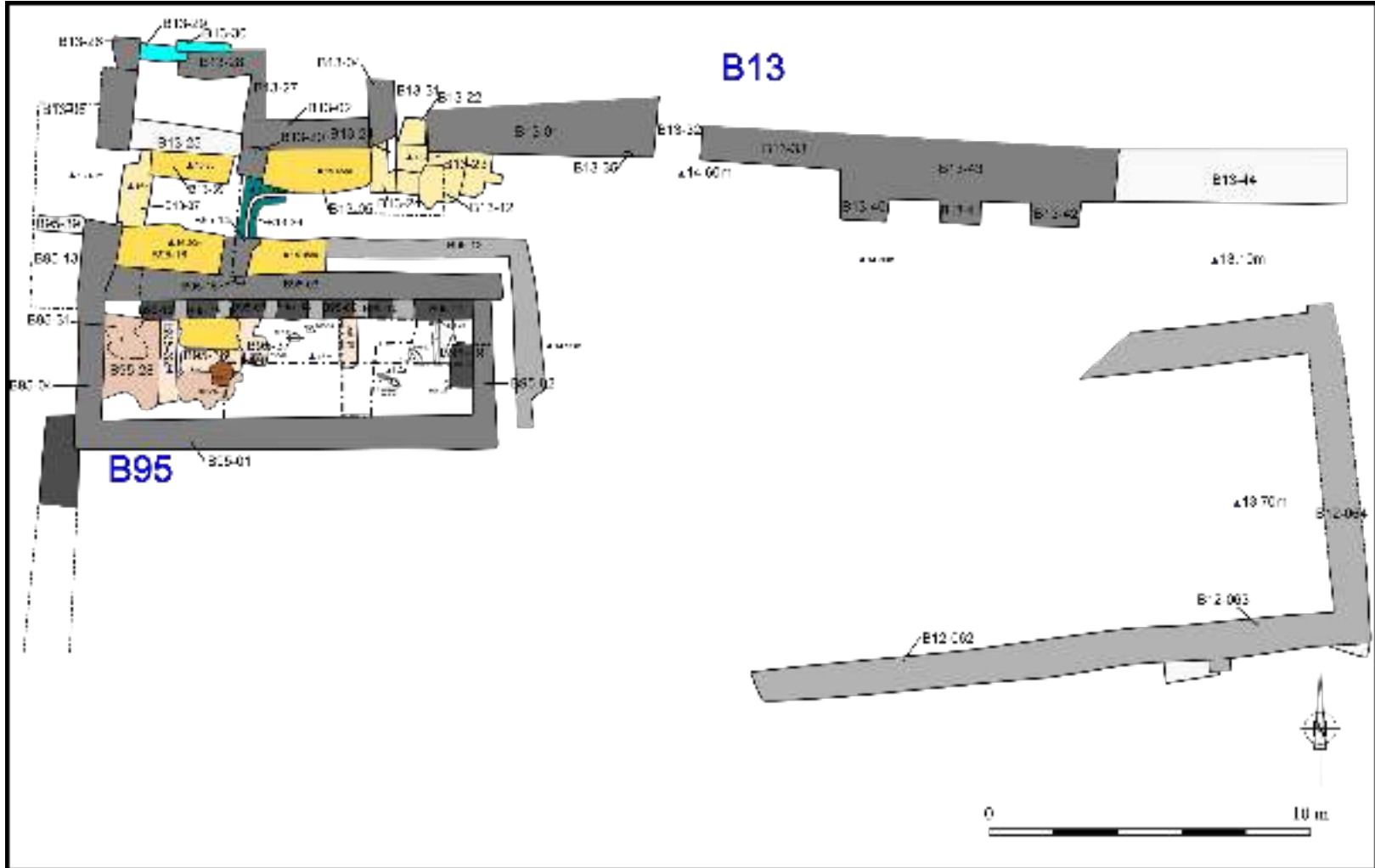
East of the room, the unexcavated part of the earthen floor was dug down to the coated floor of the earlier building, and registered as Uf3576. It is a compacted dark brown layer only made of silt and is the first stage of floor of the second building B95. The later layers of floors have already been excavated and described in the previous report.

Only two occupancy structures were found over the floor Uf3576. At east, dug through the floor and against the pillar B95-19, the small posthole B95-29 (Fig 1-288), 0.20m wide and 0.35m deep, could have been part of shelves, or for an hypothetical door if there was any gate in the south east-corner of the room.

More than 1m to the west, the pit B95-30 (Fig 1-289), at least 0.60m long, 0.45m wide and 0.20m deep, was also dug through the earthen floor Uf3576 and partially cut by the sounding opened by the QP. This oval pit is surrounded by medium stones and filled by two different layers. The lowest one (Uf3578) is an organic orange brownish layer very loose and powdery and could be the natural deterioration of rejected natural material. This organic layer is covered by a level of small pebbles mixed with whitish silt (Uf3579) leveling the pit. It is so possible that the pit B95-30 was used as a rubbish deposit finally covered by a sanitary level made of small pebbles.



Fig 1-285 : Site plan and altitudes of the structures of the building B95,





**Fig 1-286 :** general view of the building B95 at the beginning of the 2015b season

**Fig 1-287 :** general view of the row of pillars in the building B95

**Fig 1-288 :** the posthole B95-29, fully excavated

As the northern, western and southern walls are actually preserved for more than 1m and show no gate in the last stage of use of the building, the access must have been located east, where the remains are destroyed nearly to the ground. It is possible to assume the presence of two doors, on each side of the pillar B95-19, both being around 0.80m wide, but there could also have been only one (Fig 1-290). It is also very likely that the gates were reachable from outside by steps, now vanished.

Because of the presence of the range of pillars probably used to host rows of shelves, the building B95 was supposed since the beginning to be a *madrassa* but no further proof for identification was found after excavations. Many small precious artifacts, such as coins or beads, were found in the occupancy layers, which might not look convenient for a studios use. If it might be too much to assume a commercial use according to the material found, a more civilian use may be considered and the building B95 could have been the house of someone connected with the Mosque, such as a warden, a door-keeper or a gardener. On the other side, the possibility of a room for ablutions, which was consider at a time, must be rejected as no water fittings were found. (Fig 1-291)



**Fig 1-289** : the pit B95-30, fully excavated

**Fig 1-290** : the construction B95-19, which could be the jamb of the gate

**Fig 1-291** : general view of the building B95 at the end of excavations





## I-F3-2 : The passageway B95/B13

At the end of the 2013-2014 season, most of the collapse layers in the main entrance to the Mosque Complex were removed and the levels of circulation were partially unearthed. The remains however appeared very damaged, either the benches on both sides of the passageway or the layers of floors. A sounding, opened to the west in front of the main gate of the Complex, had shown the presence of important layers made of bedding of pebbles and sand brought down the slope by the rainwater. A sudden and strong rainstorm which occurred in February 2016 had turned the passageway into a violent stream, after less than 15 minutes of strong rainfall. It is very likely that decades of rainfall and the subsequent leaching have greatly damaged the structures and washed out the floors.

The sounding at west was excavated until the layer Uf3546, already registered and described in the previous report, which is a very strong backfill made with small gravels mixed with silt; it is leveling the underneath bedrock and can be considered as the ancient street level, more than 1m under the actual ground. An east-west wall **B95-39** (Fig 1-292) was partially observed in the sounding, right at south before the entrance. This wall is containing at south a layer of small pebbles mixed with indurated beige silt (**Uf3587**) which could be the remain of an internal filling, allowing the identification of the structure as a low bench bounding the main entrance. The above layer (**Uf3588**) is a mix of small stones, pebbles and beige silt, and could be the damaged upper part of this bench as it is ending in the alignment of the remains of the wall B95-39.

Part of the circulation floor Uf3546 and the north side of the wall B95-39 are covered by the layer **Uf3572** which is made of small pebbles mixed with loose beige silt which was undoubtedly brought here by the water stream created by rainfalls. North of the sounding, the **Uf3583**, also covering the floor Uf3546 and made of various sized limestone and corals blocks and disintegrated beige mortar, is the layer of collapse of the nearby building B13. Covering all the previous levels, the layer **Uf3584** is a thick layer of dark beige sandy silt with internal bedding is an eolian and rainy deposit, either testifying of a strong rainfall or of a long time abandonment.

The above levels (**Uf3585**, **Uf3586** and **Uf3589**) are also mainly made with beige sandy silt but contain a various proportion of elements of collapse which made the difference in registration. The collapse obviously partially came from the nearby buildings but also from the other decayed buildings of the city at west, the stones being brought here by the runoff of the water course.

In the western part of the passageway, two thresholds were uncovered and cleaned, variously preserved but both built over the street level Uf3546.

The first, western, one (**B13-37**) (Fig 1-293) is slightly setback from the alignment of the walls B95-13 and B13-06 which are marking the entrance into the Complex. It is built over the bedrock and its leveling Uf3546, and it is badly preserved. Several corals bonded with poor gray mortar did however survived and the remains are now around 2.60 m long by 0.80 m to 1.10 m wide and around 0.60 m high. The north and south benches B13-39 and B95-16 are built over the threshold which could so belong to the first stage of the passageway but it is also quite probable that the threshold was itself frequently rebuilt or repaired, as it must have suffered frequent damage due to the runoff of stones, pebbles and sand. It also seems, according the height and shape of the remains, that two or three steps may have existed at east.

West of the threshold B13-37 and leaning against the upper step, the layer **Uf3545** is made of small pebbles mixed with sandy silt and must be considered as the street level. Though the ceramic material was not enough characteristic, this street level may have been put in place as early as the foundation of the Mosque and regularly kept in a decent state of use. It is however the last level of occupancy, as it is covered, with the threshold B13-37, by the layer Uf3543, already described in previous report, which contained windy sand and few elements of collapse and must so be considered as a level of abandonment.

The eastern threshold (**B13-36**) (Fig 1-294) is more likely a canalization than a threshold properly said. It is a narrow L-shaped gutter, 0.10 m wide and 0.15 m deep in average, molded into a step made with strong grey waterproof mortar and corals blocks bonded with brown mortar. The plaque of mortar is now around 2.40 m long by 0.60 m wide and must have originally extended eastward, as the eastern end of the gutter is not preserved. The buttress B95-14 at south and the buttress B13-20 and the bench B13-05 are built over the canalization B13-36, which so belonged to an earlier stage of use. As a matter of fact, the course of the gutter is aligned with the vertical gutter B95-15 which is set in the wall B95-03 and was afterward disused by the construction of the buttress B95-14.



**Fig 1-292** : the wall B95-39, with the entrance at left

**Fig 1-293** : the threshold B13-37

**Fig 1-294** : the threshold with canalization B13-36, partly excavated

It is very likely that the two gutters B95-15 and B13-36 originally worked together and were used to recover the rainwater from the roofs and the rainwater running off the street (Fig 1-295). They could have been part of a fitting contemporary to the first building B95 and worked with the easterly gutters B13-21 and B13-35 observed along the south facing of the buildings B13. The buttresses B95-14 and B13-20 and their nearby benches B13-05, B95-16 and B13-25 were only built in a second stage, quite likely when the actual second building B95 was made. It is very likely that the passageway was originally wider, around 3.80 m wide, before being reduced to the actual 1.60m wide.

Covering the poor remains of the eastern steps of the west threshold B13-37 and leaning against the west face of the east threshold or canalization B13-36, the layer **Uf3573** is made of small pebbles and few small corals mixed with a brown silt and was the last level of floor in the passageway, apparently spread above the leveled bedrock Uf3546. The central gutter of the canalization B13-36 was filled by the **Uf3581**, also made of small pebbles mixed with beige silt, which was undoubtedly put in place when the passageway was reduced by the building of the benches and buttresses, when the gutter was disused and leveled. It is however strongly possible that the plaque of mortar was still visible on the ground and part of the circulation level, though the gutter was no longer in use. (Fig 1-296)

According to the ceramic material found in the passageway, it appeared that the canalization B13-36 was disused as early as the end of the 13<sup>th</sup> century or the first half of the 14<sup>th</sup> century. There is so a possibility that the canalization, and maybe the wall B95-03 if it is contemporary, was in existence before the foundation of the Mosque and that the water fitting was disused while the first building was reused as part of the Complex. It is however also possible that the canalization remained in use several years after the construction of the Mosque before being filled and abandoned, maybe during the construction of the second building B95 which might have occurred in the end of the 14<sup>th</sup> century. The nearby street level Uf3573, which is leaning against the canalization B13-36 and partially covered the threshold B13-37 date back to the first half of the 14<sup>th</sup> century and was probably set up just after the completion of the Mosque and must have remained in use until its disuse as it was covered by levels of abandonment, already described in previous report.

### I-F3-3 : The north border of the courtyard

#### Fig 1-297

East of the passageway B95/B13, important heaps of collapse were strongly suggesting the presence of high walls which were the south walls of the building B13, lining the north end of the Mosque Complex B12. It was decided to unearth the south facings of these walls more or less to the actual ground, in order to create a clear and well-visible northern limit of the Mosque Complex and to understand its relation with building B13.

One gate to B13 (B13-31) (Fig 1-298) was already known since the QP soundings in the passageway, and a second one was partially observed during the previous season, about 7 m east of the first one. The gate **B13-32** (Fig 1-299), a little less than 1.50m wide, is lined by the wall B13-01 on its western side and by the wall B13-33 to the east. The west wall, partially described in previous reports, is well preserved, being more than 2m high inside the gate. It was cleared for nearly 2 m long, until the north end of excavation, but it continues northerly and is probably the external wall of a room or a building.

The east jamb of the gate B13-32 is made by the west end of the wall **B13-33**, which was unearthed on its entire length on its south facing. It is 4.35m long and at least 1m wide and is preserved on a maximal height of 1.90m over the present surface but it continues under the unexcavated lower levels of collapse. In the absence of further excavations in B13, it is not possible to state if the gate B13-32 is leading to a corridor, a room or a courtyard, though the general shape of the northern collapse is a little in favor of the last hypothesis.

The wall B13-33 is part of a massive construction in the south-east corner of B13, either part of B13 itself or an independent structure; only the external façade of the south wall **B13-43**, showing three large buttresses, was cleared, until the present level of the surrounding surface. The wall is at least 8.50m long, for a yet unknown width and a minimal preserved elevation around 1.90m at west but less than 1m at east. The wall is strengthened outside by three buttresses (**B13-40**, **B13-41** and **B13-42** from west to east). The two buttresses at the corners are 1.50m long by 0.70m wide while the central buttress is a little bit smaller, only 1.30m long for the same width. The elevation is also differently preserved, from 1.90 for the west buttress to 1.10m at east. (Fig 1-300)





**Fig 1-295** : the canalization B13-36 and the vertical gutter B95-15



**Fig 1-296** : general view of the passageway B95/B13, nearly at the end of excavations

**Fig 1-297** : general view of the north border, from the room b12-E

**Fig 1-298** : general view of the gate B13-31





All these walls are very-well made, with medium sized pebbles, limestone and corals blocks bonded with a strong beige mortar. If some parts of the facing has collapsed, the internal core is well visible and made by regular and well-made courses of pebbles and corals. No coating was found on the walls and no fragment was found in the collapse but as it was an outside wall, it is possible that the coating had entirely disappeared by the wind activity. An important wooden setting was also observed to strengthen the connection between the south wall B13-43 and its buttresses (Fig 1-301). Around 1m above the actual surface of the mosque courtyard, horizontal beam-holes were found on the east, south and west sides of the buttresses, making some kind of strapping around the masonry. The beams were also entering for around 0.50 m into the internal core of the south wall B13-43, making a really strong construction. It is also possible that the south wall was also strengthened by horizontal beams between the buttresses but the facings are not enough preserved to be strictly affirmative.

**Fig 1-299** : the gate B13-32, partially excavated

**Fig 1-300** : general view of the assumed tower in B13 with its three massive buttresses

According to its size, the presence of the strengthening buttresses, the precise way of construction and the height of collapse (the heaps being the highest of the Complexes B12 and B13), it is very likely that a huge tower stood here, probably of square plan with three buttresses on each sides. The heap of stone actually covering the strongly assumed tower is around 4 m high above the actual ground of the courtyard and, as some part of its collapse felt inside the tower and some other parts may have run down the slope, it is possible that the tower was originally 15 m high or maybe more. The top of the tower was overlooking the roofs of the Mosque and the building B13 and possibly the suq B140 at north, and it was probably high enough to have a vision of the higher parts of the city to the west, north and south.

If it is too early to speak of a lighthouse, the height and location of the tower, near the junction of the undockable cliff to the north and the landing beach to the south, made it some kind of a landmark well visible in the skyline of Qalhât, and was maybe used by the sailors as a beacon to avoid the rocky banks which stand underneath the low tide in the northern part of the beach.

There is also a possibility that this huge tower, which was quite probably higher than the nearby minaret of the Great Mosque, is the one mentioned by Bras de Albuquerque which the Portuguese invaders used as an observation spot overlooking the city. If the tower was around 30 m high, which is possible, it would have been high enough to look over the houses until the mountains slopes behind the city walls.

East of the tower, leaning against the east facing of the wall B13-43, a low wall **B13-44** was unearthed 7 m long by 1.50 m wide and less than 1 m high. Made of medium pebbles, corals and limestone blocks bonded with a beige mortar, it is possibly, according to its height, an enclosure wall making the south delimitation of a north-east courtyard associated with B13. Between 3 m to 4 m south of this wall, another low wall parallel to B13-44 was also unearthed. This wall is parallel to the retaining wall B12-63 at south and perpendicular to the retaining wall B12-64, with which it is possibly connected, at east. Though not yet excavated because of the need to preserve a passable way to the low courtyard until the end of the

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conservation works at B12, it is very likely that these three walls are delimiting a second inner high courtyard, similar to the inner high courtyard B12-D right at south-west, overlooking the low courtyard. (Fig 1-302)

It is also very likely that a stair once existed between the two low walls to connect the high and low courtyards but the watercourse of the rains has greatly damaged the possible remains. A simple slope, more or less cut in the bedrock, might also be convenient but the answer will remain unsolved as excavations are not possible here until the end of the conservation works at the Mosque Complex, and the excavations of the B13 Complex.



**Fig 1-301** : *the prints of the wood settings used to strengthen the walls*



**Fig 1-302** : *the passageway between the tower in B13 and the high courtyard, down to the beach*



#### I-F4. The outside mausoleum B197

##### Fig 1-303

The small building B197 is located around 13m west of the north-west corner of the Mosque Complex, in front of the main entrance B95/B13, at the outlet of the main street which comes from the west city gate B31 to the Mosque Complex. In this area, the main street meets a low but rather steep ridge in the bedrock, and divides in two branches, where some masoned steps have been observed, north and south of the building which is erected at the foot of the ridge .

##### Fig -1-304

The building is merely rectangular in plan, around 7m long north-south by 6.50m wide east-west, covering an area around 45m<sup>2</sup>, and is made of a room on top of a massive basement. The basement is built directly on the slope of the bedrock except at south where a natural pit was filled and leveled and most of its east part has collapsed. The masonry of the first floor, above the occupancy layer around 1m above the natural ground, has nearly entirely collapsed, only few courses of stones being preserved on the west side.

The building B197 was apparently divided in two elements, the main one at south, about 5.80m long by 4.80m wide with a rectangular external projection at west, the second one at north, about 6.60m long and from 2m to 2.40m wide. Though badly preserved, it seems that the platform above the basement was reachable by a stair built against its north side. The external projection in the middle of the west facade, as a mihrab, strongly suggests a religious use.

#### The main building on platform

The south side of the building is made by the wall **B197-01 (Fig 1-305)**, 6.10m long by 0.50m for a maximal preserved elevation around 1.50m. The external facing is made of large and medium pebbles and limestone blocks in the lower courses and of medium to small ones in the upper courses, all bonded by whitish beige mortar. In the low part of the wall, a strong grayish beige coating is still present but it has disappeared in the higher part. The wall is nearly entirely destroyed at the south-east corner while it is well preserved at west where it is quoined with the west wall.

The west side is made by the walls B197-02, B197-03 and B197-04, all quoined and built together but differently registered because of their different identifications (**Fig 1-306**).

The wall **B197-02**, quoined with B197-01, is 1.75m long by 0.60m wide for a maximal preserved elevation of 1.30m high. The west facing is made of large limestone blocks for the foundations and small and medium corals and limestone blocks in the upper part, bonded with a highly disintegrated beige mortar. A strong gray brown coating is preserved on the lowest part of the wall. Northerly, the wall **B197-03** is 1.70m long by 0.65m wide for a preserved elevation of 1.30m high. The west facing is also made of large pebbles and limestone blocks on foundations and smaller corals and limestone blocks on the upper part, bounded with beige mortar. The brown coating is also present but less-preserved.

Between the walls B197-02 and B197-03, the structure **B197-04 (Fig 1-307)** is a rectangular construction protruding for around 0.50m from the alignment of the westerly limit of the basement. It is 1.30m long and preserved for a little more than 1m high, and is made with medium corals and limestone blocks bonded with beige mortar. The same coating is preserved in the lowest part, hiding the connections between the walls, while it has disappeared in the upper part, showing that the wall B197-04 is leaning against the walls B197-02 and B197-03. It is so probable that these two walls make in fact a single wall, against which was later built the projection B197-04, probably shortly later.

Though not preserved at first floor, the location of this structure, in the middle of the west side of the main building, strongly suggests that the projection was built to host a niche for a *mihrab* at first floor.

The north side of the main building is made by the wall **B197-05 (Fig 1-308)**, around 5.70m long by 0.50m wide. As the stair was built against it, it has only been observed for 0.60m high, until the reaching of the backfill levels of the stair which were left in place. According to what have been observed, the north facing is made of small to medium corals and limestone blocks bonded with beige mortar, and small remains of the brown coating were observed, especially at east.

The east side is made by the wall **B197-06 (Fig 1-309)**, 4.90m long for a maximal preserved elevation of 0.90m and an unknown width as its west facing was not uncovered. It is badly preserved, especially at

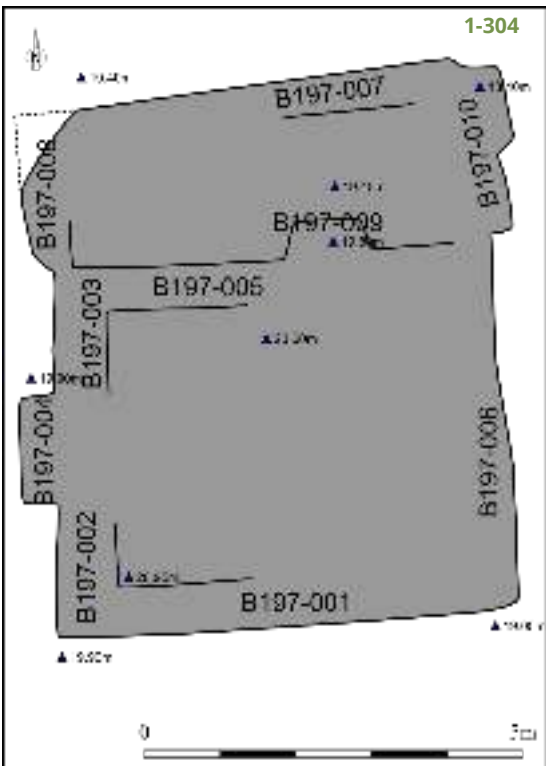
1-303



1-305



1-306



**Fig 1-303 :** the mausoleum B197, with the Great Mosque in the background

**Fig 1-304 :** site plan and altitudes of the building B197

**Fig 1-305 :** the wall B197-01

**Fig 1-306 :** general view of the west side of the building B197



1-307



1-308



1-309

**Fig 1-307 :** the wall B197-04 (under the scale) with the walls B197-02 at right and B197-03 at left

**Fig 1-308 :** the wall B197-05, in the background under the scale

**Fig 1-309 :** the wall B197-06



south where it seems to have slid, and it is made with medium to small corals and limestone blocks and larger ones on the lower part but not on foundation. The facing is yet badly organized, partly because of the sliding, and no important remains of coating were observed. Though a little different in the way of construction, the wall is however very likely to be contemporary of the other ones.

### The stair at north

The north side of the stairs is made by the wall **B197-07 (Fig 1-310)**, nearly parallel to the wall B197-05, 5m long by 0.50m wide for a maximal preserved elevation of 0.70m high. It is made with large to medium corals and limestone blocks, bonded with earthen mortar, and no trace of coating was observed. Its west end, at the junction with the wall B197-08, is unfortunately destroyed.

The west wall **B197-08 (Fig 1-311)**, poorly preserved, is built against a very massive natural pebble which has detached from the puddingstone cliff edge and has rolled down the slope. It is in fact quite impossible to state if the stair was built against the large stone or if it has later detached from the cliff and has rolled against the wall. It is 1.46m long and around 0.50m wide in average with a maximal preserved elevation of 0.70m, made of large to medium unorganized corals and limestone blocks bounded with earthen mortar and without coating. Though the presence of the large stone did not help the observation, it seems that the wall B197-08 is leaning against the corner of the walls B197-03 and B197-05, and could so be a later addition.

In the east part, built against the wall **B197-05 (Fig 1-312)**, the construction B197-09 is 1m long by 0.55m wide for a preserved elevation of 0.35m high, and is entirely covered by a strong grayish beige coating. It has been interpreted as the final step of the stair, reaching the circulation level of the southerly main building. Other much damaged steps are guessable at east and it is very likely that the west part was occupied by a small terrace or a high bench.

At east, the construction **B197-10 (Fig 1-313)** is very badly preserved but several lines of stones might be the remains of damaged steps. The lowest one, leaning against the wall B197-06, is made with plaques of bedrock, protruding for around 0.50m from the alignment of the wall B197-06. A second step can be seen above by the alignment of few medium limestone blocks and a third one can more be guessed than observed and the other ones have entirely disappeared.

Though the north stair seems to be built against the main building, it may have been built a certain time afterwards but probably only few days later as the main building needed an access to the first floor.

At the beginning of excavation, the circulation floor of the room upstairs, made by small pebbles spread above the backfill of the basement, was visible, and only very thin levels of collapse were present at west, covering the very low remains of the elevation of the first floor.

The internal facing of the walls B197-03 and B197-02 have only be observed for 0.20m and 0.30m high, made by irregular courses of small corals and limestone blocks with no preserved coating. At the south-west internal corner, a small trace of coating was observed against the walls B197-02 and B197-01, with a small projection possibly marking the delimitation between the backfill and the pebbles floor (**Fig 1-314**).

If the religious use of the building is obvious because the presence of the external projection of a small *mihrab*, its small internal surface (no more than 16m<sup>2</sup>) is not in favor of an identification as a small mosque on platform, especially so close to the Great Mosque. A small mausoleum, or a grave built on platform, is probably a better identification. However, as no backfill layers were excavated, it is not possible to give a dating for this structure. The location of this funerary structure in the really center of the city is also quite unusual, and certainly testifies to the social importance of the deceased. (**Fig 1-315**)



1-310



1-311



1-312

**Fig 1-310 :** the wall B197-07, in the foreground

**Fig 1-311 :** the wall B197-08, with the massive natural pebble at right

**Fig 1-312 :** the assumed step B197-05



**Fig 1-313** : the steps B197-10

**Fig 1-314** : the internal corner of the walls B197-02 and B197-03 with a small remains of coating which could mark the original level of the floor

**Fig 1-315** : general view of the mausoleum B197 with the main street at right



## PART II : EXCAVATIONS AT THE CERAMIC WORKSHOP B41

### II. A : Previous work and brief presentation of the QDP 2016a campaign:

#### II-A.1 : The potter's workshop discovery in the course of the Qalhât Project:

During the first season of the Qalhât project in 2008, slags and ceramics wastes were discovered around the centre of the site. Soundings were opened in the eastern part of this area in 2008 (B41 A-F) and then extended in 2011 (B41 G-J). These soundings confirmed the presence of a potter's workshop with three kilns. An extensive excavation of the area was planned for this season to understand different issues.

#### II-A.2 : Objectives and methodology:

There are two main questions when a potter's workshop is studied. The first is to identify and to characterize the ceramic production. So the spatialization of wastes, the production technics involved in medieval Qalhât, and the evolution of the local ceramics are examined. The second question is to understand the spatial organisation and the evolution of the building and the localisation of the workshop in its neighbourhood.

A specific excavation protocol was implemented during the excavation to understand the spatialization of wastes and the evolution of the local ceramics. It is based on the implementation of an excavation grid with a mesh size of 2 x 2 m on an area measuring 336 m<sup>2</sup>, (Fig. A-1). Each square was excavated by artificial passes of 0.30 m high and an altitude measure was taken for every new passe that was dug. This method of excavation is associated with a Geographic Information System (GIS), (Fig A-2, Fig A-3, Fig A-4, Fig A-5, Fig A-6, Fig A-7, and Fig A-8). A complete photographic record by photogrammetry was introduced every 15 days in order to have a site monitoring as a whole (Fig A-9, Fig A-10, Fig A-11, Fig A-12, Fig A-13). And for each passe, photography was taken (Fig A-14, Fig A-15, Fig A-16, Fig A-17, Fig A-18, and Fig A-19).

06/02/2016 <https://skfb.ly/KY8X>

19/02/2016 <https://skfb.ly/L7wK>

03/03/2016 <https://skfb.ly/LGsl>

17/03/2016 <https://skfb.ly/M67o>

24/03/2016 <https://skfb.ly/N9AC>

A new protocol of the ceramic study was applied. The ceramics from each square were counted directly in the site (Fig A-20). The local production was sorted into four categories (wastes, over-firing, red body, and yellow body). Then local forms and exogenous ceramics were studied by Mrs H el ene Renel.

Five archaeologists and one specialist were working in this sector between the 24<sup>th</sup> of January 2016 and the 24<sup>th</sup> of March 2016:

-Juliette Andr e from 24/01/2016 to 27/03/16

-Sanae Essafi from 21/02/2016 to 26/03/2016

-J erome Janky from 08/02/2016 to 18/02/20

-H el ene Renel from 08/02/2016 to 11/02/2016

-Romain Seguier from 24/01/2016 to 27/03/2016

During the first two weeks, the former soundings were partially cleared by Juliette Andr e and Romain S eguier before the arrival of Fabien Lesguer, in charge of this sector. Between the 8<sup>th</sup> of February and the 11<sup>th</sup> of February, H el ene Renel, Fabien Lesguer, Juliette Andr e and Romain S eguier set up the ceramic study protocol. Then at regular interval, Fabien Lesguer, Juliette Andr e and Romain S eguier sorted the ceramics directly on the field or were excavating. J erome Janky and Sanae Essafi were only excavating.

From the 7<sup>th</sup> of February to the 10<sup>th</sup> of March 2016, the team was directing twenty-two workers, then from the 13<sup>th</sup> of March to the 24<sup>th</sup> of March 2016, the workforce decreased to twelve workers.

Fig A-1 : Excavation grid



Fig A-2 : UF distribution of the passé 1





Fig A- 3: UF distribution of the passe 2











Fig A-6 : UF distribution of the passe 5



Fig A-7 : UF distribution of the passe 6





Fig A- 8 : UF distribution of the passe 7







**Fig A-9 :** The excavation of B4.1 (06/02/2016)



**Fig A-10 :** *The excavation of B41 (19/02/2016)*







Fig A-11 : The excavation of B41 (03/03/2016)



Fig A-12 : The excavation of B41 (17/03/2016)







Fig A-13 : The excavation of B41 (24/03/2016)



**Fig A-14 :** Passe 1 UF 6205 in C6

**Fig A-15 :** Passe 2 UF 6206 in C6

**Fig A-16 :** Passe 3 UF 6245 in C6



200



**Fig A-17 :** *Passe 4 UF 6249 in C6*



**Fig A-18 :** *Passe 5 UF 6404 in C6*

**Fig A-19 :** *Passe 6 UF 6405 in C6*

**Fig A-20 :** *Sorting of the material in situ*



## II-B Localisation and general description

The workshop B41 is located between different buildings, B285 to the north, B284 to the west, B40 to the south. Before the excavation started, the sector of the factory was approximately levelled (Altitude between 32m and 31.40m) (Fig A-21). There was a depression to the east of the area (Altitude 29.6m). To the west, building B284 forms a promontory (Altitude 33m). At the end of the excavations, the highest point was at 32.4m and the lower point was at 28.65m at the bottom of structure 45 (Fig A-22).

During those seven weeks, the general plan of B41 was brought to light (Fig A-23). Eight rooms were unearthed, as well as the north and the west streets. The two main rooms of B41 are space G and space E. Space E contains three kilns and two ancillary rooms (Room D and Room C). The dimensions of this room are 9.50m long and 8.82m wide. Its surface is 84m<sup>2</sup>. Space G communicates with Space E. Its dimensions are 7.29m long and 6.21m wide, *i. e.* 35.5m<sup>2</sup>. This room contains just one ancillary room (Room H). To the south of space E, another room communicates with this one, that is room F. To the east of the building there are two rooms (Room A and Room B).

## II-C. The spatial organisation of the workshop and chronological descriptions

### II-C. 1 Phase 1 (Second half of the 13th century)

The excavation of workshop B-41 helped refine its chronology and determine five major phases of operation (Fig A-24).

#### II -C.1a Foundation

The first phase of the workshop corresponds to a levelling of the bedrock. Before the construction of the walls, pits in the bedrock were backfilled by the same type of UF. These UF (UF 6394 whose minimum altitude is 28.65m and UF 6398 whose minimum altitude is 29.13m in the room F, and UF 6429 in the room E) were constituted by a brown with orange and black nuances silt. It contained pebbles and many ceramics (Fig A-25). Occasionally, there are layers of green clay (UF 6133 in the room G and UF 6393 in the room F) above these levels. In room G, UF 6139 and UF 6140 levelled out the bedrock. They have the same composition. They are homogeneous, more or less compact beige silt with gravel. This kind of layer backfilling the natural depression of the bedrock has been found in the foundation of many buildings of Qalhât.

#### II -C.1b Construction

Different workspaces are defined (Rooms A to H) (Fig A-26), segmented by walls which are usually built in small to medium stones, bounded by an earth mortar containing small pebbles in inclusion. Stones of large module and corals are rare, as well as the presence of a coating (Fig A-27).

#### ■ South exterior

The south space is delimited by a set of three walls which are linked together. It includes B41-27 and B41-35 oriented north-south, and B41-02 oriented east-west. Wall B41-27 was excavated on a length of 3.06m and continues south beyond the excavation area. Its maximum width is 0.52m; its maximum height preserved is 1.80m. A sounding was carried to observe its foundations. It was then determined that the wall is based on the above-mentioned UF 6398. Wall B41-02 is built directly on the bedrock. It measures 13.22m long, 0.55m wide and it is preserved on a 1.54m height. Its north face is partially coated with a beige mortar with gravel and pebbles, as well as the west part of its southern face. Wall B41-35 is also built directly over the bedrock. It measures 1.40m long, 0.50m wide and 1.60m high. A coating is preserved on 1.10m high from the ground level at the angle it forms with wall B41-02.

Two walls oriented north-south were only partially cleared as they both continue southward, beyond the excavated area. It is wall B41-64 to the east, and B41-20 to the west. The first one is leaning on B41-02 and measures 1.50m long, 0.55m wide and 1.25m high. It seems to be built on the same bedrock level but the information could not be confirmed during the excavation. The second is only visible in a section; it is connected to wall B41-02 by threshold B41-29 (Altitude 30.10m) that is leaning on both walls 02 and 20. This threshold measures 0.96m long, 0.42m wide and 0.15m high.



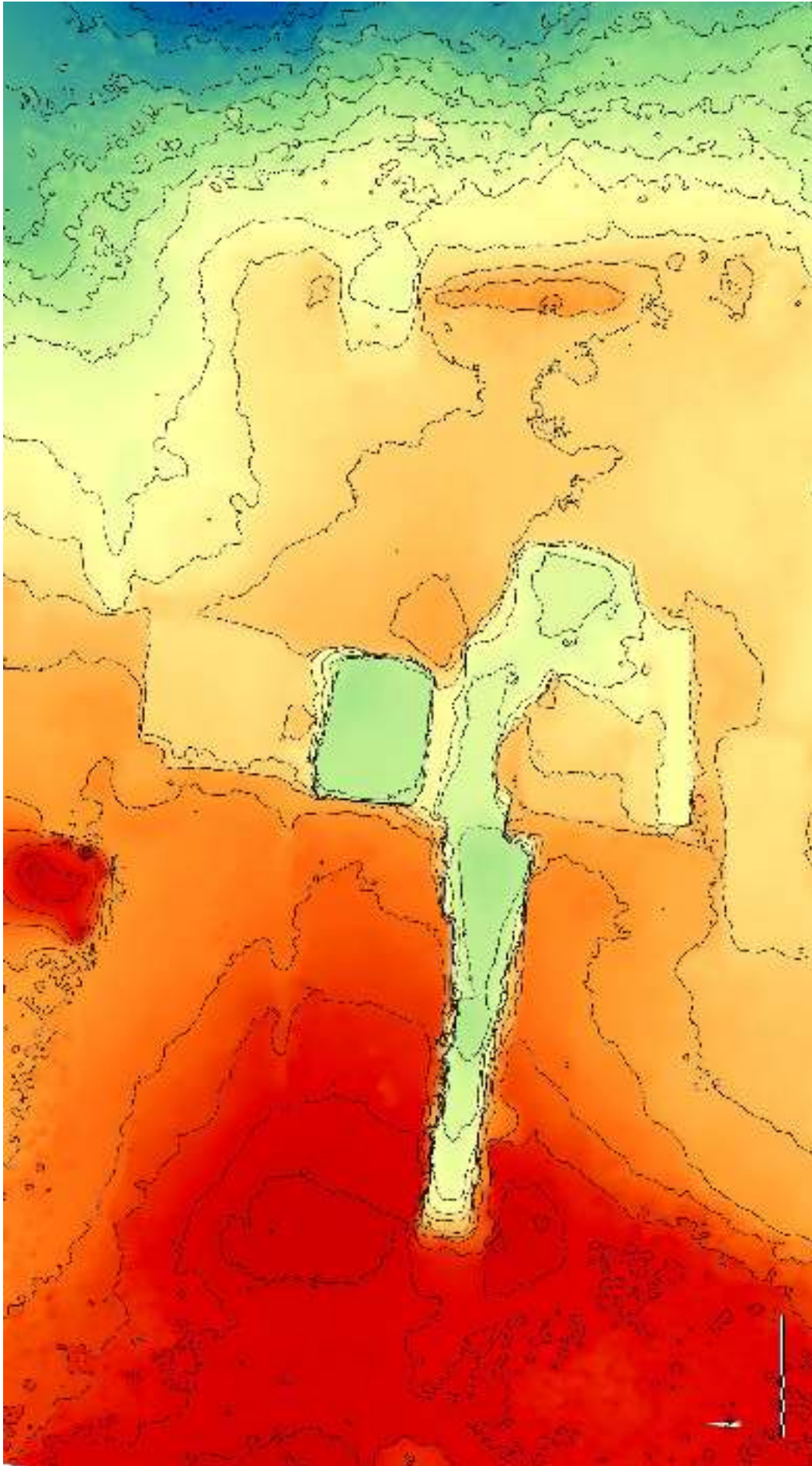
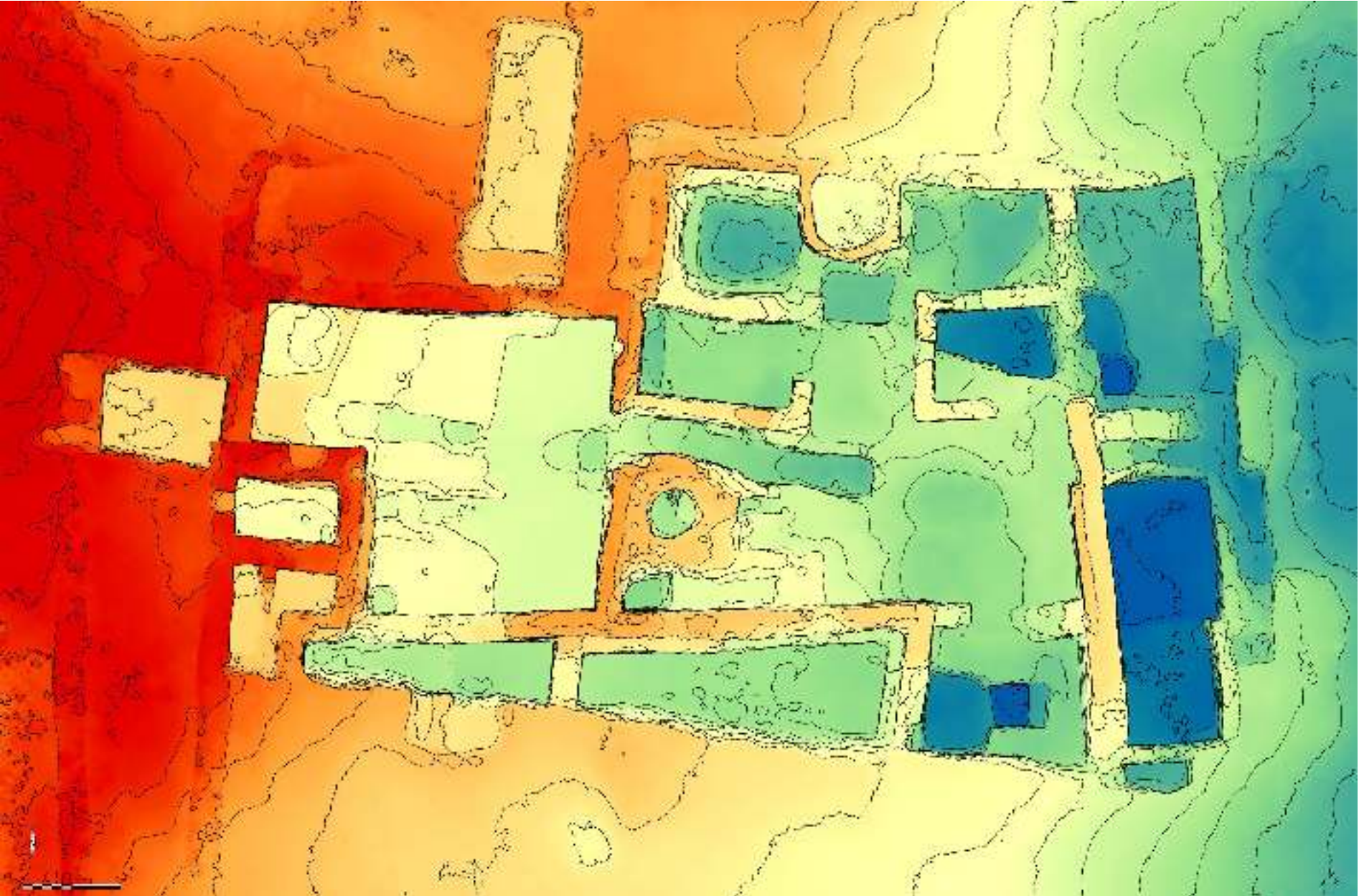


Fig A-21 : Digital Elevation Model of B4 1 (06/02/16)



Fig A-22 : Digital Elevation Model of B41 (24/03/16)



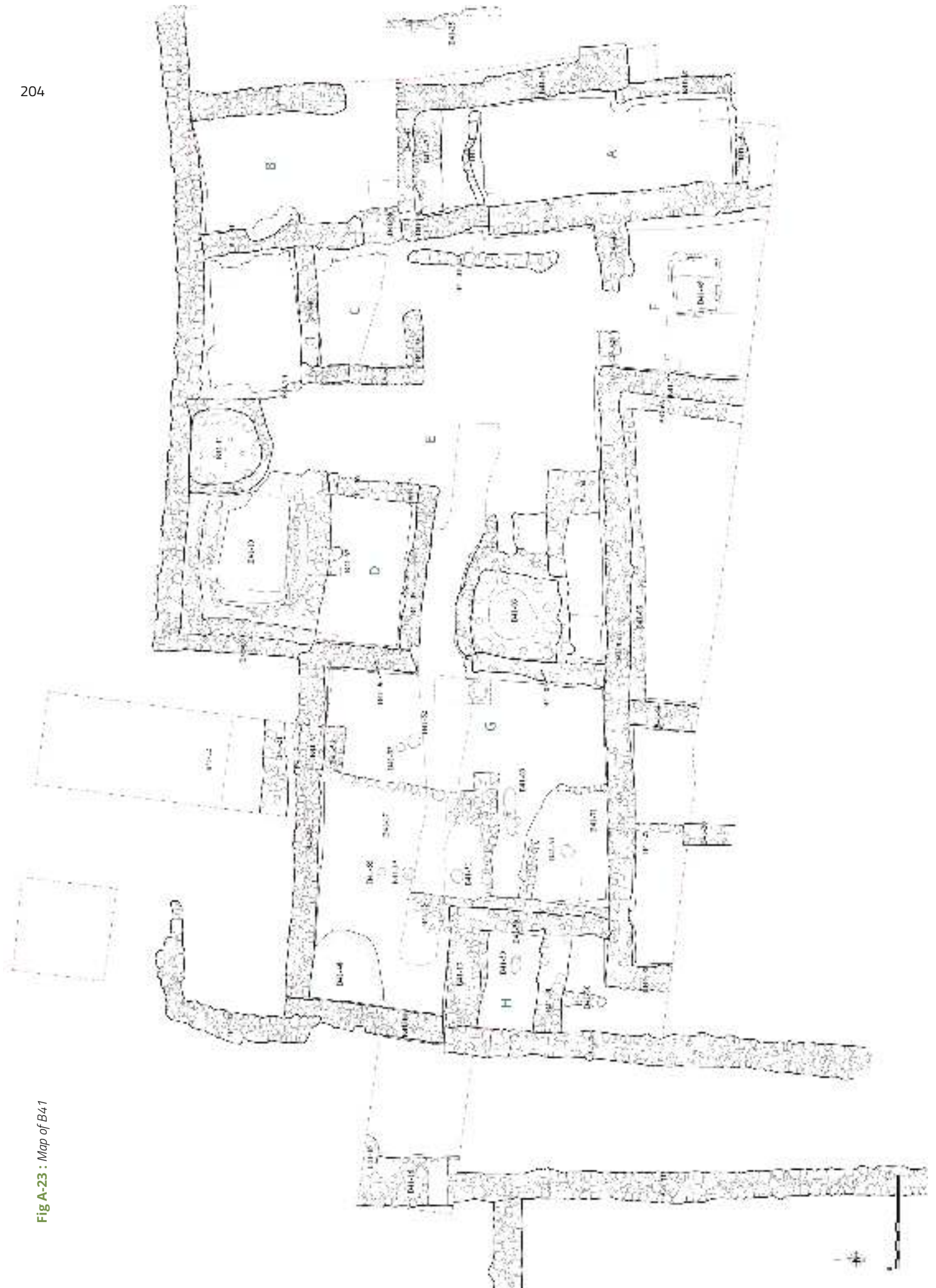
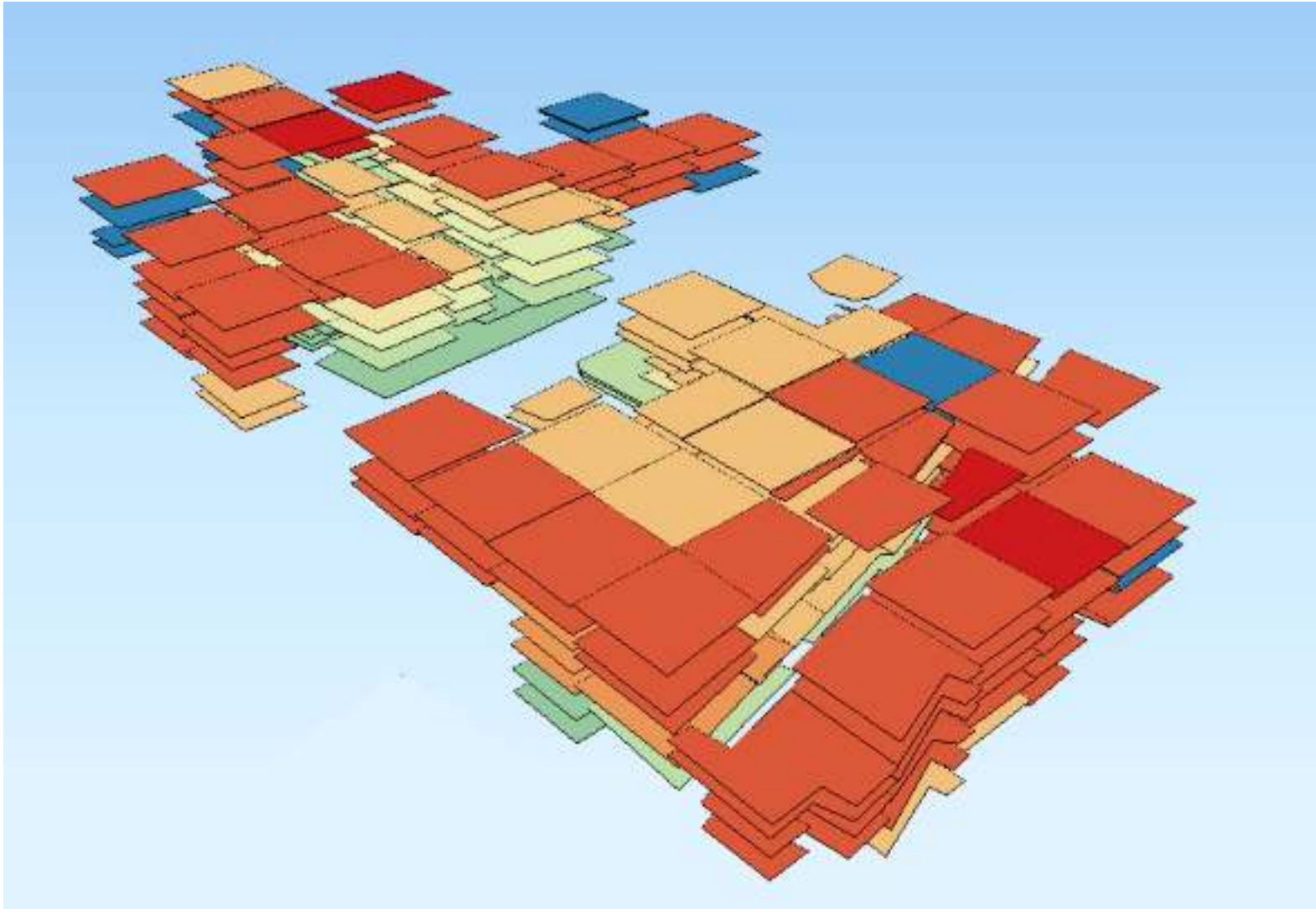


Fig A-23 : Map of B41



**Fig A-24 :** 3D modelling of phase





**Fig A-25** : UF 6394 in room F



Fig A-26 : Phase 1 of B41

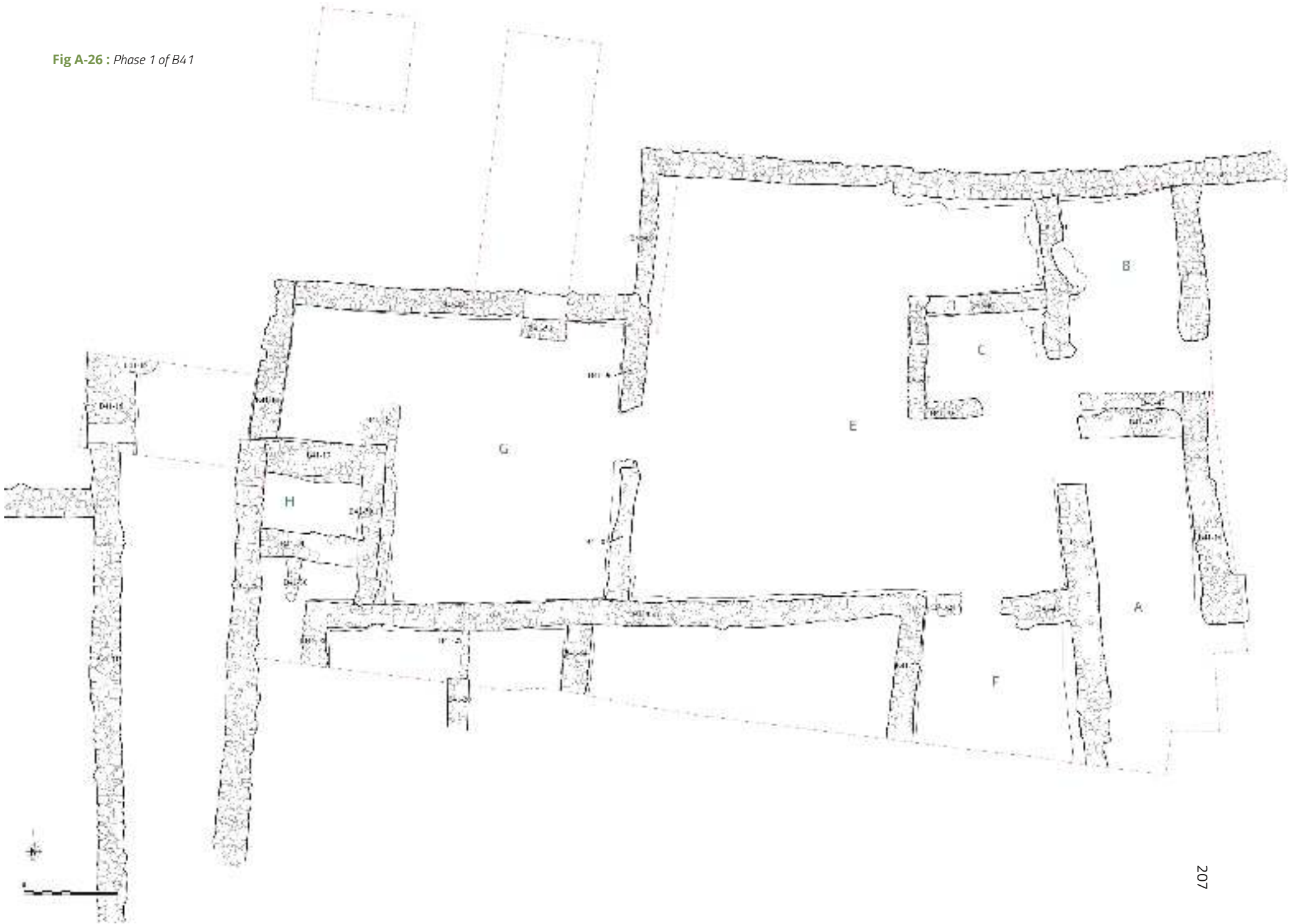




Fig A-27 : General view of B4.1 phase 1



#### ■ Room H

Wall B41-50 oriented north-south is based on the bedrock. It is leaning against B41-013 to the north side, against B41-02 to the south and against B41-044 to the west. These walls create an enclosed space (Room H) which underwent restorations during which the facing of walls 013, 044 and 050 were rebuilt and connected together. The function of this room is still to be determined. All of them are built directly over the bedrock. To the west side, the area is delimited by wall B41-30 which was excavated on a length of 9.14m, but continues southward beyond the area of excavations. It is built directly over the bedrock and is 0.55m wide and 1.75m high. It has an opening, a niche or a window overlooking the street. B41-50 measures 2.60m long, 0.60m wide and its maximum height preserved is 1.60m. B 41-44 measures 2.20m long, 0.50m wide and 1.60m high. B 41-13 is 2.55m long, 0.68m wide and 1.40m high. B41-044 is also the support of B41-36, a small wall oriented north-south, measuring 1.05m long, 0.30m wide and 0.90m high (*Fig A-28*).

#### ■ Room G

Wall B41-14 is in the same axis as B41-30 but the connection between these two structures is unclear because of refurbishments that took place at their junction. It is founded directly over the bedrock and measures 3.55m long, 0.55m wide and 1m high. Wall B41-08 is oriented east-west; it is leaning on B41-14 and delimits the workshop to the north side. It was erected over the bedrock and measures 7.52m long, 0.47m wide and its maximum height preserved is 1.56m. It has an outward opening including a step, structure B41-56, which is 1m long, 0.44m wide and 0.19m high (Altitude 30.65m). It is linked with wall B41-06 oriented north-south which in its first phase measures 1.06m long 0.42m wide and 2.20m high. Its western side has a niche of 0.47m long by 0.75m high. It underwent refurbishments, which will be detailed in the section dedicated to the third phase of the workshop. Wall B41-05 is in the same axis as wall B41-06 but it is leaning perpendicularly on wall B41-02. It measures 3.04m long, 0.45m wide and 1.60m high. Wall B41-18 is built over the bedrock and is oriented north-south. It measures 1.40m long, 0.43m wide and 0.30m high and is built against wall B41-50. These walls create an enclosed space (Room G) (*Fig A-28*).

#### ■ Room E

In the northern extension of wall B41-06, there is wall B41-09. It measures 3.22m long and 0.35m wide. Its links with wall B41-08 remains unknown because the installation of the kiln does not enable to observe the junction between the various facings. However it seems to be bounded with wall B41-24.

Wall B41-24, which partitions the space to the north, is 16.03m long, 0.52m wide and 2m high from the bottom of the kiln B41-10. It is built over the bedrock, except in the angle formed with wall B41-41 where it lies on a layer of backfill (UF 6429) filling a cavity in the bedrock. It continues eastward out of the area of excavation. In the section located to the east of the kiln, a change in the use of larger stones to build the wall suggests the existence of an opening. Another small opening may correspond to a small niche; it is located 0.25m to the west of B41-41.

Wall B41-12 is built over the bedrock and measures 5.21m long, 0.60m wide and 2.16m high. The lower parts of its western face are coated on 0.45m high. B41-46 is a small wall that is bounded with the western facing of B41-12. It is oriented east-west and is located 2.60m north of the southern limit of wall 12. It measures 1.50m high, 0.74m wide and 0.80m high.

These walls create an enclosed space (Room E) (*Fig A-29*).

#### ■ Room C

Wall B41-40 is perpendicular and is leaning on wall B41-41. It measures 2.63m long, 0.40m wide and 0.80m high. It is endowed with an opening across the total width of the masonry and measuring 0.37m long. Its height is not known since the upper parts of the wall are not preserved. It is built over large blocks of the bedrock. Wall B 41-37 is perpendicular and leaning on it, it measures 2.75m long, 0.40m wide and 1.05m high. Another niche was built measuring 0.28m wide at its base, and 0.48m at the level of destruction of the wall. Wall B41-33 is perpendicular to B41-37 on which it is leaning, and parallel to B41-40. It measures 1.26m long, 0.40m wide and 0.77m high. This set of three walls creates an enclosed space inside Room E (Room C) whose function is still to be determined (*Fig A-29*).

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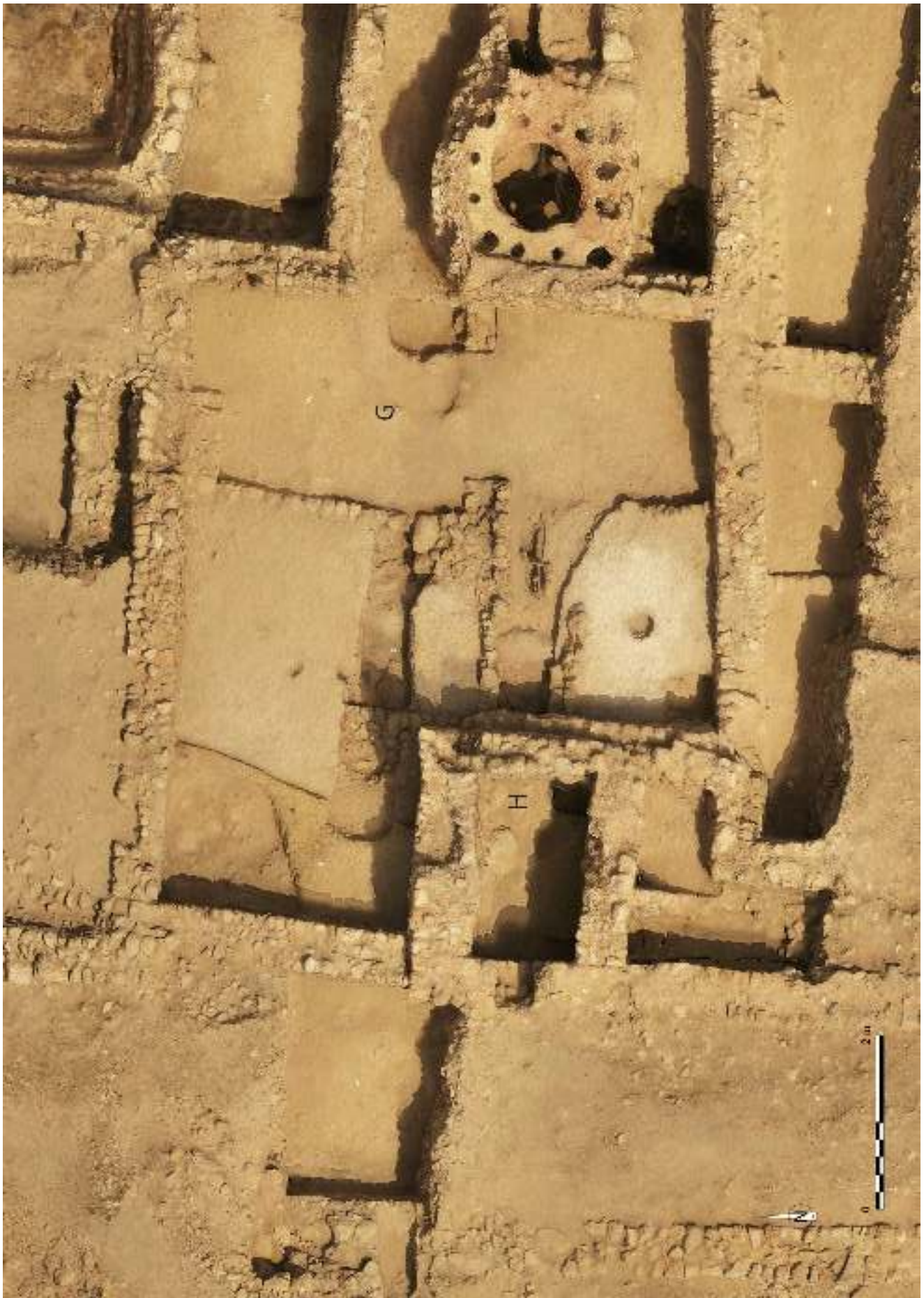


Fig A-28 : Room H and space G



Fig A-29 : General view of space E





- Room F

Inside the workshop, the opening between areas E and F is not closed but only narrowed with the construction of B41-28, which is built perpendicular to wall B41-27. It is facing B41-46, but unlike wall 46, which is connected to wall 12, B41-28 is leaning on wall 27. It measures 0.68m long, 0.45m wide and 0.65m high (Fig A-30).

- Room B

B41-24 is the support of two perpendicular walls B41-41 and B41-63 which enclose room B to the east and west. The first one measures 3m long, 0.60m wide and 1.30m high. Its facing has partially collapsed. The foundation is irregular, large blocks from the bedrock are for instance used for the base. B41-63 is parallel to it ; it is oriented north-south, measuring 3.29m long, 0.48m wide and 0.55m high. It operated with B41-26 which is built in the same axis. A space measuring 1.05m between them creates an opening which gave access to the workshop (Fig A-30).

- Room A

Wall B41-26 – already mentioned above -, is built directly over the bedrock. It is 4.95m long, 0.60m wide and 0.10m high. It seems to make a return towards the east, but this section of the wall is out of the excavated area, so this hypothesis is still to be confirmed in the context of a possible resumption of the research. At the angle of the passage between walls 63 and 26 and perpendicular to B41-26 on which they are leaning, two walls are built one on top of the other. B41-47 is built over the bedrock. It measures 2.83m long, 0.56m wide and 0.72m high. Over it wall B41-42 is measuring 2.22m long, 0.56m wide and 1.10m high. Wall B41-12 is in the same axis as B41-41 and is parallel to B41-26 but it is related to neither one nor the other, thus creating a possible flow through the defined space (Room A) towards the workshop or outside (Fig A-30).

#### II-C.1c Ceramics

The levels of the first phase are dated thanks to the finding of imported ceramics to the second half of the 13th century. This material comes for the greater part from India (86% of the imported vessel, (Fig A-31). Among this group, the jars with red painted lines are predominant. The small carinated cooking-pots with paddlestamps patterns in the lower part are present only in this phase. Their fabric is light brown with mica inclusions. Some pieces (19) come from Iran: *sgraffiato* bowls (for 1%), incised jars or bottles (2%) and moulded globular jug (5%). From Arabia come the yemeni bowls (in) "*mustard ware*" and the so-called "Julfar cooking-pots" (2%).

Few pieces of local production were found in these levels: 6 glazed bowls and 3 unglazed large jars. It is therefore difficult to identify the first production and compare it with the material of the next period.

This first phase corresponding to the very installation of the workshop, this may explain the low number of local ceramics.

#### II-C.2 Phase 2 (Second half of the 13<sup>th</sup> century)

Phase 2 corresponds to the first period of operation of the workshop (Fig A-32).

#### II-C.2a Constructions and occupancy

- Room G

During this phase, room G is a work space. Different structures were installed.

Structures B41-17 and B41-71 were built against to the east side of the wall B41-50 Structures They are platforms whose precise function will be to refine particularly through the ceramic study.

Fig A-30: detailed view of rooms A, B and C



**Fig A-31 :** Imported ceramic phase 1

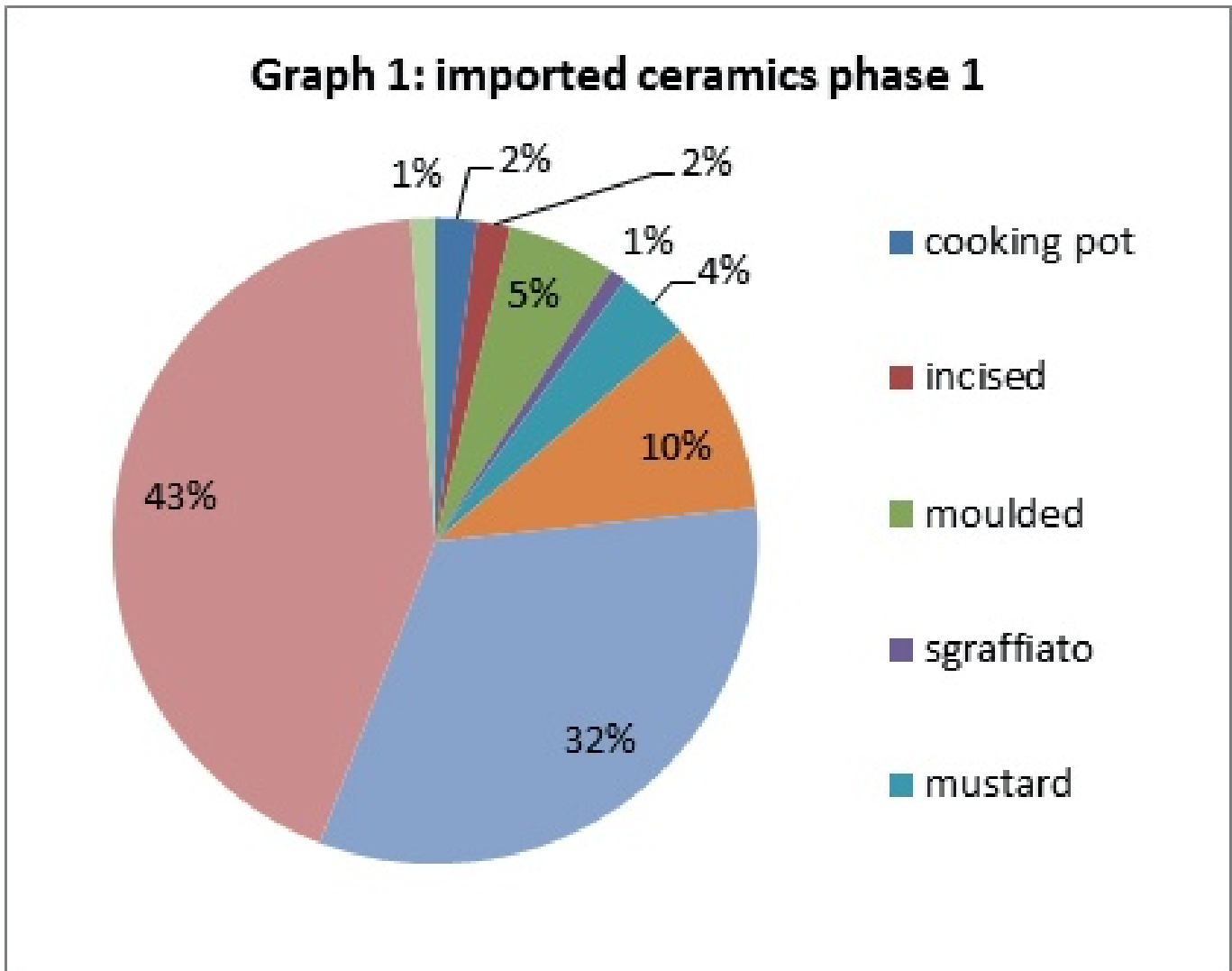
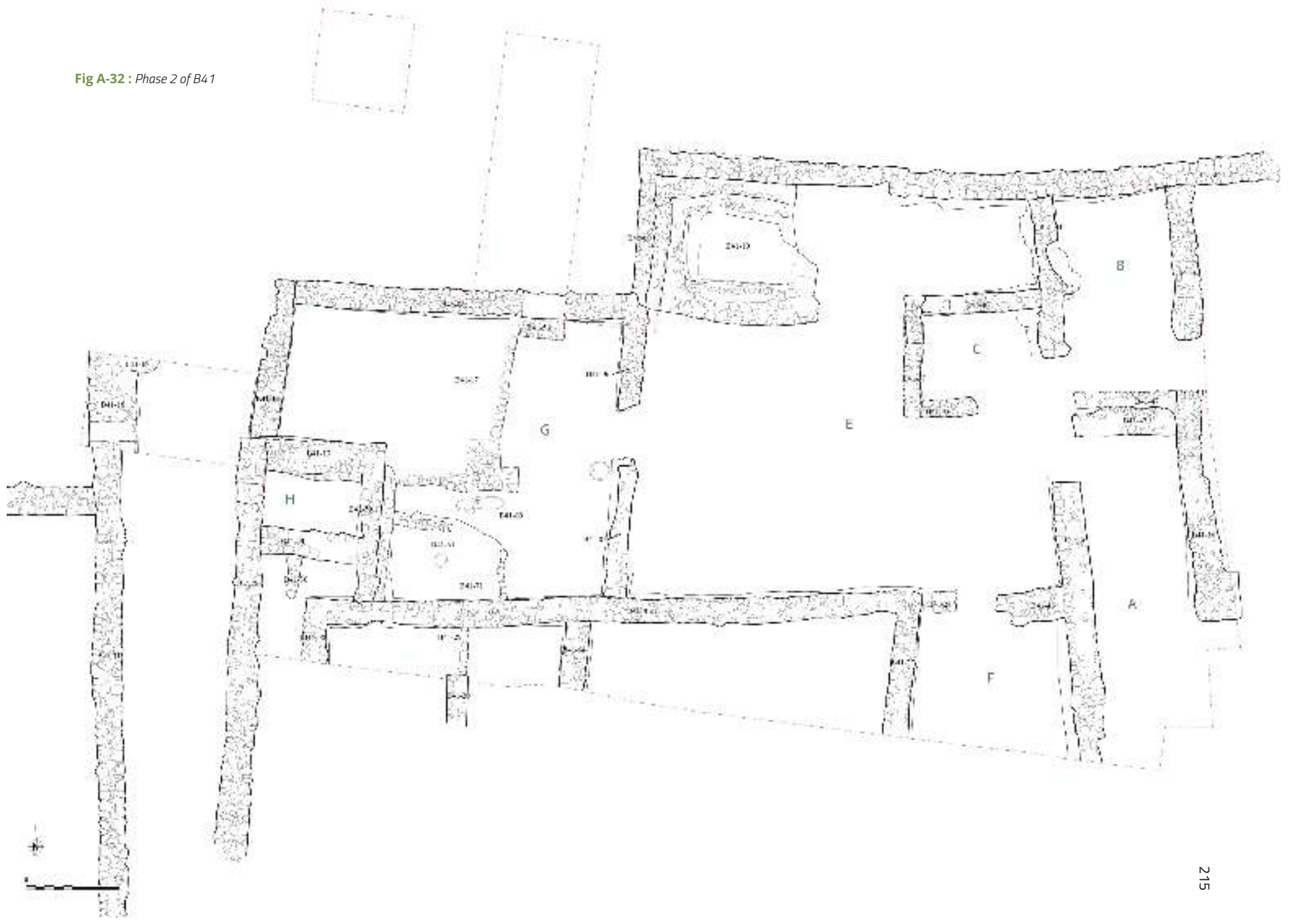




Fig A-32 : Phase 2 of B41



The ongoing assumption concerning B41-17 (**Fig A-33**) suggests work and / or storage of clay area. It is built directly over the bedrock, and leaning on walls B41-56, B41-50, B41-08 and B41-18 which closes the platform to the west (Altitude 30.83m). It measures 3.70m long, 4.85m wide and 0.30m high. The platform itself is made of a homogeneous light grey compact indurated mortar (UF 6117). It contains some ceramics and gravels. This structure is sealed by a layer of crushed, yellow to green clay (UF 6118, max Altitude 31.20m). Very locally against the wall B 41-08 there is a compact heap of brown clay (UF 6228) above UF 6118.

B41-71 was more likely a discharge area (Altitude 30.69m). It measures 2.50m long, 1.55m wide and 0.24m high (**Fig A-27**). This platform is constituted by a plaster level more or less compact with ceramic inclusions and gravel (UF 6411). It is delimited by two low stone walls. It should be noted that a post hole (B41-61) was dug at the centre of the platform. Thereafter levels of wastes (UF 6412, UF 6407) covered this structure. These are heterogeneous loose silt levels. They contain inclusions of charcoal, mortar, plaster and many ceramics. At the end of phase 2, the space related to the B41-71 platform is sealed by UF 6231. It is compact homogeneous brown clayey silt. It contains ceramics and gravels and charcoal residues.

Between B41-17 and B41-71, there was a hearth (B41-60). It consists of a rectangular fireplace delimited by stones and an ashtray. The fireplace measures 0.37m long and 0.23m wide. The ashtray measures 0.58m long and 0.28m wide. Carbonaceous levels (UF 6420, UF 6421, UF 6428) remained inside the hearth (**Fig A-34**).

A floor level is associated with the use of both platforms (UF 6115) which consists of a beige and compactsilt level containing inclusions of small gravels (Altitude 30.43m). Near the access with room E, a jar was buried in the floor. It may have been used for storing water.

During this phase, all the walls mentioned above define an enclosed area (Space G) dedicated to the work of clay (structures 17 and 71, UF 6118).

#### ▪Room E

In room E, kiln B41-10 was built during this phase (min Altitude 29.51m). It was built along walls B41-09 and B41-24. Its plan is rectangular. It is seriously damaged. The heating room of the kiln is the only part remaining. Its external dimensions are 3.27m long and 3.06m wide. It is preserved over a height of 2.20m. The heating room measures 2.00m long and 1.40m wide. It was built with medium to large blocks of stones directly over the bedrock. Along the western wall of the chamber, there is a vitrified bench. There is no trace of any support or floor (**Fig A-35**).

#### ▪Room F

At the end of phase 2, room F was backfilled by a level (UF 6302) of stone bonding a compact homogeneous silt. It contains a few ceramics and charcoals. This UF corresponds to artificial passes UF 6194 and UF 6197. The same backfill was found in room E.

#### ▪Room B

A sounding on the corner of wall B41-47 and the plugging B41-58 allows to reach levels of phase 2 (UF 6401 and UF 6400). UF 6401 is a compact homogeneous brown silt. It contains ceramics, fauna and carbonate inclusions.

#### ▪North exterior

On the outside at the level of the door in wall B41-08, there is an occupancy level corresponding to phase 2. It is UF 6217 (equal to the automatic pass (UF 6162)). It is a compact homogeneous beige clayey silt. It contains ceramics, gravels, fauna remains and a copper oxide spreading. The copper oxide is probably related to the manufacture of glazed ceramics.



**Fig A-33 :** *Structure B41-17*



**Fig A-34 :** *Structure B41-60*



Fig A-35 : *Kiln B41-10*



## II-C.2b Ceramics

The imported material of the second phase (**Fig A-36**) is identical to the first one except for the disappearance of the moulded jugs from Iran (**Fig A-37**) and the introduction of the hormuzi jars with "textile patterns". These elements could belong to the end of the 13<sup>th</sup> or the beginning of the 14<sup>th</sup> century.

The jars with light brown fabric, whitish on exterior, and with fine incised patterns (**Fig A-38** : 6-9) are more important in this phase (19%). We find in same proportions *sgraffiato* bowls (**Fig A-38**: 3 with *champlevé decoration*) and the Yemeni "mustard ware" (**Fig A-38**: 1-2). The Indian ceramics are always outnumbers (76% of the imported material).

The second phase corresponds to the activity of the first kilns of the workshop. This first production is characterized by pieces with fine sides, well-levigated fabric, pale yellow coloured, and a dark green glaze in relative good quality. The glazed forms are produced in very large majority (70% **Fig A-39**) with a predominance of open forms (44%). Several profiles of bowls are present: hemispherical with everted rim (**Fig A-40**: 1F type, **Fig A-41**: 1), the most important, globular (1D, **Fig A-41**: 3), carinated (1E, **Fig A-41**: 2) and hemispherical with molded rim (1H; **Fig A-41**: 4). Some bowls have painted decoration under glaze. The closed forms are essentially jars with large straight neck and two handles (**Fig A-41**: 5). The production of the common large glazed jars of the phases 3 and 4 (**Fig A-41**: 7-8) started during this period. The small pots (**Fig A-41**: 6) are produced only in this period and present only in the workshop.

On the contrary, the unglazed forms are essentially closed forms (**Fig A-39** and **Fig A-42**): large jars (types T1, 2B, 2N and 2D of **Fig A-42**, **Fig A-41**: 9- 10), jars (type 2C) and jugs (types 2O, 2M, **Fig A-41**: 11). The rest of the unglazed material consists of globular bowls (types 2H and 2V) and basins (**Fig A-41**: 12). Lamps are present but in few quantities. The strong proportion of lamps in chlorito schist in the levels of the 13<sup>th</sup> and 14<sup>th</sup> centuries in the houses explains probably this low percentage.

## II-C.3 Phase 3 (first half of the 14<sup>th</sup> century)

The third phase of the workshop corresponds to the installation of two other kilns following the destruction of B41-10 (**Fig A-43**). This phase is in turn subdivided in 3 sequences.

### II-C.3a Sequence 3.1, construction and occupancy

#### ▪Room G

In room G, the sequence 3.1 is divided in two occupation phases.

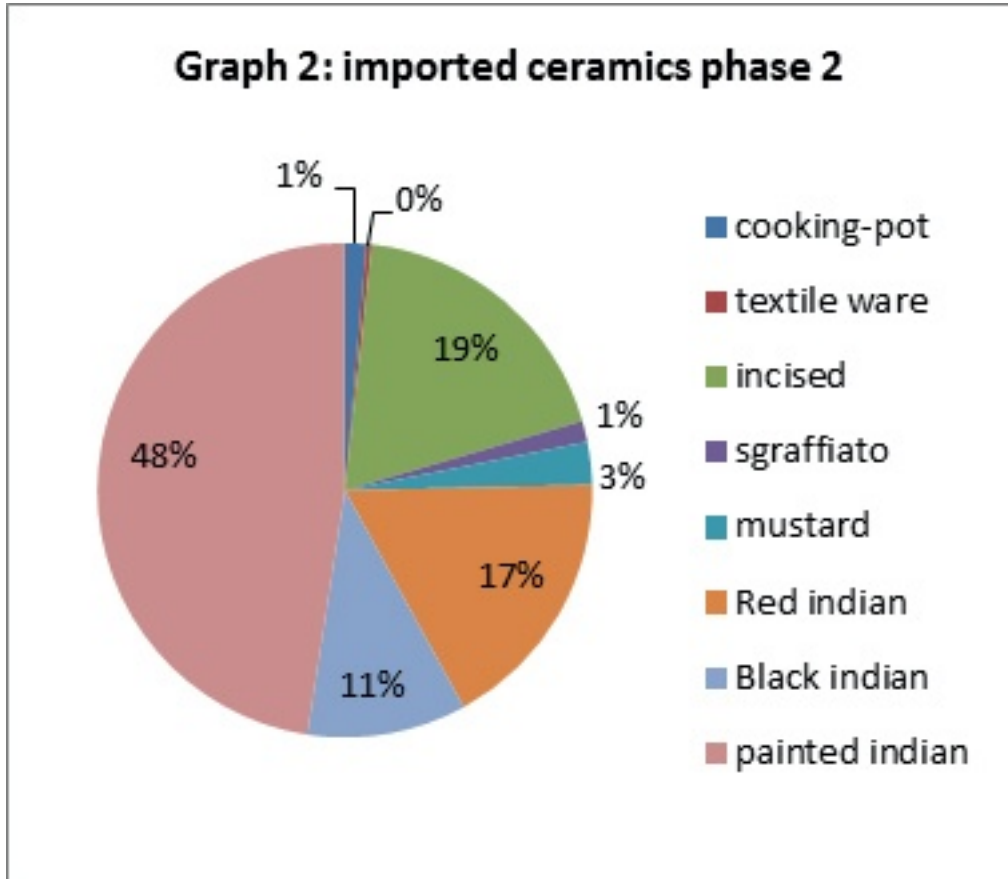
Firstly, the room G lost its access to the outside as B41-67 (**Fig A-44**), a rough masonry is now filling the opening in the north wall B41-08. It blocks the passage over its entire length of 0.94m, on a width of 0.51m and it is 1.02m high. A set of structures is dug in the room. A pit (B41-48, **Fig A-45**) is dug on the corner of walls B41-08 and B41-14. It was filled with fish bones. It measures 1.60m long, 1.40m wide and 0.40m high. Three aligned postholes (B41-51, B41-19, B41-55) were dug in the platform B41-17. The posthole B41-19 is the only to drill the platform at a depth of 0.42m (**Fig A-46**). Two other postholes perforated less deeply the platform (0,10m).

Secondly, the room is backfilled on a depth of 0.50m by UF 6120, 6144 and 6145. Those layers are compact homogeneous beige silt. They contain a few ceramics and stones. In the corner of wall B41-14 and wall B41-13, this backfill was thicker. These UF correspond to artificial passes UF 6004, UF 6005, UF 6038, UF 6040, UF 6041, UF 6042, UF 6186, UF 6339, UF 6347, UF 6354, UF 6361 and UF 6367. On this backfill, there was a new level of occupation. Different hearths as B41-34 and a rectangular structure with a stone outline are related to this occupation phase. The rectangular structure measures 0.80m long, 0.55m wide and 0.20m high. At the end of this sequence, this area was covered with a level of abandonment (UF 6122).

#### ▪Room C

The phase 3.1 also involved the addition of walls and the closure of some access (**Fig A-30**).

The access from the east side is at some stage sealed by masonry. Wall B 41- 38 is built further north in the same alignment as wall 12, even if its axis is slightly different. It is leaning against walls 12, as well as walls 42 and 47 to the east. It measures 1.85m long, 0.45m wide and 1.40m high.



**Fig A-36:** Imported ceramic phase 2

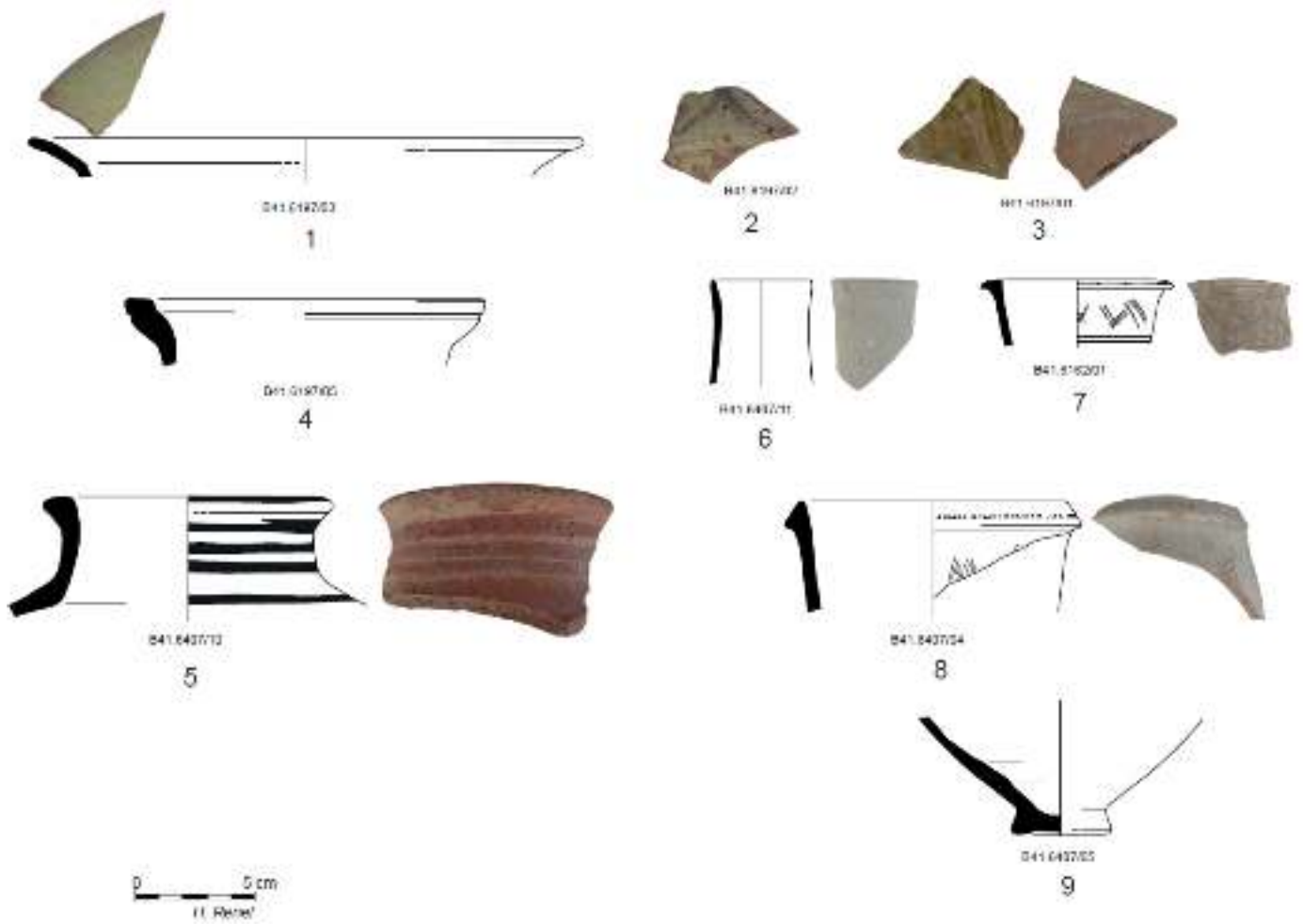
**Fig A-37 :** Moulded jug from Iran



B41.512/04



**Fig A-38 :** Phase 2 : imported ceramics : n °.1-2: yemeni «Mustard ware»; n ° 3: iranian sgraffiato ware; n °.4-5: indian painted ware; n °.6-9: iranian incised buffware.



**Fig A-39 :** percentage glazed/unglazed phase 2

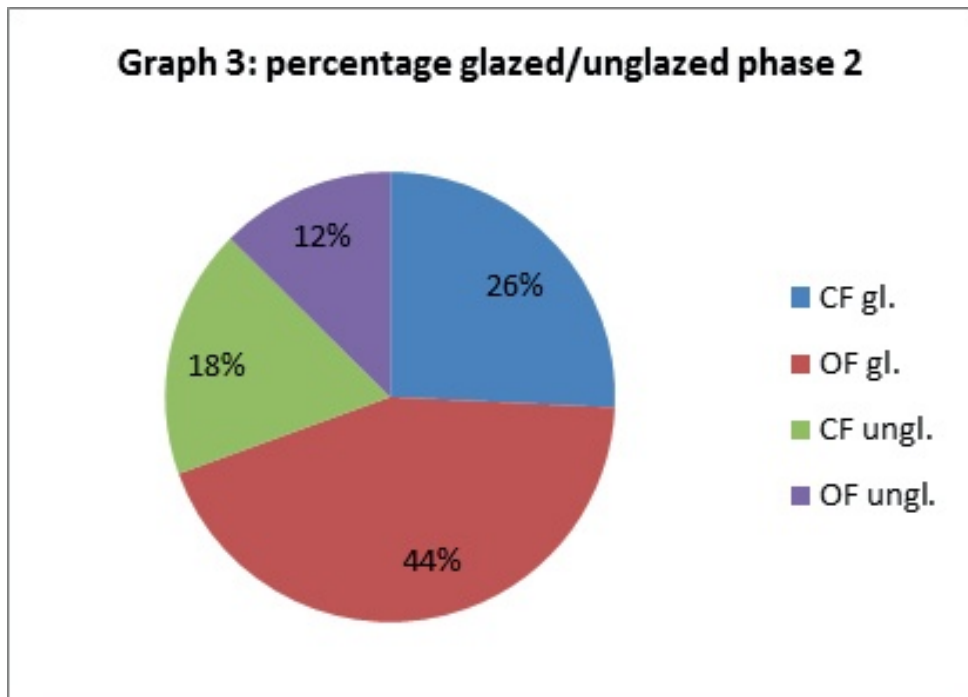
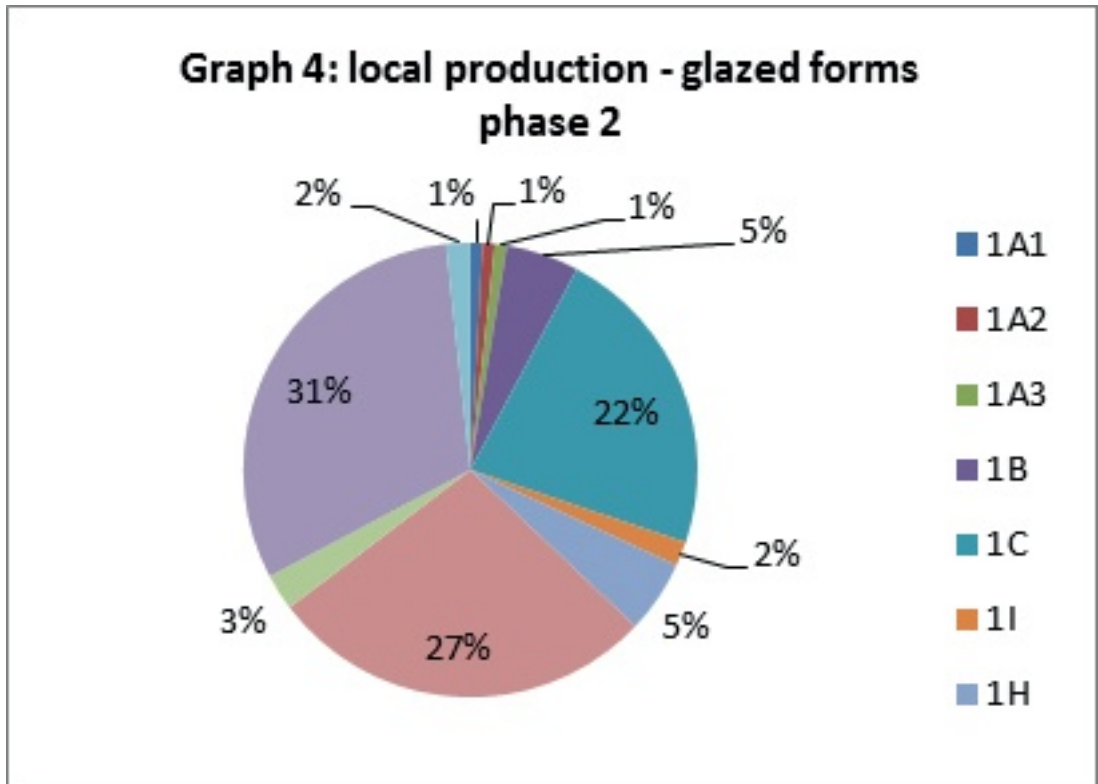


Fig A-40 : local production- glazed forms phase 2



**Fig A-41 :** Phase 2 : local production. Bowls: n°1 (type 1F), n° 2 (type 1E), n°3 (type 1D), n°4 (type 1H); jar : n°5 (type 1C); pot : n°6; large jars : n° 7-8 (type 1A); n°9 (type 2B); n°10 (type 2N); jug : n° 11 (type 2M); basin : n° 12 (type 2U).

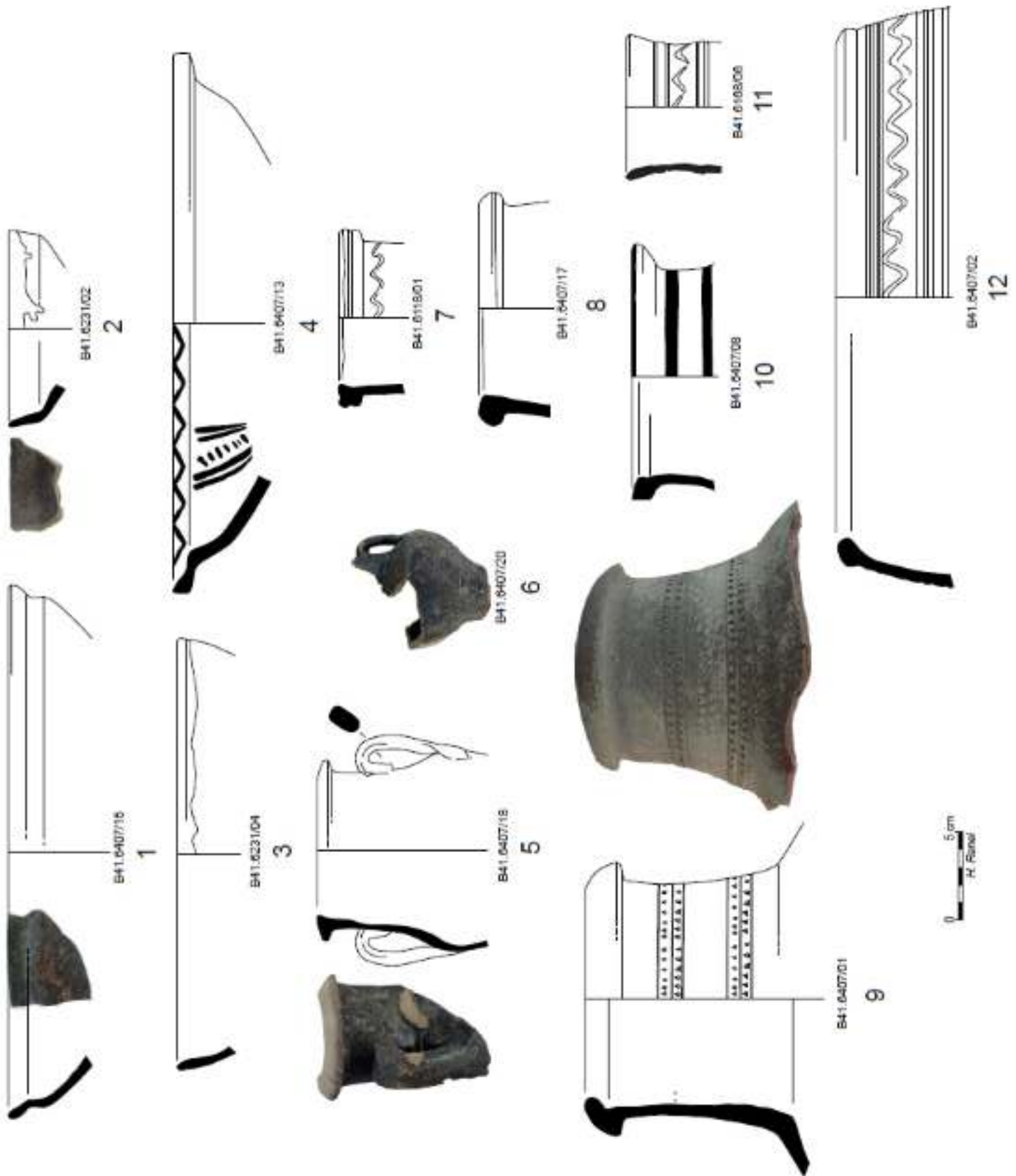




Fig A-42 : local production- unglazed forms phase 2

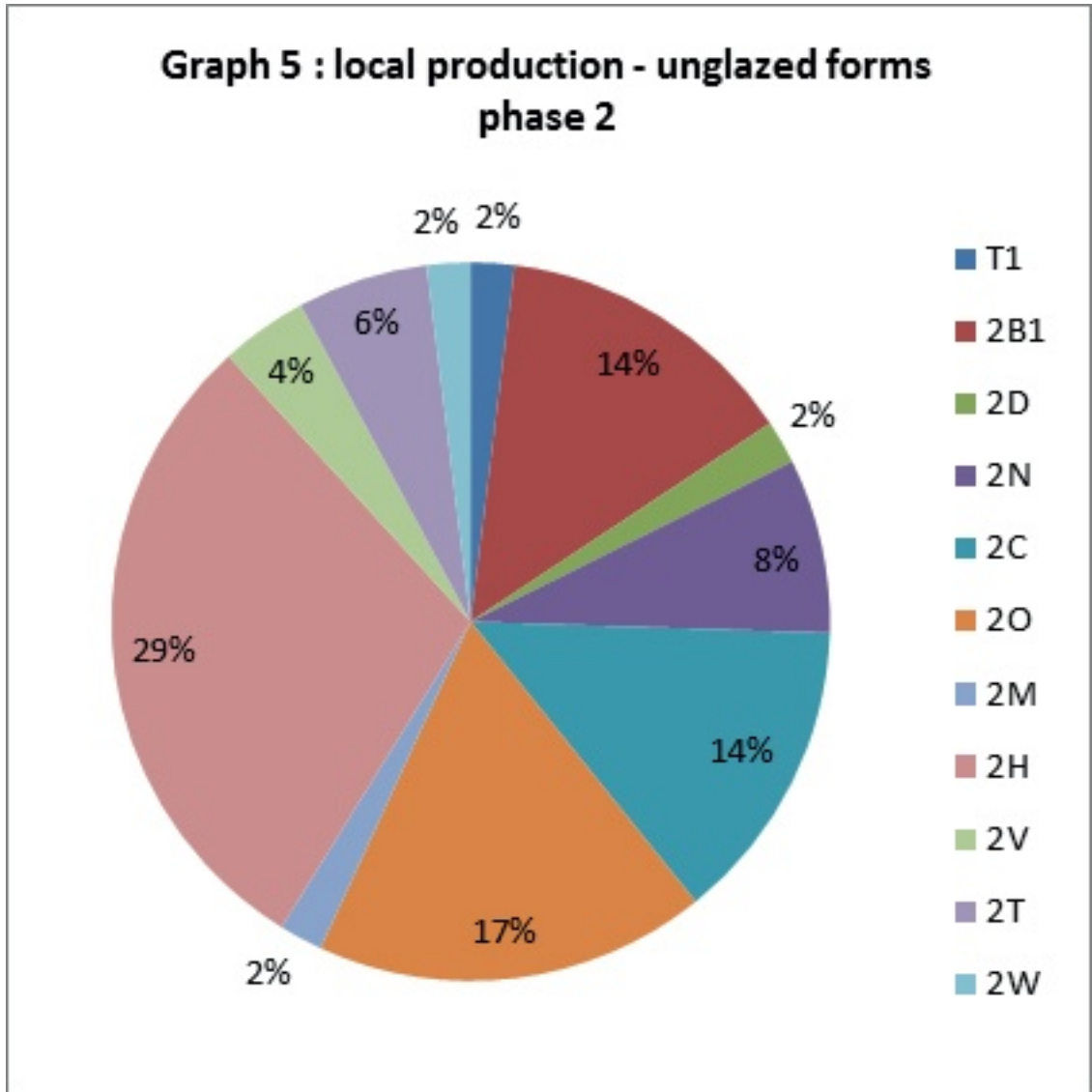
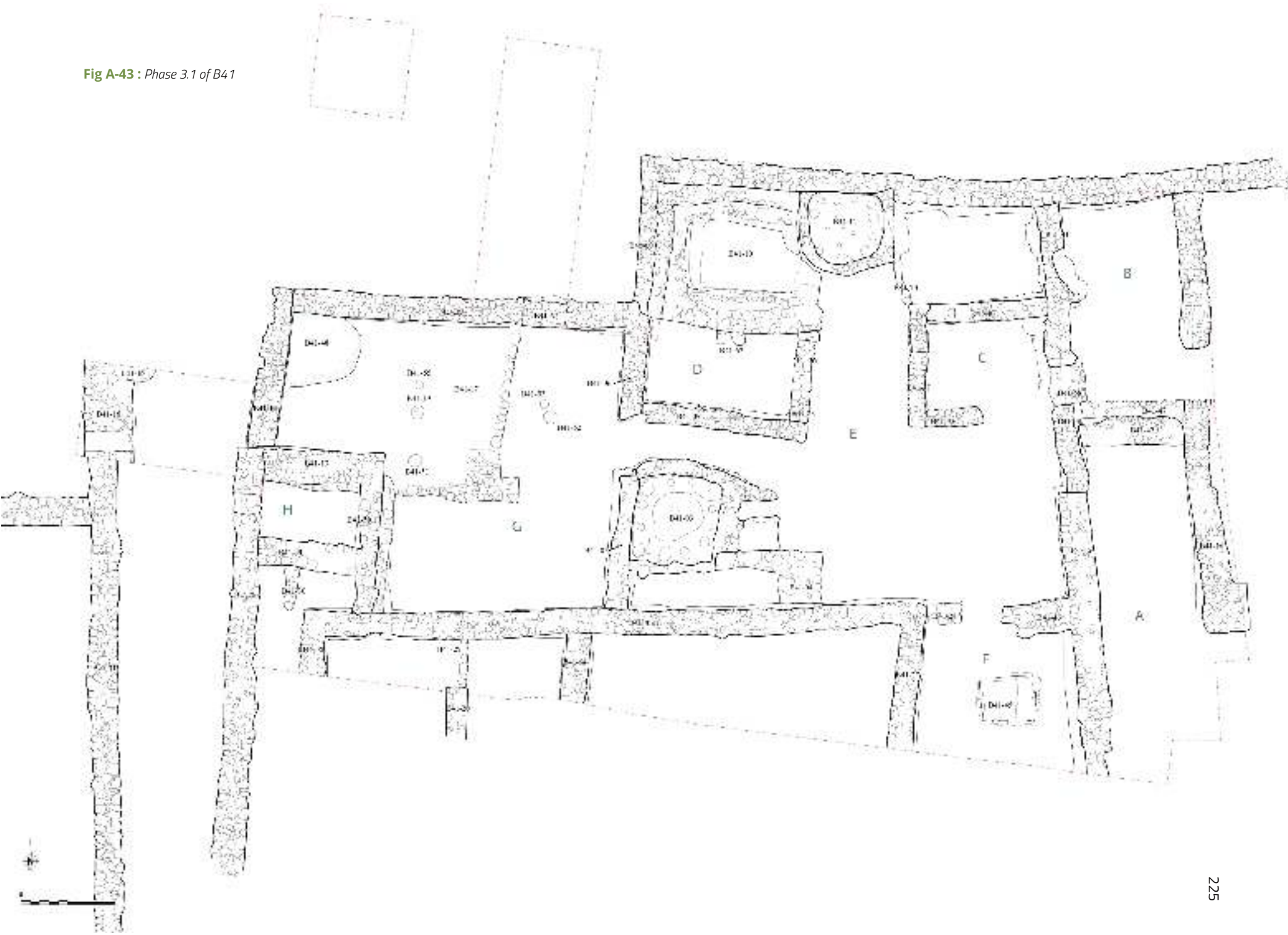


Fig A-43 : Phase 3.1 of B41





**Fig A-44** : B41-67

**Fig A-45** : B41-48

**Fig A-46** : B41-19



The narrow passage which remains north of walls 38, 42 and 47 is also sealed by B41-58. The west facing is built directly over the bedrock and is relatively well built even if large blocks are prominent compared to the upper parts of the masonry. The east facing is very poorly constructed, and it is founded on a silt level (UF 6401). B41-58 is leaning on every other wall (38 and 47 to the south-east and 41 to the north), so it belongs to the last phase of restoration of the workshop. It measures 1.90m long, 1m wide and 1.10m high.

The room was then backfilled until an altitude of 30.287m. On the first level of occupancy of the 3.1 sequence, copper oxides were found in this room under UF 6366. Copper oxide might be related to the manufacture of glazed ceramics (**Fig A-47**).

#### ▪Room E

The most significant modification of the phase 3 was the construction of two new kilns (B41-11 and B41-03) in room E (**Fig A-29**).

Kiln B41-11 is built over the destruction level of kiln B41-10 and along wall B41-24 (**Fig A-48**, <https://skfb.ly/Mpqz>). This kiln has two chambers, a firing room and a heating room (min. altitude 29.51m). A floor separates both chambers. The floor is perforated by 15 flues. Both chambers were constructed with medium blocks of stones, corals, and slags. Its external plan is pseudo-rectangular. Its external dimensions are 1.98m long and 1.90m wide. It is preserved over a height of 1.95m. The heating room measures 1.90m long, 1.32m wide and 0.98m high. Its plan is piriform. The firing room measures 1.57m long, 1.48m wide and 0.70m high minimum. Its plan is ovoid. Its fire tunnel is destroyed. A low wall (B41-70) was built between kiln B41-11 and wall B41-37. It closed an area that will later serve as a dump.

Kiln B41-03 is built over wall B41-04 and against wall B41-05 (**Fig A-49**, <https://skfb.ly/MuYC>). Wall B41-04 is built with large blocks of stones and over a level of soil. It is leaning on wall B41-02. It measures 4m long and 0.35m wide. The successive cleanings of the kiln have dug the inner face of wall B41-05. This kiln has two chambers, a firing room and a heating room (min altitude 29.94m). A floor separates both chambers. The floor is perforated by 12 flues minimum. Both chambers were constructed with medium blocks of stones. Its external plan is pseudo-rectangular; its external dimensions are 3.20m long and 2.37m wide. It is preserved over a height of 1.70m. The heating room measures 1.90m long and 1.24m wide, by 1.14m high. Its plan is piriform. The firing room measures 1.88m long and 1.89m wide, by 0.18m high minimum. Its plan is rectangular. The fire tunnel measures 0.98m long and 0.48m wide.

In this room, the excavation was stopped when the first functioning level (UF 6374) of phase 3 (Altitude 30.01m) was reached.

#### ▪Room F

Inside Room F, B41-45 is a structure whose exact function remains uncertain (**Fig A-50**). It is a built pit with a bench along its eastern wall. It is 1.15m long, 0.84m wide and 0.82m deep. The bench measures 0.32m wide and 0.42m high. It works with a compact beige silt floor level (UF 6374). This layer corresponds to the last functioning level of the workshop homogeneously found in the entire building.

#### ▪Room D

During this phase, a new room was created inside Room E. B41-06 was extended to the south, when a pillar made of coral blocks was added. Including this adjunction, the total length was then 1.96m. The pier was used as a support for the construction of a perpendicular wall running east-west, B41-07. This wall is measuring 3.55m long, 0.36m wide and 1.56m high. Its northern face has a niche that is 0.30m long by 0.20m high. B41-23, perpendicular to B41-07 and B41-10 on which it is leaning, is the sidewall of an opening, allowing access to the new space created by the addition of these walls (Room D). It is 1.89m long, 0.36m wide and 1.11m high. The passage has a threshold, B41-69, which measures 1m long and 0.40m wide (Altitude 29.93m). The installation seems to be contemporary with wall 23. It was in room D that the largest number of uncooked potsherds and clay spreading were found (UF 6406 and UF 6415, Altitude 29.91m). Against the wall of B41-10, there was a little structure made of stones (B41-62). It measures 0.60m long, 0.30m wide and 0.35m high. This structure can be linked to the installation of a potter's wheel. Therefore, the current assumption is that this space was related to clay work, perhaps with the installation of a potter's wheel (**Fig A-51**).



**Fig A-47 :** *Copper oxide*

**Fig A-48 :** *kiln B41-11*

**Fig A-49 :** *Kiln B41-03*

**Fig A-50 :** *B41-45*

**Fig A-51 :** *Room D*

## II-C.3b Sequence 3.2, construction and occupancy :

## ▪Room G

The sequence 3.2 is only documented in room G (Fig A-52). It corresponds to a level of demolition mixed with wastes. The corresponding UF (UF 6123, 6124 and 6136) were composed of loose heterogeneous beige silt. They contain many stones, ceramics, wastes, slags and burnt fish bones. These UF correspond to artificial passes UF 6011, UF 6017, UF 6021, UF 6024, UF 6025, UF 6164, UF 6168, UF 6176, UF 6344, UF 6346, UF 6352, and UF 6353.

## II-C.3c Sequence 3.3, construction and occupancy :

## ▪Room G

As from the sequence 3.3, the room G becomes a dumping ground for the workshops. There is a stack of layers (UF 6127, UF 6146, UF 6223, UF 6224, UF 6227) containing many ceramics, wastes, slags and burnt fish bones. These UF correspond to artificial passes UF 6014, UF 6020, UF 6163, UF 6333, UF 6335, UF 6350, and UF 6359 (Fig A-53).

## ▪Room E

As the stratigraphic relationship between parts G and E has been destroyed by previous excavations, all levels of occupancy of phase 3 were included in the sequence 3.3. After the first level of occupancy (UF 6374), there was a sequence of different layers (UF 6377, UF 6378, UF 6388, UF 6389, UF 6395, UF 6396, UF 6397). There are a stack of layers of fish bones, ashes, wastes and silt with gravels.

The kiln B41-10 (UF 6424) as the space located to the east of kiln B41-11 (UF 6293, UF 6294, UF 6311, UF 6312, UF 6319, UF 6329, UF 6331, UF 6336, and UF 6337) were now used as landfill.

## ▪Room H

As ceramics did not allow dating the first levels of functioning of room H, this layers (UF 6414, UF 6413 and 6408) were included in sequence 3.3. They are composed of green compact homogeneous sandy silt.

## II-C.3d Ceramics

The imported ceramic assemblage of the levels of the phase 3 is marked by the continuity of most productions of earlier phases such as "sgraffiato" (Fig A-54: 1), "mustard ware" or jars with fine incised decoration (Fig A-54: 2). We observe for certain productions like Julfar cooking pots (Fig A-54: 5-7) and hormuzi jars with impressed textile patterns (Fig A-54: 4) an increase of the number of pieces.

Furthermore, painted jugs from Julfar (Fig A-54: 2) and Iranian bowls with painted decoration under glaze whose production began in the 14<sup>th</sup> century complete the corpus.

The Indian painted jars are less imported and cooking pots in red or black fabric more important. These elements allow us to date the phase 3 of the first half of the 14<sup>th</sup> century.

Local production of phase 3 is characterized by a thickening of sides, a less homogeneous pale yellow fabric, and various modules of bowls with the appearance of small bowls (9 to 11cm in diameter).

The glazed wares are still predominant but in lesser proportion (55% of 70% in phase 2, Fig A-56). Among these ones, bowls remain the most widely produced. We note a decline of the variety with a very wide ascendancy of hemispherical bowls (Fig A-57, type 1D; Fig A-58: 1-2).

Large jars with molded rim (Fig A-57 type 1A) are now produced in greater number (Fig A-58: 5-6).

Closed forms (large jars, jars and jugs) are the most frequent forms in unglazed category (Fig A-59: types 2B, 2N, 2D, T1, 2X, 2I; fig.5: 8-13). The profiles of the large jars are more varied in this period. However the jugs are in unique shape (Fig A-58: 13, Fig A-57 type 2O).

Unglazed bowls are similar to those in phases 1 and 2 while the basins are enhanced by a new globular shape with rounded rim.



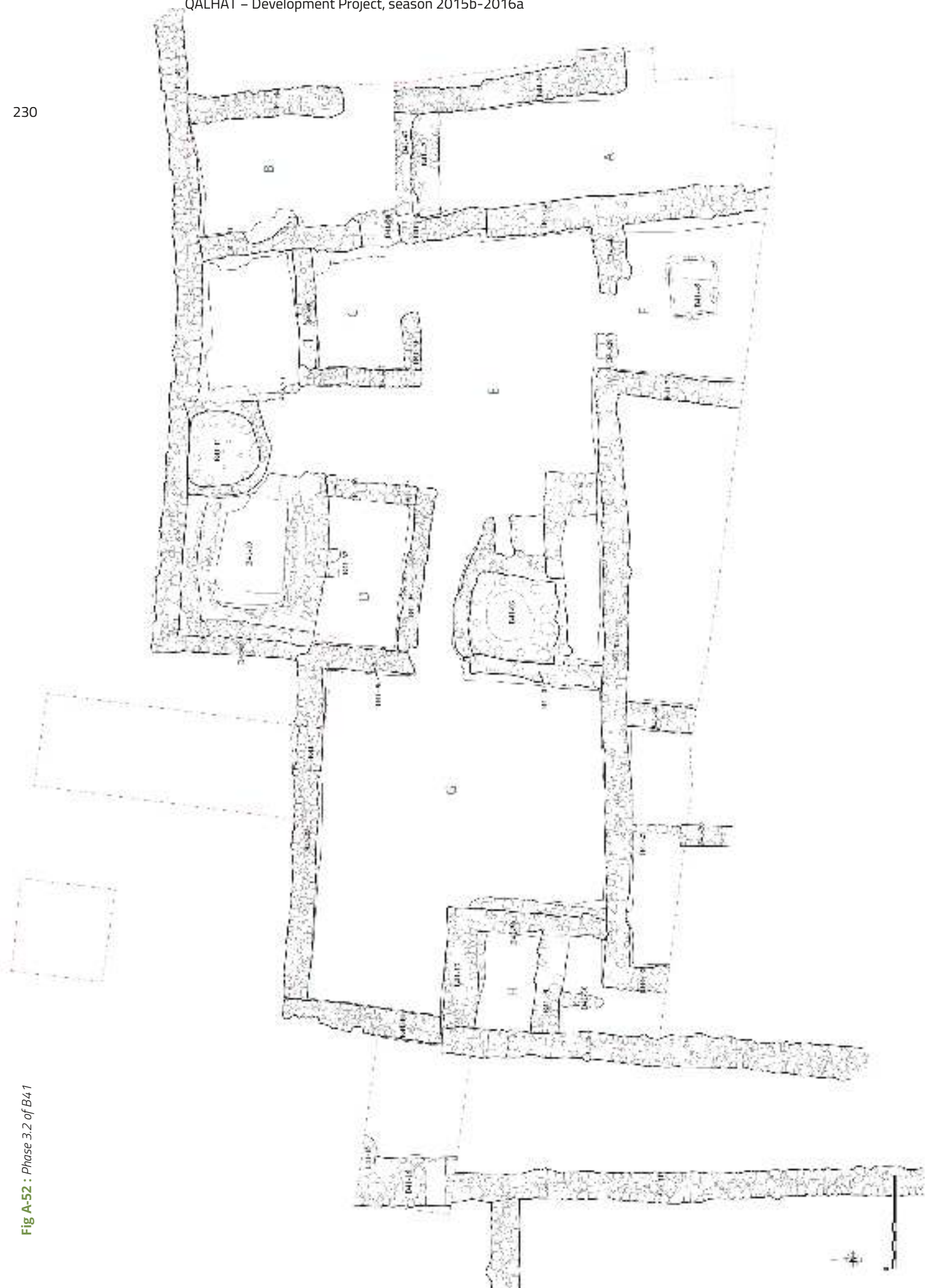
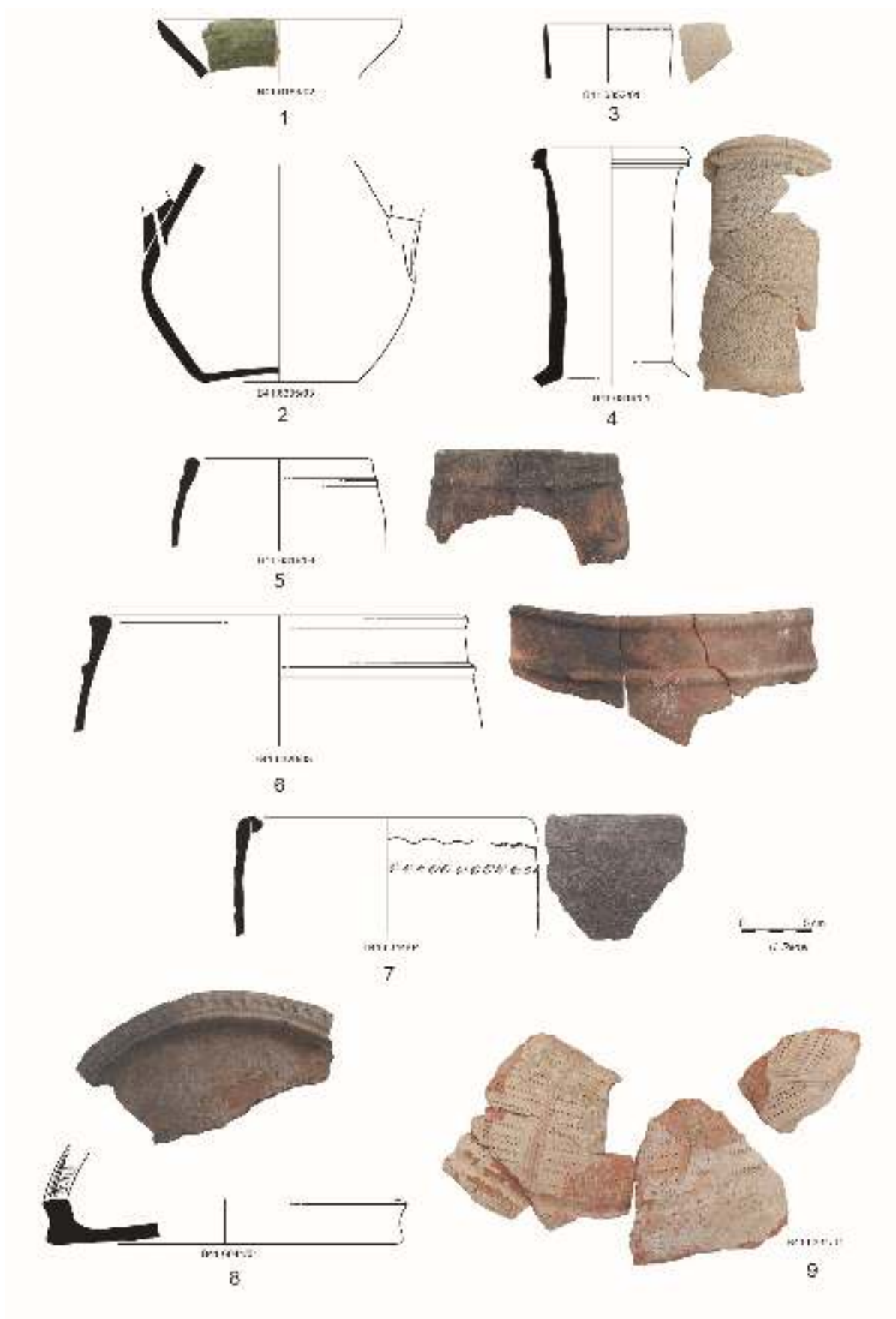


Fig A-52 : Phase 3.2 of B41

Fig A-53 : Longitudinal west–east trench



**Fig A-54:** Imported ceramic phase 3. N°1 : sgraffiato ware; n°2 : Julfar ware; n°3 : Iranian incised jar; n°4 : iraninan jar with textile patterns; n°5-7: cooking pots from Julfar; n°8-9 : unknown common ware





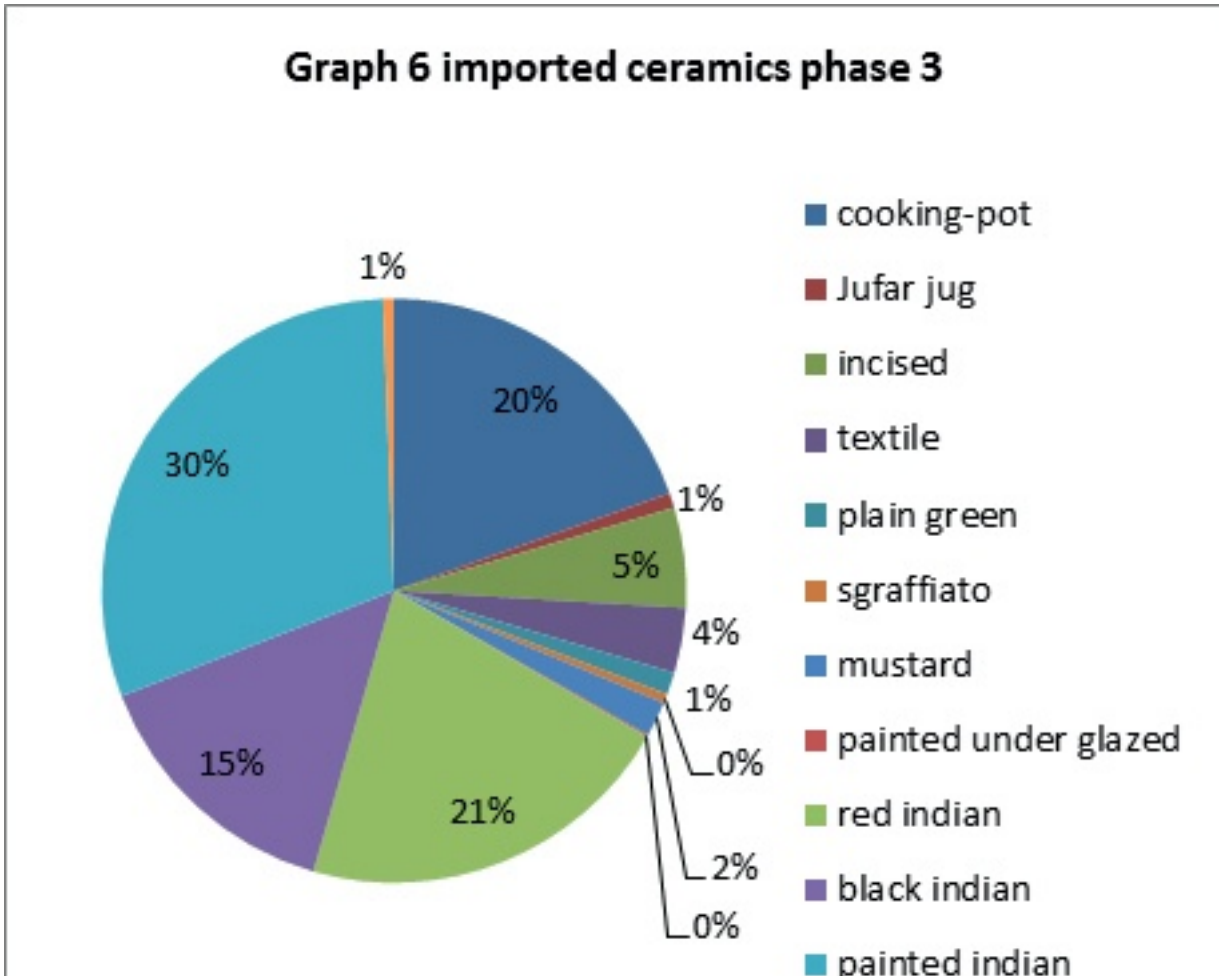


Fig A-55 : Phase 3 : imported ceramics

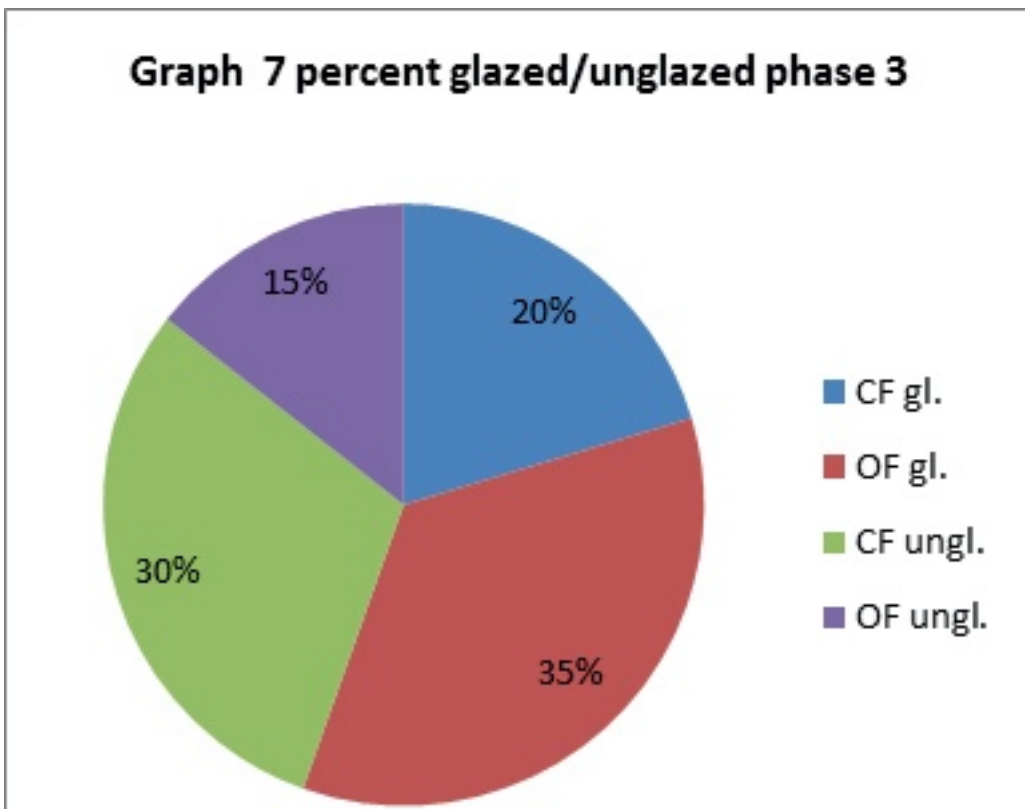
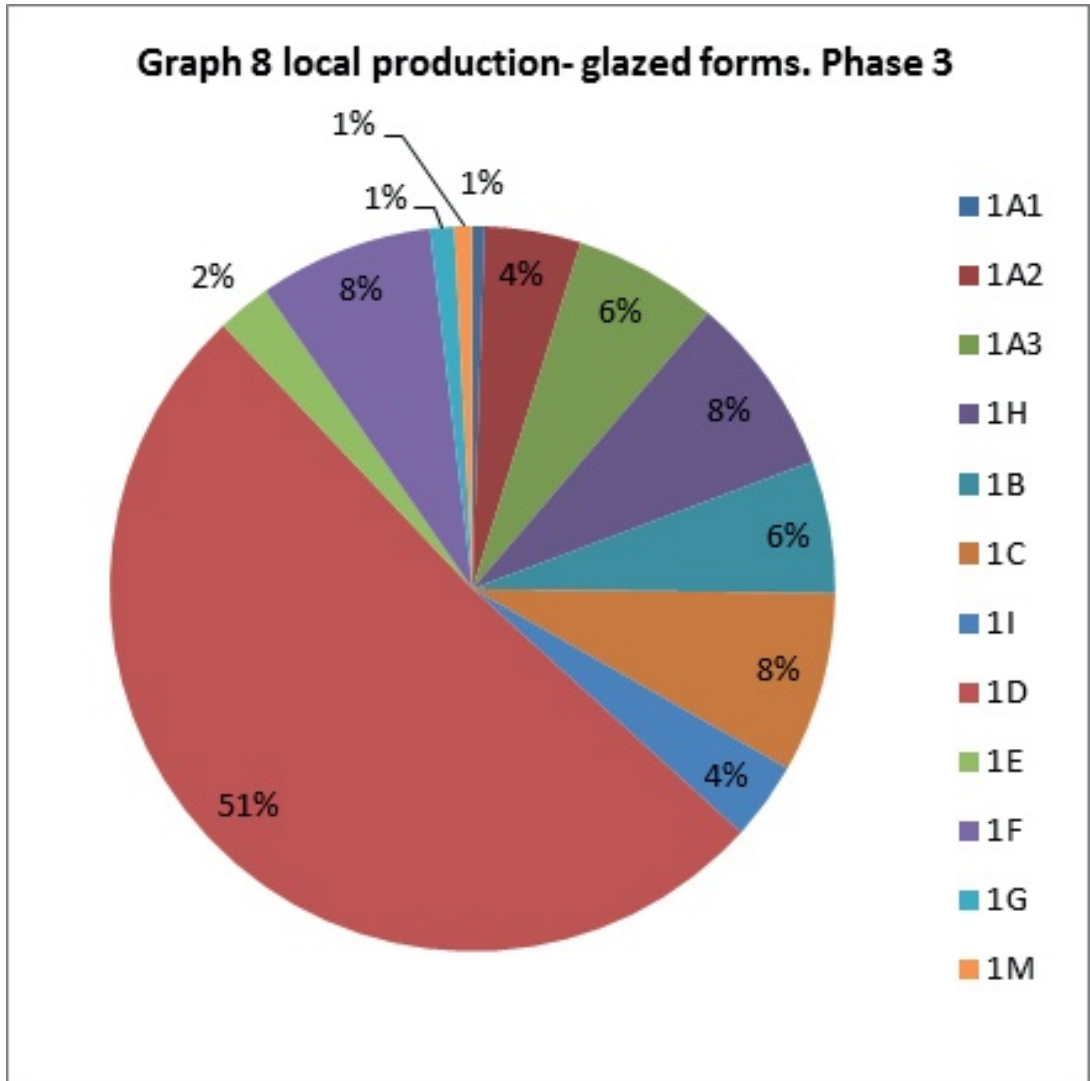


Fig A-56 : percentage glazed/unglazed phase 3

Fig A-57 : local production- glazed forms phase 3

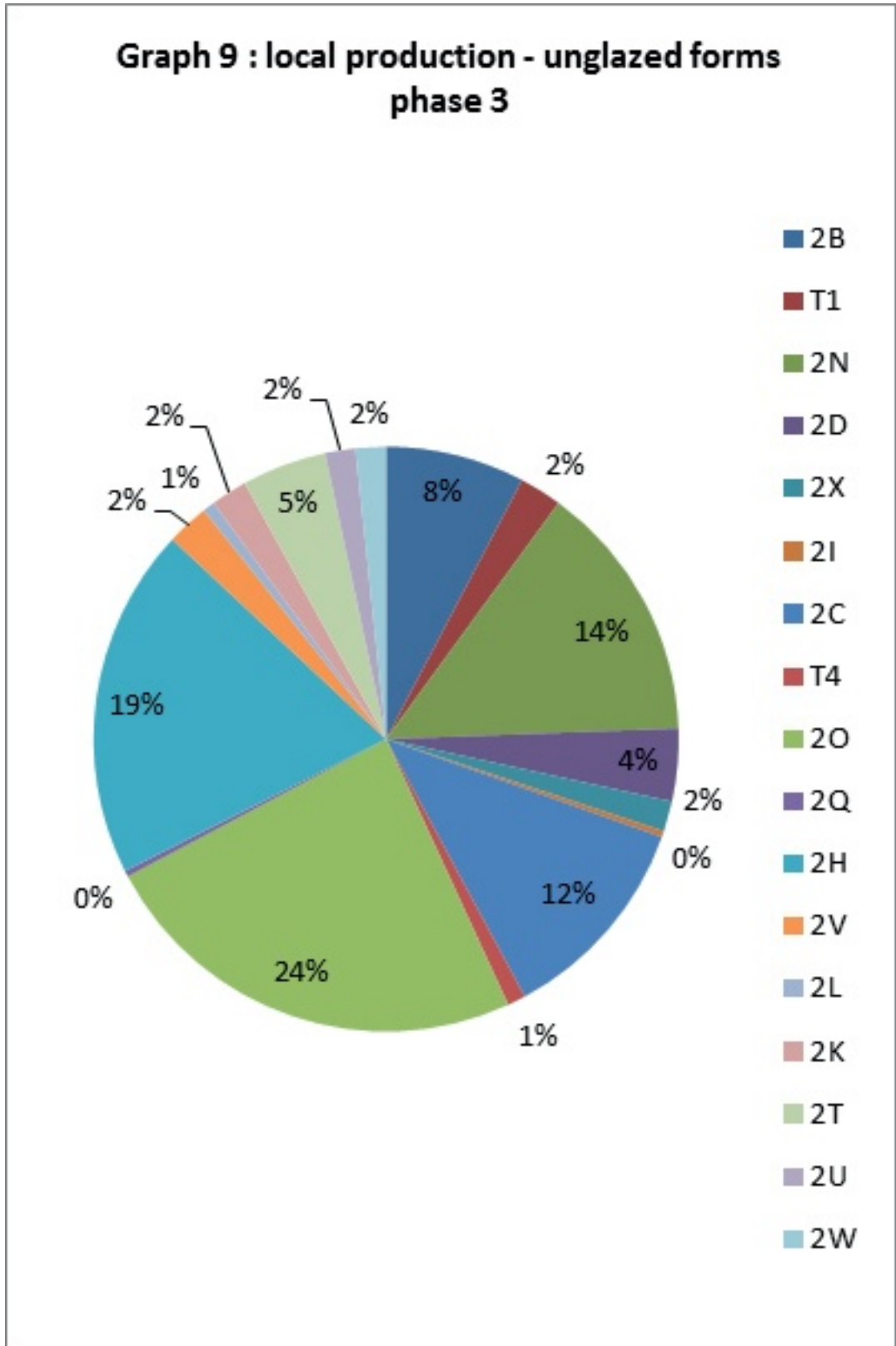


**Fig A-58** : Phase 3 : local production. Glazed bowls : n° 1-2 (type 1D), n° 3 (type 1H), n° 4 (type 1G); large jars : n° 5-6 (type 1A), n° 8 (type 2N), n° 9 (type T1); n° 10 (type 2D), n° 11 (type 2X), n° 12 (type 2I); jar: n° 7 (type 1C); jug: n° 13 (type 2M); unglazed bowls: n° 14-15 (type 2H), n° 16: (type 2V); basins: n° 17, 18 (type 2T), 19 (type 2U).





Fig A-59 : local production- unglazed forms phase 3



## II-C.4 Phase 4 (second half of the 14<sup>th</sup> century)

### II-C.4a Construction and occupancy

#### ▪Room G

During phase 4, room G continues to be a dump but in lower proportions (**Fig A-60**). The layers of backfill (UF 6126 and UF 6137) were composed of loose homogeneous beige silt. They contain stones, ceramics or fragments of kiln walls. These UF correspond to artificial passes UF 6008, UF 6010, UF 6013, UF 6018, UF 6159, and UF 6340.

#### ▪Room E

The kilns were still active during this phase. Ashes and charcoals (UF 6358) of the last firing of the kiln B41-03 were found at the bottom of the heating room. At the bottom of the heating room of kiln B41-11 were found ashes and many burnt fish bones (UF 6365). In room E, workshop levels continue as in phase 3.3 (UF 6295, UF 6345, UF 6369 and UF 6308). There are a stack of layers of fish bones, ashes, wastes and silt with gravels.

The followings levels that fill the room are a series of discharges of the heating chamber (UF 6066, UF 6067, UF 6068, UF 6069, UF 6070, UF 6071, UF 6072, UF 6073, UF 6074, UF 6075, UF 6076, UF 6077, UF 6078, UF 6079, UF 6080, UF 6081, UF 6082, UF 6094, UF 6095, UF 6096, UF 6098 and UF 6099). There are a stack of layers of burnt fish bones, stones, slag, ashes, a few wastes and brown compact homogeneous silt. These UF correspond to artificial passes UF 6023, UF 6027, UF 6030, UF 6033, UF 6036, UF 6039, UF 6046, UF 6178, UF 6179, UF 6181, UF 6189, UF 6191, UF 6193, UF 6200, UF 6202, UF 6208, UF 6236, UF 6261, UF 6272, UF 6281, UF 6282 and UF 6283 (**Fig A-11**).

At the end of this phase, the workshop is abandoned and a level of demolition (UF 6102 and UF 6084) comes to seal this room. In the kilns, UF of demolitions are UF 6364 for the kiln B41-11 and UF 6357 for the kiln B41-03. These layers were composed of loose homogeneous beige silt. They contain many stones and ceramics. These UF correspond to artificial passes UF 6029, UF 6037, UF 6174, UF 6177, UF 6196, UF 6199 and UF 6244.

#### ▪Room F

Progressively to phase 4, room F becomes a dump. Initially, the structure B41-45 is filled with fish bones, slags, kiln pieces of wall, stones, coals, gravels, pebbles, and many ceramics (UF 6301 and UF 6373). Then, there are a stack of layers of burnt fish bones, stones, slags, ashes, a few wastes and brown compact homogeneous silt (UF 6308, UF 6296, UF 6297, UF 6299, UF 6303 and UF 6304). These UF correspond to artificial passes UF 6172, UF 6170, UF 6171, UF 6180, UF 6184 and UF 6325.

#### ▪Room D

During the phase 4, room D became a dumping ground (UF 6360). This layer was composed of loose homogeneous beige silt. It contains stones, ceramics and many burnt fish bones. This UF corresponds to artificial pass UF 6190.

#### ▪Room A

B41-38 serves as a support of another masonry, wall B41-43, which seems to have suffered significant pressures due to the compaction of discharges stored in room A. It measures 2m long, 0.35m wide and 1.50m high. The junction between walls 43 and 12 still wears a fine coating preserved only in this part of the wall. The access to room A from the south and east is closed by the construction of wall B41-68 which is leaning on B41-26, with the same north-south direction but with a different axis. It is built on a backfill layer of about twenty centimetres. It is 2.52m long, 0.38m wide and 1.85m high. B41-39 closes the southern access: it is oriented east-west and leans on both walls 12 and 68. It measures 1.10m long, 0.30m wide and 1.10m high.

Following the closure of the room A, a dump (UF 6049) is located south of the room. It contains stones, pebbles, and many ceramics (**Fig A-30**). This UF corresponds to artificial pass UF 6316.

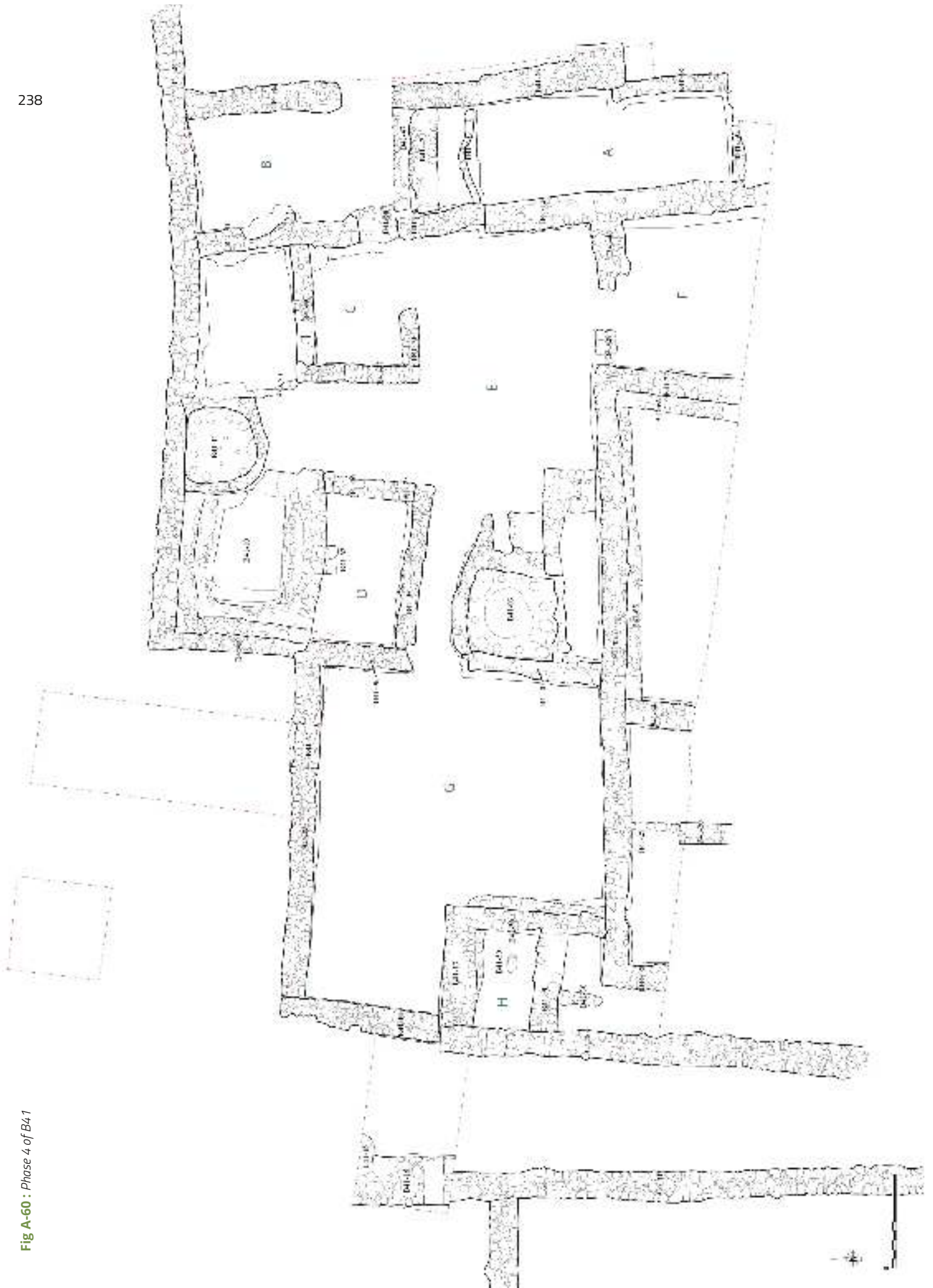


Fig A-60 : Phase 4 of B41



#### ■ Room H

During phase 4, a pit B41-59 was dug on the floor (Altitude 30.60m). It measures 0.40m long, 0.25m wide and 0.18m high. It could contain a jar. Then there is a succession of levels of abandonment and demolition (UF 6404 and UF 6405).

#### ■ South exterior and the early layout of B39

B41-65 and B41-66 were built to reinforce the walls against which they are built (Fig A-61). They are bounded together and leaning on B41-02 and B41-27. Wall 65, which is thickening wall 02, measures 6.56m long, 0.35m wide and 1.05m high. Wall 66, that thickens wall 27, is 2.48m long but continues south beyond the excavated area, 0.35 m wide and 0.55 m high.

At the level of the thresholds B41-29 (altitude 29.9m), there are occupancy levels (UF 6129 and UF6175). These layers were composed of compact homogeneous brown sandy silt. They contain a few ceramics and a copper bowl.

Further south, during the excavation of B39, many basins have been uncovered, which clearly belong to the early phase of this building that was probably running northward at that time. According to the few ceramic finds, this phase could be dated from the second half of the 13<sup>th</sup> century to the end of the 14<sup>th</sup>. If these structures belong to the potter's workshop, they could be connected to any or all of the four phases already described.

#### ■ North exterior

There is backfill (UF 6209, UF 6210, UF 6218) of a height of 0.57 m. These layers were composed of compact homogeneous beige silt. They contain stones. These UF correspond to artificial passes UF 6155 and UF 6160.

#### II-C.4b Ceramics

The collection of the phase 4 differs from the one of previous periods (Fig A-63).

The « mustard » bowls, common between 1250 and 1350, disappear. The few examples are residuals, founded principally in rubbish levels. Whereas some productions dated from the 14<sup>th</sup> century appear: the bowls with turquoise glaze so-called "blue speckled", bowls with black painting patterns under light pinkish glaze (Fig A-64: 2) and the plain or painted under glazed fritware.

A new shape of cooking pot is present in the levels of the 4<sup>th</sup> phase (Fig A-64: 4-5) next to the cooking pots coming from Julfar (Fig A-64: 3). This new shape is globular with everted rim and combed decoration on the shoulder. It is uncommon in the levels of the houses of Qalhât, some pieces are found in levels dated to the late 14<sup>th</sup> century. Their origin remains unknown for the moment. The importations from India change with a decline of painted jars and the frequency of cooking pots in red or light brown fabric with orange slip (Fig A-64: 8-9).

A dating to the second half of the 14<sup>th</sup> century for the levels of this phase can be suggested.

The local ceramic of the phase 4 is characterized by a reduction of glazed pieces (Fig A-65 à 67; Fig A-68).

The thickening of the side is confirmed in this phase.

Unlike the imported material, there is no change in the corpus of local ceramics.

In fact, the forms represented, glazed and unglazed, are equal and produced in the same proportions as during the phase 3 (Fig A-65). We note the confirmation of the reduction in glazed bowls with everted rim (type 1F) and the significant increase of basins (type 2K; Fig A-68: 12). Ascendancy which will be confirmed during the 15<sup>th</sup> and the 16<sup>th</sup> centuries.



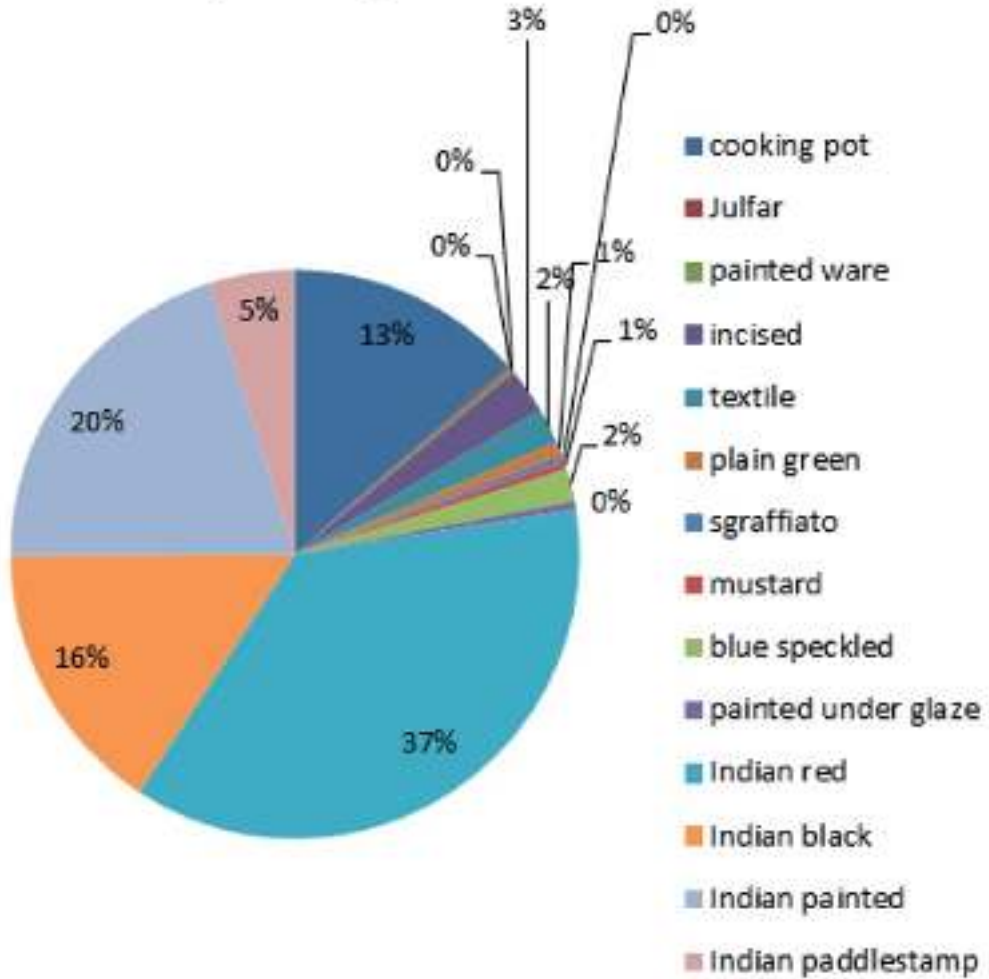
**Fig A-61 :** Wall B41-65 and B41-66

**Fig A- 62 :** The copper bowl (UF 6175 B41-E7)



Fig A-63: Imported ceramic phase 4

**Graph 10: Imported ceramics- phase 4**



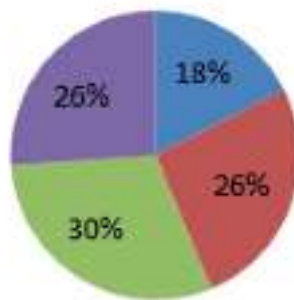


**Fig A-64:** Imported ceramic phase 4. N°1: plain green glazed bowl; n°2: iranian painted underglazed ware; n° 3-5 : cooking pots; n° 6-7: indian black cooking pots; n°8-9: indian red ware.



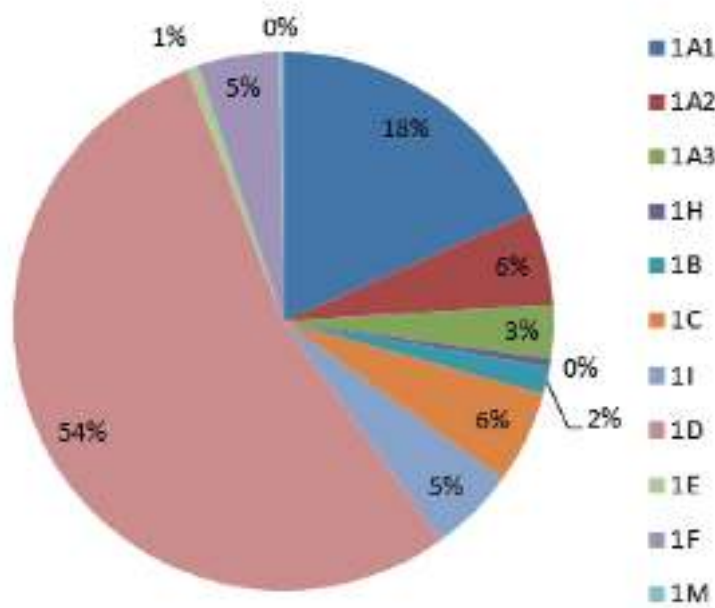
**Graph 11 percentage unglazed/glazed phase 4**

■ CF gl. ■ OF gl. ■ CF ungl. ■ OF ungl.



*Fig A-65: percentage glazed/unglazed phase 4*

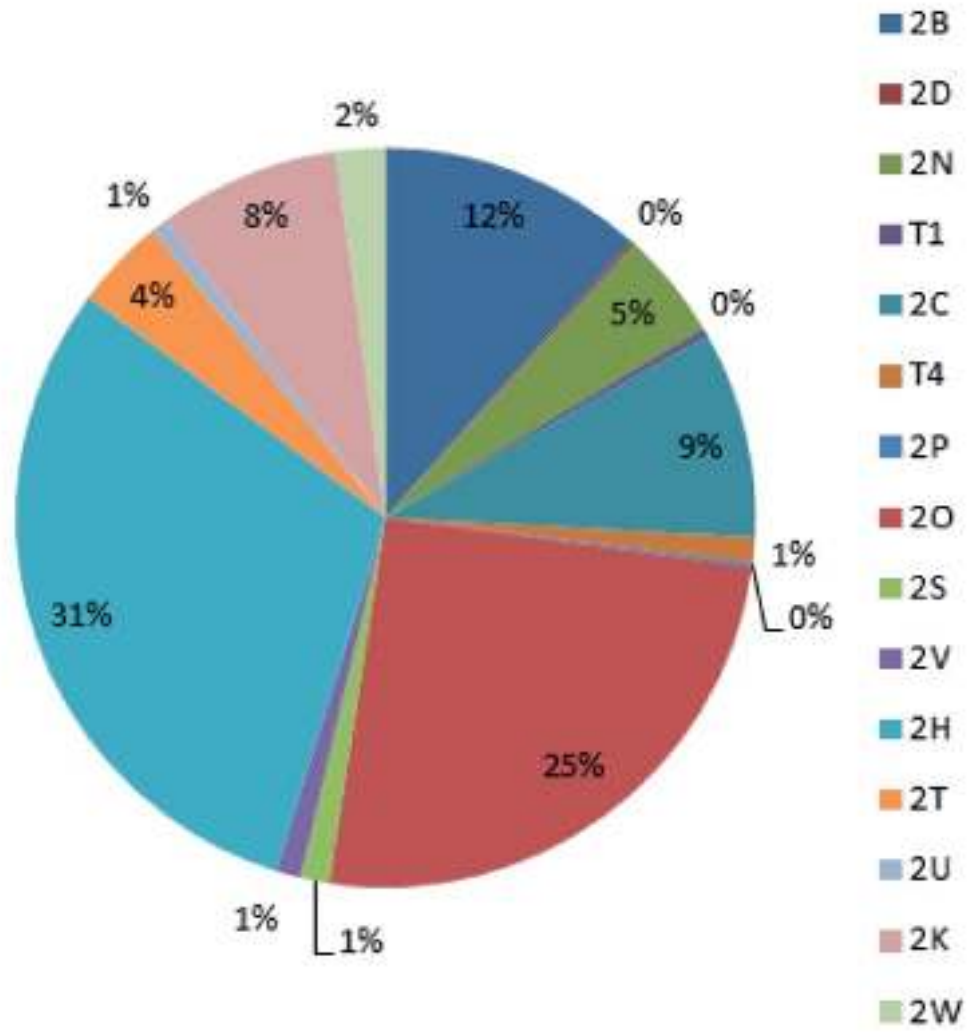
**Graph 12 local production glazed forms. Phase 4**



*Fig A-66 : local production-glazed forms phase 4*

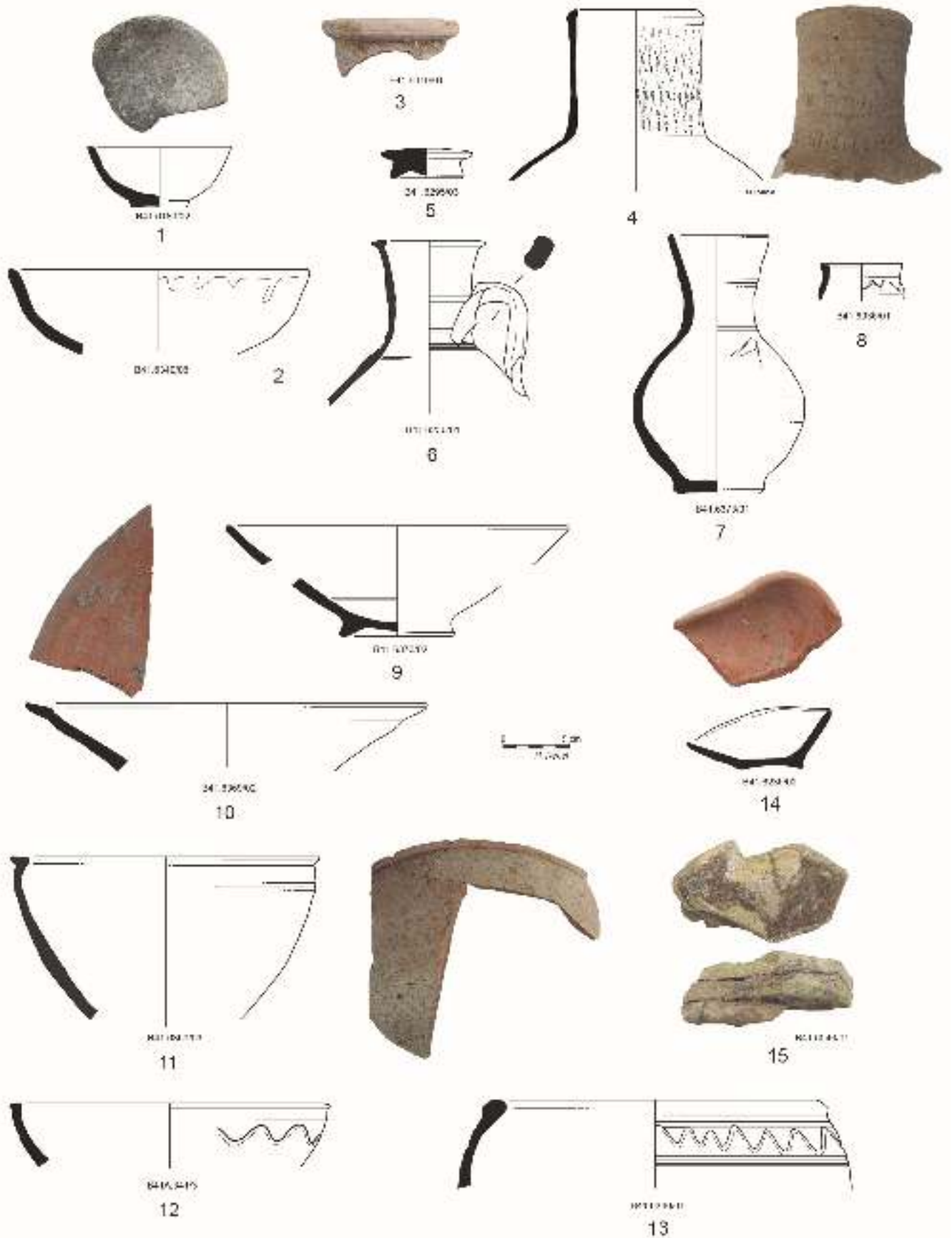
Fig A-67 : local production- unglazed forms phase 4

**Graph 13 local prodction unglazed. Phase 4**





**Fig A-68** : Phase 4: local production Glazed bowls: n° 1-2 (type 1D); large jars : n° 3 (type 1A), n° 4 (type T4); jugs: n° 5-6 (type 2O); bottle: n° 7; pot: n° 8 (type 2S); unglazed bowls : n° 9 (type 2H), n° 10 (type 2V); oil lamp: n° 14 (type 2W); basins: n° 11 (type 2T), n° 12 (type 2K), n° 13 (type 2U, ) tiles: n° 15.



## II-C.5 Phase 5 (15<sup>th</sup>-16<sup>th</sup> century)

### II-C.5a Construction and occupancy

#### ▪Room G

At first, room G is a dumping ground of another potter's workshop (**Fig A-69**). In the northern part of the room, there is a stack of layers of wastes, slags, kiln pieces of wall, burnt fish bones (UF 6138, UF 6147, UF 6148, UF 6149, UF 6150 and UF 6151). These UF correspond to artificial passes UF 6156, UF 6323, UF 6328, and UF 6356. Then, wall B41-02 was destroyed. The UF 6230 and UF 6128 correspond to demolition levels south of the room. These UF correspond to artificial passes UF 6130, UF 6158, UF 6348, UF 6349 and UF 6351. At the end of the phase there are very mixed levels (UF 6001, UF 6002 and UF 6342), probably related to a late reoccupation of the area (B41-32) (**Fig A-53**).

#### ▪Room E

The east part of room E presents a layer of demolition of the 16th century. Against wall B41-12, layers UF 6101 and one part of UF 6100 came to dig the layers of the phase 4. These layers were composed of homogeneous beige silt. They contain many stones. They are probably earthwork levels. These UF correspond to artificial passes UF 6185, UF 6187, UF 6251, UF 6257, UF 6292 and UF 6310. At the end of the phase, a wall built in dry stones is constructed in the axis of B41-12 at an altitude of 31.66m. It measures 3.20m long, 0.40m wide and 0.25m high. It is associated with artificial passes UF 6015 and UF 6019 (**Fig A-53**).

#### ▪Room A

This space is related to the storing of discharges from other workshop since almost all of the stratigraphy of this area consists of layers of ashes mixed with carbonised fish remains (UF 6104, UF 6105, UF 6106, UF 6107, UF 6108 and UF 6109). These UF correspond to artificial passes UF 6016, UF 6032, UF 6045, UF 6047, UF 6252, UF 6255, UF 6259, UF 6262, UF 6264, UF 6268, UF 6270, UF 6271, UF 6273, UF 6274, UF 6276, UF 6284, UF 6285, UF 6288, UF 6289, 6309, UF 6314 and UF 6315 (**Fig A-53**).

At the end of the phase, there is a stone layer (UF 6110) associated with the Wall B41-01. These UF correspond to artificial passes UF 6258 and UF 6266.

#### ▪Room B

During this phase, all the room is filled by a level of demolition stones. These UF correspond to artificial passes UF 6253, UF 6254, UF 6260, UF 6265, UF 6269, UF 6275, UF 6277, UF 6278, UF 6279, UF 6290, UF 6291, UF 6318, UF 6320, UF 6324 and UF 6334.

#### ▪Room F

Earthwork levels of room E continue into room F (UF 6300 and UF 6305, and a part of UF 6084). These layers were composed of homogeneous beige silt. They contain many stones. These UF correspond to artificial passes UF 6157, UF 6161, UF 6313, UF 6317, UF 6326, UF 6327 and UF 6341.

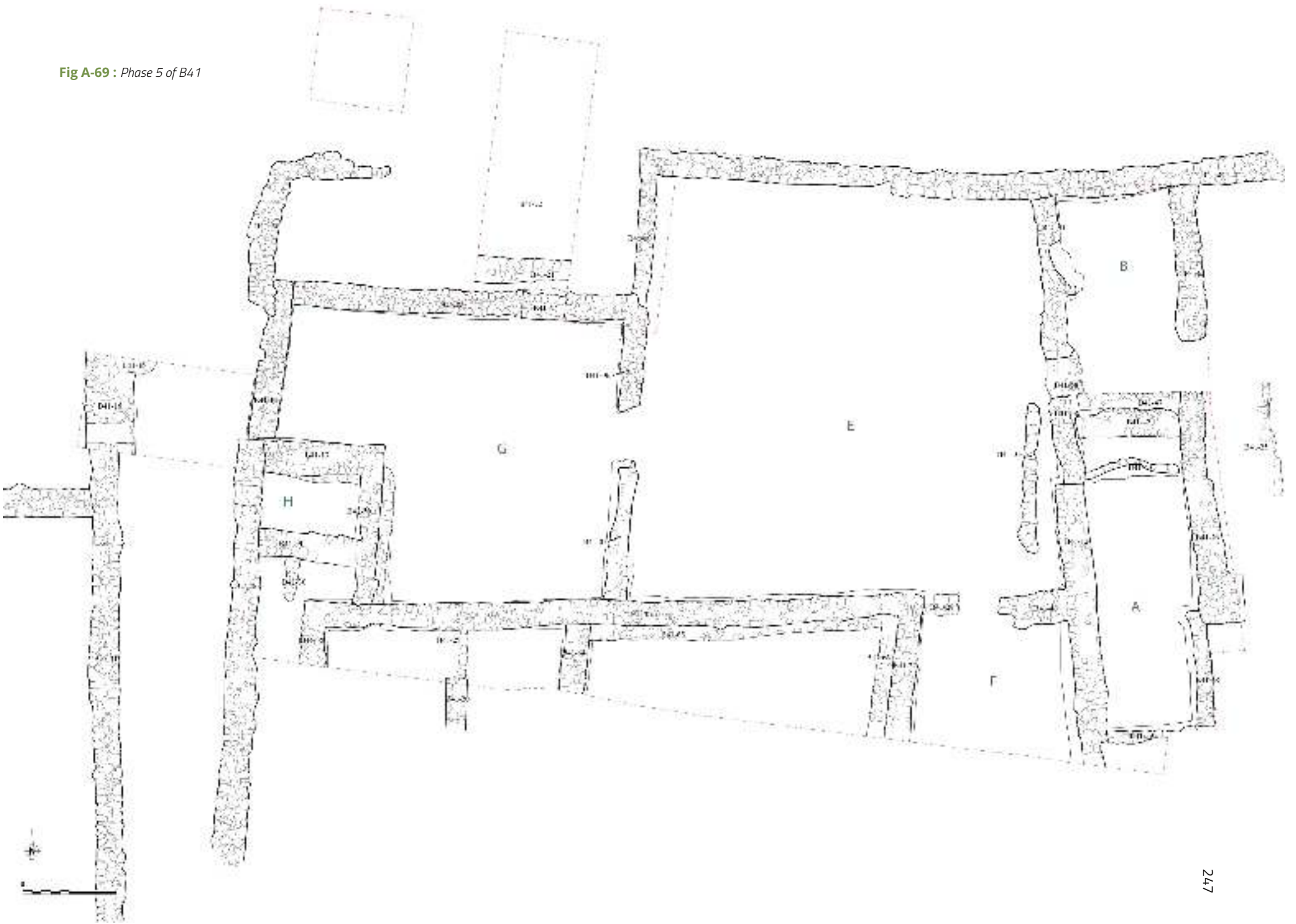
#### ▪Room H

Room H was also filled during this phase by demolition levels (UF 6205, UF 6206, UF 6245 and UF 6249). These layers were composed of homogeneous beige sandy silt. They contain many stones.

#### ▪North exterior

The northern area outside of room G underwent major redevelopment during this phase. 0.25 m behind B41-67, wall B41-21 was unearthed in trench E oriented north-south. This wall is built on the new floor level of the north street (B41-22, Altitude 31.14 m), it was cleared over a length of 1.94 m and a width of 0.48 m but continues on either side of the trench. In the continuation of B41-14 wall, a dry stones wall B41-32 was built (Altitude 32.21 m). The end of the occupation of this sector has led to the development of several levels of collapse, abandonment and burning (UF 6211, UF 6212, UF 6213, UF 6214, UF 6216, UF 6219, 6220, UF 6221 and UF 6222). These layers were made of homogeneous beige sandy silt. They contain many stones, ceramics, charcoals and gravels. These UF correspond to artificial passes UF 6051, UF 6086, UF 6093, UF 6103, UF 6111, UF 6113, UF 6131, UF 6132 and UF 6154 (**Fig A-70**).

Fig A-69 : Phase 5 of B41





**Fig A-70** : West view of the trench south-north

#### ■ South exterior

The southern area outside the workshop was filled during this phase. Between wall B41-64, B41-65 and wall B41-66, filling was made of stones and ceramics included in homogeneous loose beige sandy silt (UF 6182, UF 6192, UF 6207, UF 6229, UF 6237, UF 6238, UF 6246 and UF 6247). Between wall B41-64, B41-02 and wall B41-39, demolition levels of room G extends into this area (UF 6128, UF 6232 and UF 6233). These UF correspond to artificial passes UF 6050, UF 6085, UF 6090, UF 6112, UF 6355, UF 6362, UF 6363, UF 6368, UF 6370 and UF6390 (**Fig A-70**).

Further south, an excavated area that previously contained different structures probably related to the ceramic factory was now occupied by an independent building, B39, probably devoted to a craftsman activity, maybe a jeweller or a semi-precious object factory. This entire area might have been one of the artisan district of Qalhât.

#### II-C.5b Ceramics

Most of the levels from the phase are rubbish with a mixed material. It is thus impossible to present a corpus chronologically correct for the last periods. The more recent imported sherds are dated to the 15<sup>th</sup> and 16<sup>th</sup> centuries.

### II-C The localisation of the workshop in the neighbourhood

Areas of circulation around the workshop could have been only partially uncovered since the extension of the workshop is more important than what was expected. B41-30 and B41-31 walls define a street to the west (Fig A-71). B41-31 is only excavated on one course of stones; it measures at least 10.24 m long but continues south, and 0.55 m wide. A dark grey mortar coating is present on both sides of the wall. This wall belongs to another building, B-284, located to the west side of B-41.

Wall B41-16 is located at the western end of the trench oriented east-west. It is likely related to the same street. Its thickness of over a meter corroborates this hypothesis. It has an opening that could correspond to a window or a passage. The exposed part of the wall is 2 m long, 1.05 m wide and 1.24 m high. Wall B41-15 is partly built on B41-16. A similar coating covers both walls, itself covered with a grey mortar that binds both structures, and therefore they worked together at some point. B41-15 and B41-16 also belong to building B284, located to the west side of B41.

The northern limits of the workshop are well defined, even though the connection with B285, a building located to the north of B41, could not be observed in the trench E oriented north-south. In the east, where a street was expected instead of rooms A and B, both walls B41-24 and B41-26 seem to continue. No return of the north wall B41-24 could be observed, and as already mentioned, wall B41-26 forms an angle and continues towards the east. There is therefore a possibility that the workshop will continue in this direction, but its exact limits could only be found with an extension of the excavated area.

The workshop continues south of the grid established in the search protocol, and considering that every wall oriented north-south continues beyond, it is clear that the building goes further south. As it has already been mentioned, one can assume that it originally included the area where B39 was lately built, using some walls of the ceramic factory.



**Fig A-71 :** *West Street overlooking north*

## II-D Production of local ceramics of the B41

### II-D1 Typo-chronology

All the assemblages of sherds and wastes from the kilns excavation were counted according to the typology created during previous excavations and completed if necessary.

The ceramics produced in Qalhât include every type in use during the medieval period: jars, jugs, basins, bowls and lamps, glazed and unglazed. The pieces are wheel-thrown except for the globular jars which have hand-made struck sides and a wheel-thrown neck. The fabric is orange brownish (2.5YR5/8) to pale brown (2.5YR6/4) in color with calcite and grog inclusions.

#### II-D1.a The large jars (Fig A-72; Fig A-73)

The production of large jars began during the first activity of the workshop in the second half of the 13<sup>th</sup> century. Two categories of large jars are distinguished: the glazed and the unglazed.

1/ Large glazed jars have an ovoid side, a ring base, a cylindrical neck and an everted simple rim (types 1A3, 1H, Fig A-72: 1-3) or grooved outer face (types 1A1, 1A2; Fig A-72: 4-5). Four small horizontal handles are distributed on the shoulder. A pale green glaze covers the upper part of the shape with an exception for the bottom of the rim for technical grounds. Some wastes (fig.9) have given us the arrangement, head to foot, of the jars in the interior of the baking chamber of the kiln. In this case, the glaze on the rim could be impossible (or dangerous). The large glazed jars are the most produced, in particular the shape with grooved rim, from the first half of the 14<sup>th</sup> century (phase 3).

2/ Large unglazed jars have a globular side and a large cylindrical neck (types 2B, 2D, 2N and T1; Fig A-72: 6-11). Some variants in the rim and/or the decoration of the neck and the shoulder have allowed the classification in different types. The forms 2B (Fig A-72: 6-7), the simple one, with a large everted rim, are mainly produced in the first phases then, in a constant way, until the 16<sup>th</sup> century. We note that the pieces with painted decoration (type 2N; Fig A-72: 11) are made in the same proportion from the start of the production (in phases 1 and 2; Fig A-73). The strong relation, in shape and patterns, between these jars and those imported in huge quantities from India during these first phases suggests an imitation made by the qalhati potters (Fig A-74).

Also the forms T1 (Fig A-72: 8), imitation of the hormuzi jars with combed textile patterns are produced at the same time of the prototype during the second half of the 13<sup>th</sup> century.

The shape 2X with a flaring and flattening rim (Fig A-72: 10) was produced only in the first phase.

#### II-D1.b The Jars (Fig A-75; Fig A-76)

Two shapes of jars are identified (types 1C/2C and T4; Fig A-75). The first one has a globular side, a cylindrical neck and a rounded rim (Fig A-75: 1-3). Two straight handles go from the neck to the shoulders. This shape can be glazed (type 1C) or unglazed (type 2C). It was made in constant way between the second half of the 13<sup>th</sup> and the 16<sup>th</sup> century. The counting of diagnostic pieces allows us to see that the use of glaze was frequent at the beginning of the workshop activity, then decreased gradually.

The second shape (type T4; Fig A-75: 4-5), too piecemeal to be described (understood) in its entirety, has an everted neck decorated with stamped patterns which copied boorishly the textile ornament of the imported hormuzi jars (type T1, Fig A-54: 4). This shape appears only in the 14<sup>th</sup> century (phase 3).

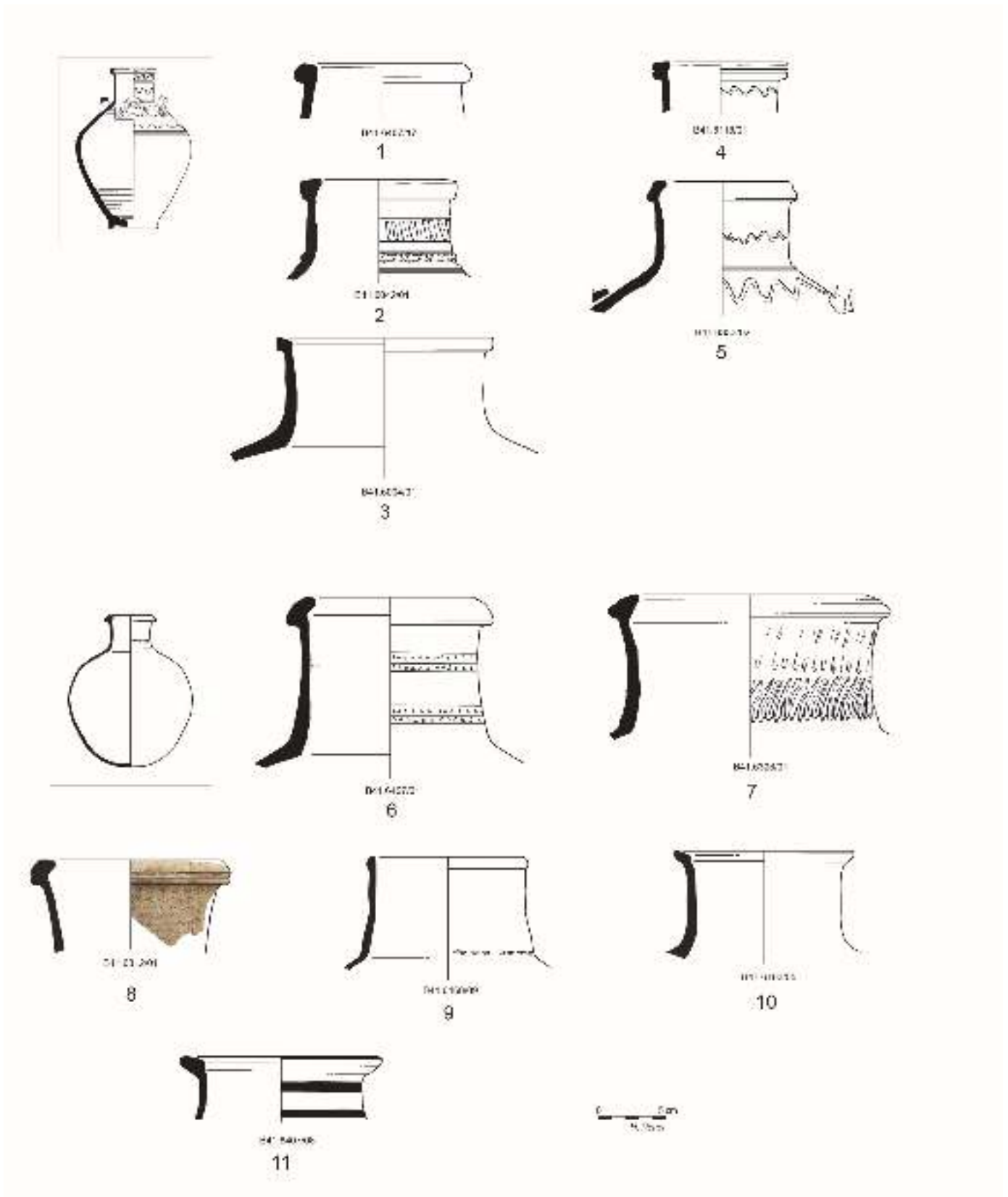
#### II-D1.c The jugs and bottles (Fig A-77; Fig A-78)

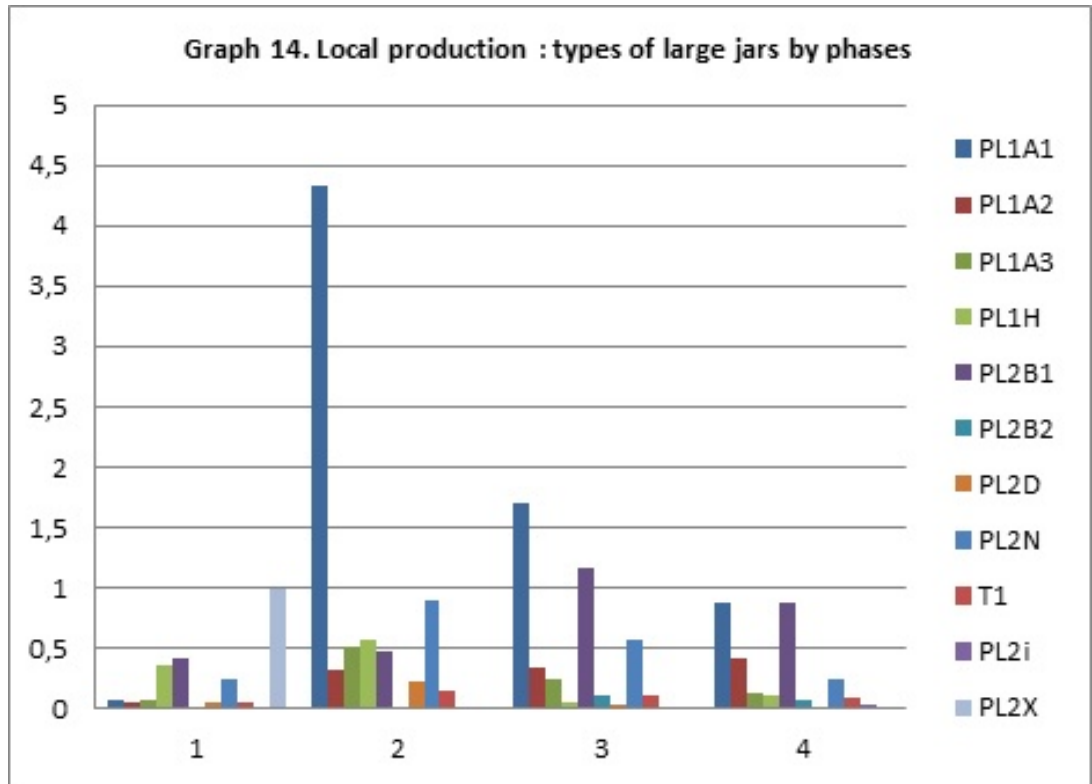
Only one type of jug was produced in the workshop B41 between the second half of the 13<sup>th</sup> century and the end of the 14<sup>th</sup> century. It has an ovoid side with a ring base, a flaring neck, one straight handle and a heavy straight spout (Fig A-77: 1-3). The neck and the shoulders are, in some cases, decorated with incised wavy and horizontal lines. This form was unglazed (type 20) or covered, in its upper part, by a green glaze (type 1l). The unglazed shape was more produced in all phases than the glazed one.

The same shape but without handle was identified as a bottle (Fig A-77: 4).



**Fig A-72** :Local production : large jars. glazed large jars : type 1A (n°1, 2, 4, 5); type 1H : n°3; unglazed large jars: type 2B (n°6-7); type T1 (n°8); type 2D (n°9); type 2X (n°10); type 2N (n°11).





**Fig A-73 :** Local production : types of large jars by phases

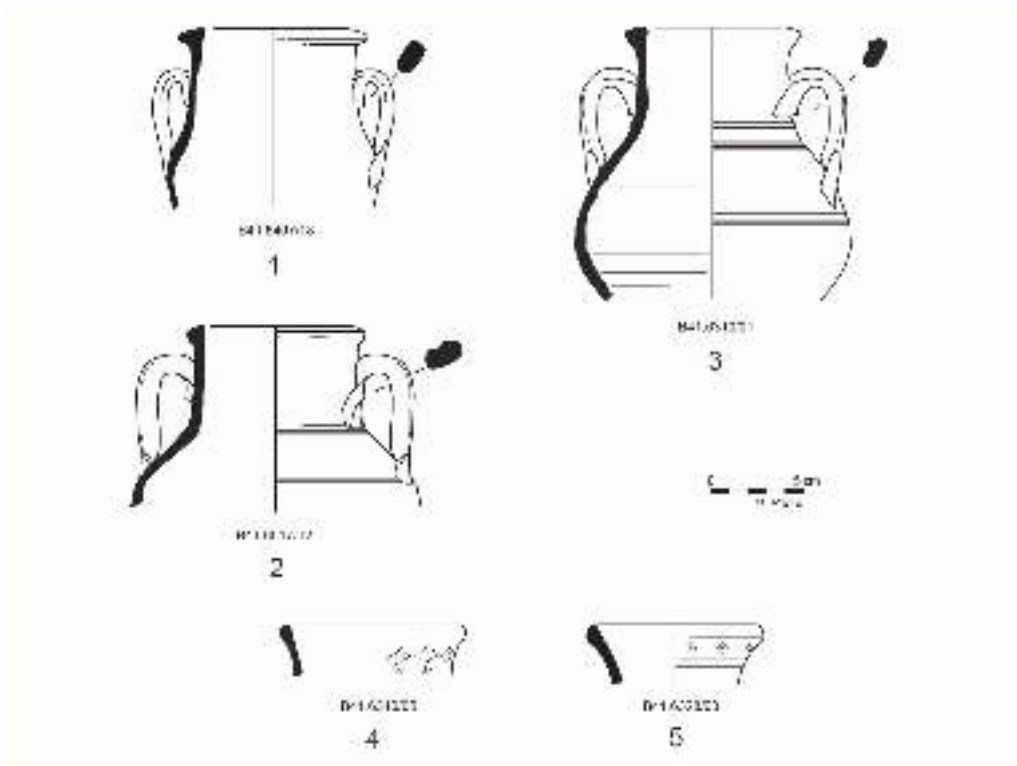
**Fig A-74 :** Painted jars from Qalhât (A) and imported from india (B)



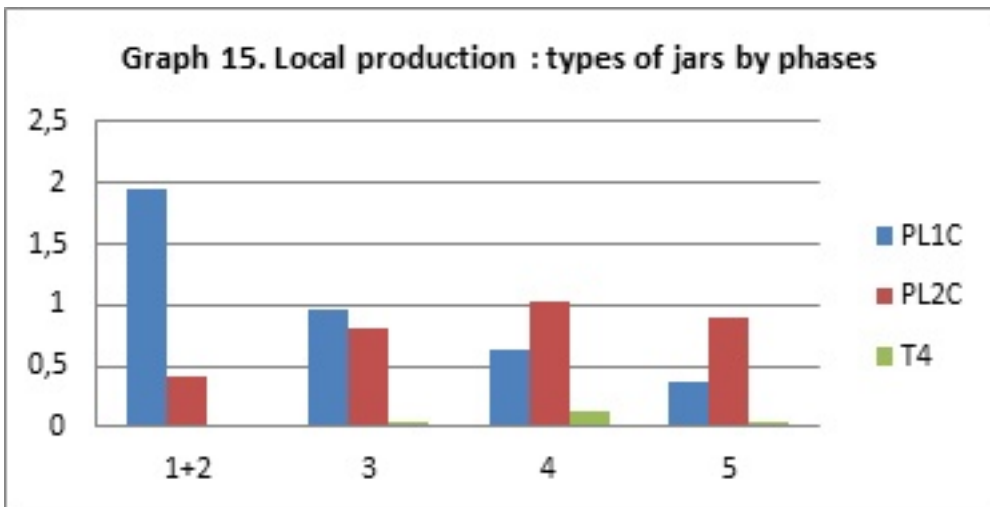
A



B

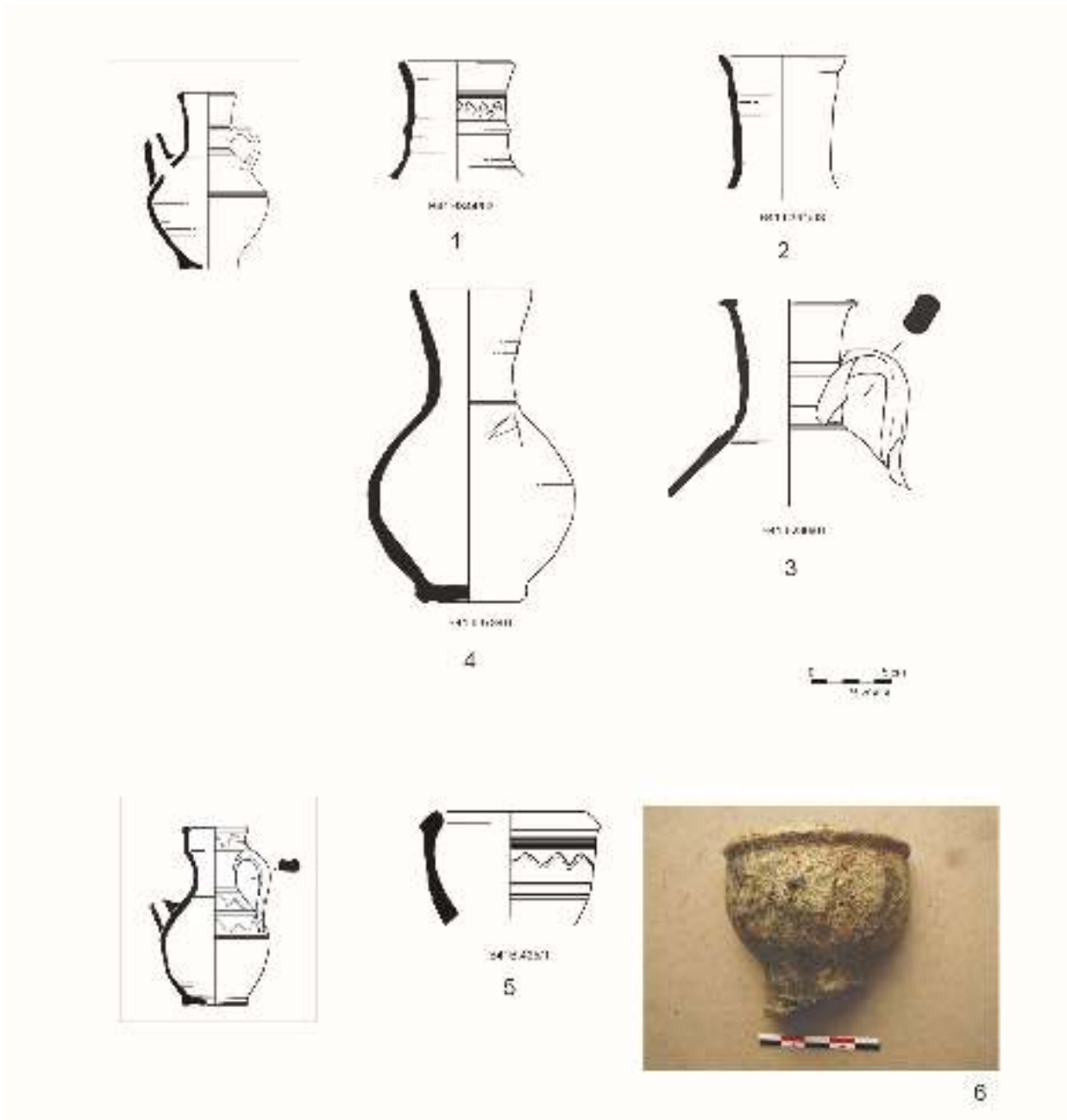


**Fig A-75 :** Local production : jars. type 1C/2C (n° 1-3); type T4 (n° 4-5).



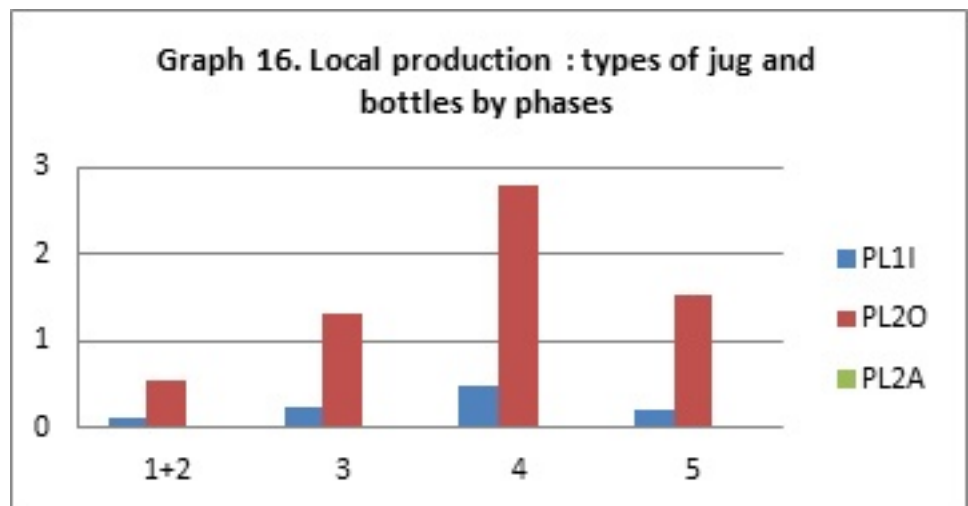
**Fig A-76 :** Local production : types of large jars by phases





**Fig A-77 :** Local production : jugs and bottles. type 2M (n° 1-2), type 2O (n° 3); type 2P (n° 4), type 2A (n° 5), type 2L (n° 6).

**Fig A-78 :** Local production : types of jugs and bottles by phases



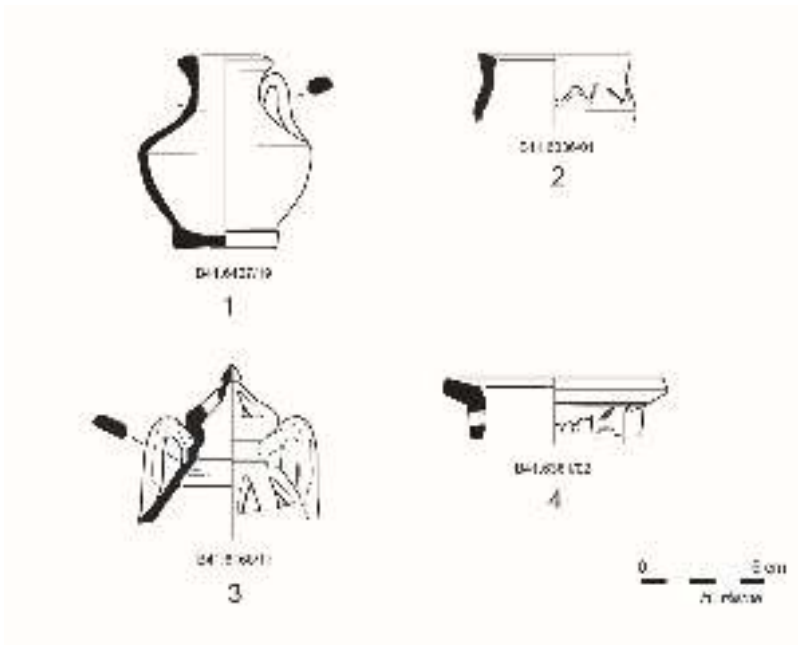
The type 2A (Fig A-77: 5-6) with cup on the top of the neck [cup-shape neck] appears only during the end of the 15<sup>th</sup> and the 16<sup>th</sup> century.

#### II-D1.d The pots and incense burners (Fig A-79)

Few small pots were made in the B41 workshop in particular, as generally in Qalhât. The small glazed flask with an ovoid side, a ring base, a short flaring neck and two small straight handles (Fig A-79: 1) was made only during the second half of the 13<sup>th</sup> century. It is absent in levels dated between the 14<sup>th</sup> and the 15<sup>th</sup> centuries in the workshop as in the housing environment.

The globular pots decorated with incised horizontal and wavy lines on the shoulders (Fig A-79: 2) were produced from the second half of the 13<sup>th</sup> century to the 16<sup>th</sup> century but in few quantities.

The excavation of the refuses of the workshop brought to light some sherds of incense burners. Unfortunately the sherds are too small for a complete description of the shape (Fig A-79: 3-4). Their production is continuous between the 13<sup>th</sup> and the 16<sup>th</sup> centuries.



**Fig A-79 :** Local production :  
pots and incense burners.  
type 2S (n°2); type 2J (n°3-4).

II-D1.e The bowls (**Fig A-80, Fig A-81**)

The bowls are the most important open forms founded in the refuses of the workshop. Five shapes are distinguished in the typology.

- Hemispherical bowls with a ring base (**Fig A-80: 3-9**). They are unglazed (type 2H) or cover on interior and outer rim by a green glaze (type 1D). Some sherds have a painted decoration under the glaze. This shape is the most common, and especially the glazed shape, between the second half of the 13<sup>th</sup> century and the 16<sup>th</sup> century. The diversity of modules appears from the first half of the 14<sup>th</sup> century (phase 3) with the creation of small bowls and cups (**Fig A-80: 3-4**). From the second half of the 14<sup>th</sup> century, some sides are less globular and straighter (**Fig A-80: 7-9**). In the last period, the sides are thicker.
- Hemispherical bowls with a flaring rim and a ring base (**Fig A-80: 10-12**). They are also glazed (type 2V) or unglazed (type 1F). The glazed shape is predominant during the second half of the 13<sup>th</sup> century and declines from the first half of the 14<sup>th</sup> century (phase 3), replaced by the hemispherical shape.
- Carinated bowls with a ring base (types 1E; fig.14: 1-2). The interior and the outer rim are covered with a greenish glaze. A few bowls are unglazed but found only in the housing contexts (type 2L). This shape remains uncommon at Qalhât in the workshop like in the housing sectors.
- The hemispherical bowls with a flattening and molded rim (type 1M; fig.14: 13-14). Some sherds have a painted decoration under pale green glaze (**Fig A-80: 14**). Like the previous type, a few pieces are unglazed but founded only in housing contexts.
- Bowls with a large flattening rim (type 1G; **Fig A-80: 15-16**). This shape is always glazed. It's produced from the 14<sup>th</sup> century and could be an imitation of the imported bowls from the south of Iran (probably the site of Kunj).

II-D1.f The basins (**Fig A-82; Fig A-83**)

Basins were produced in the workshop B41. Because of their function for preparation and storage of food, they are always unglazed.

The workshop produced four shapes of basins :

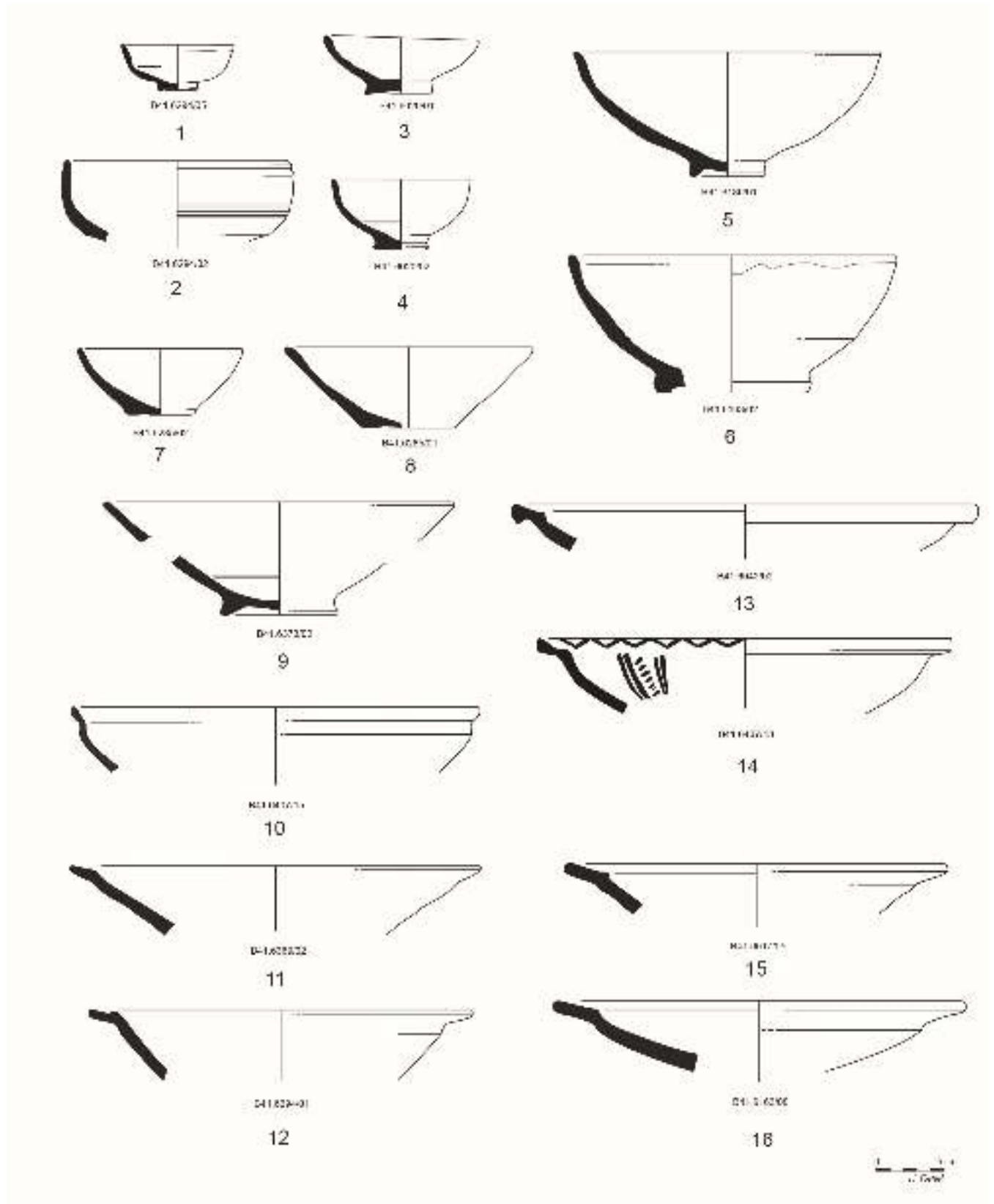
- Hemispherical basins with a ring base and an everted rim (type 2T; **Fig A-82: 1**). They are generally without decoration and the only form in the levels of the phases 1 and 2. They are then produced in a constant way until the 16<sup>th</sup> century.
- Globular basins with a thickened rim (type 2U, **Fig A-82: 2**). They are always decorated in their upper part by horizontal and wavy lines. This shape was made only in the 14<sup>th</sup> century, and in more quantity during the first half of the century. It is absent in levels of the second half of the 13<sup>th</sup> century as well as in recent levels dated to the 15<sup>th</sup> and 16<sup>th</sup> centuries.
- Hemispherical basins with a ring base and a rounded rim (type 2K; **Fig A-82: 4**). This shape appears during the first half of the 14<sup>th</sup> century, then becomes majority from the second half of the 14<sup>th</sup> century as well as in the 15<sup>th</sup> and 16<sup>th</sup> centuries.
- A new shape was brought to light during this campaign. The sides are slightly carinated with a thickened rim triangular in section (**Fig A-82: 3**). Only four sherds were found in phase 3.

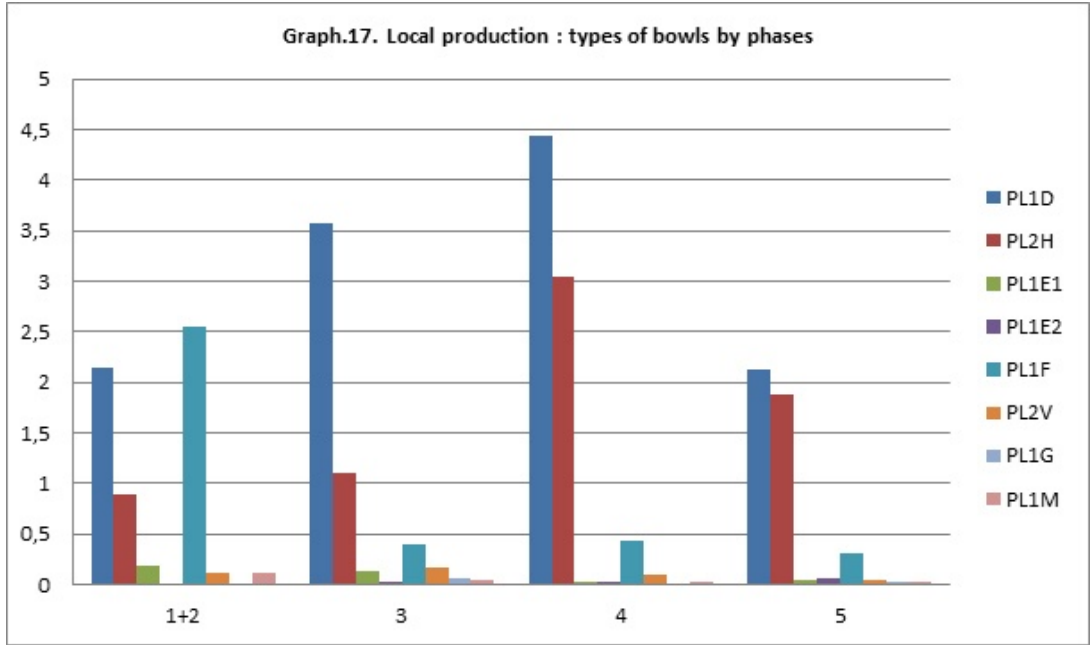
II-D1.g Oil lamps (**Fig A-84**)

Only one shape of saucer lamp was found in the waste of the workshop from the second half of the 13<sup>th</sup> century. Oil lamps are present in few quantities until the middle of the 14<sup>th</sup> century because of the strong presence of lamps in soapstone.



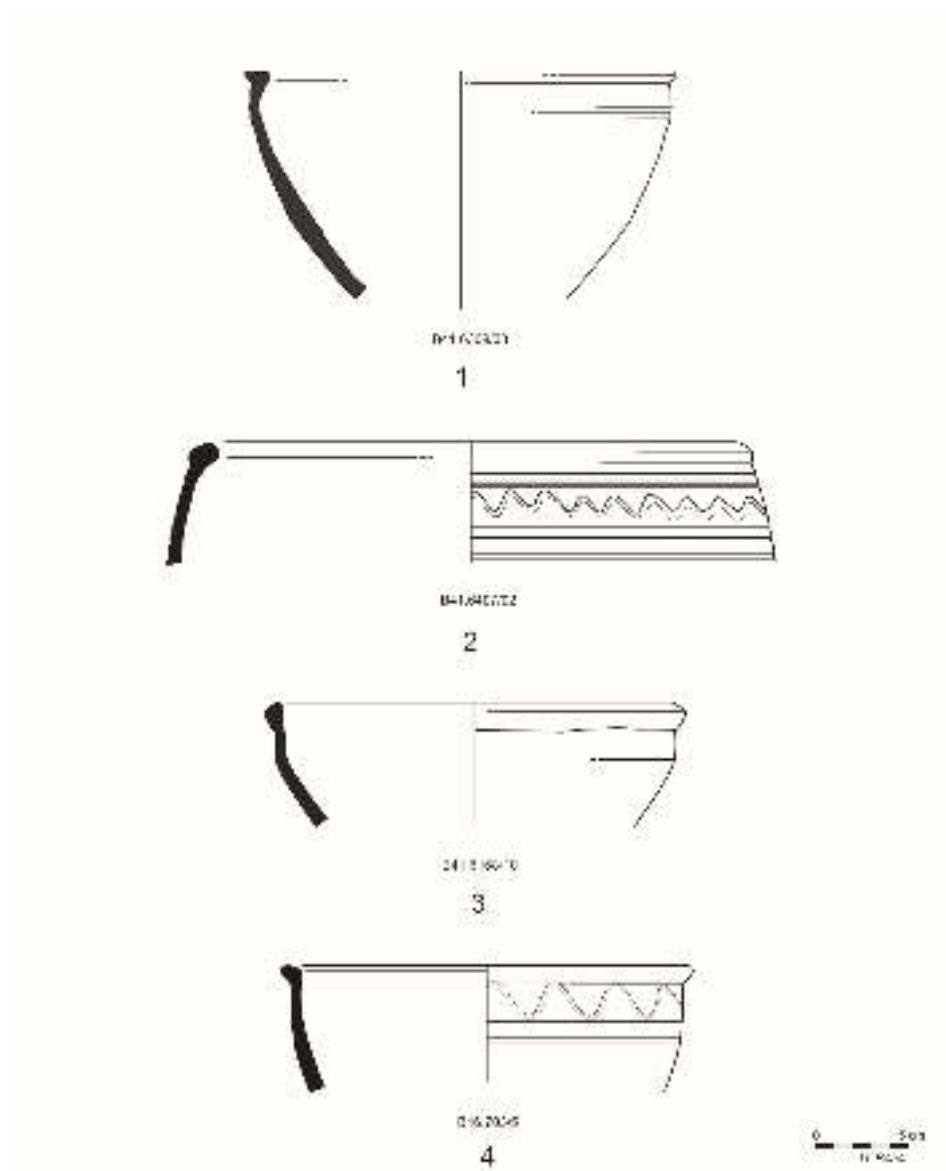
**Fig A-80** :Local production : bowls. type 1E (n°1-2), type 2D/1H (n°4-9), type 1H/2R (n°13-14); type 1F/2V (n°10-12); type 1G (n°15-16).

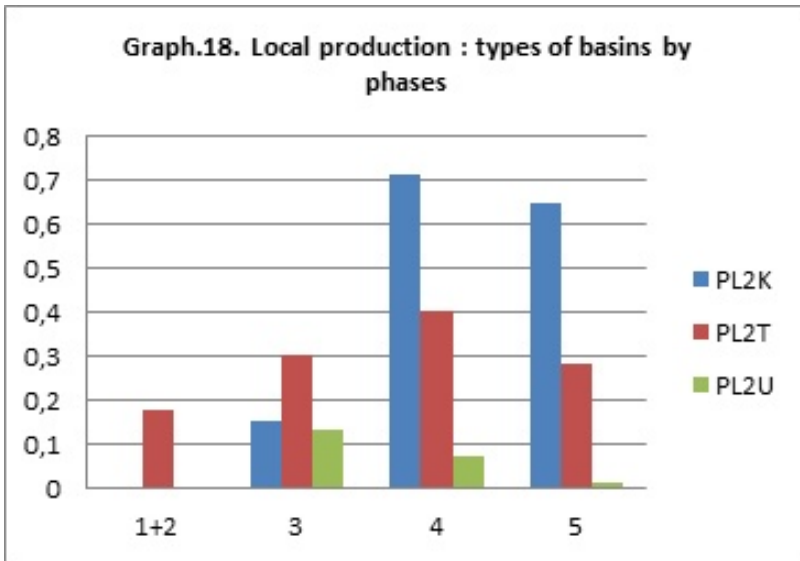




**Fig A-81 :** Local production : types of bowls by phases

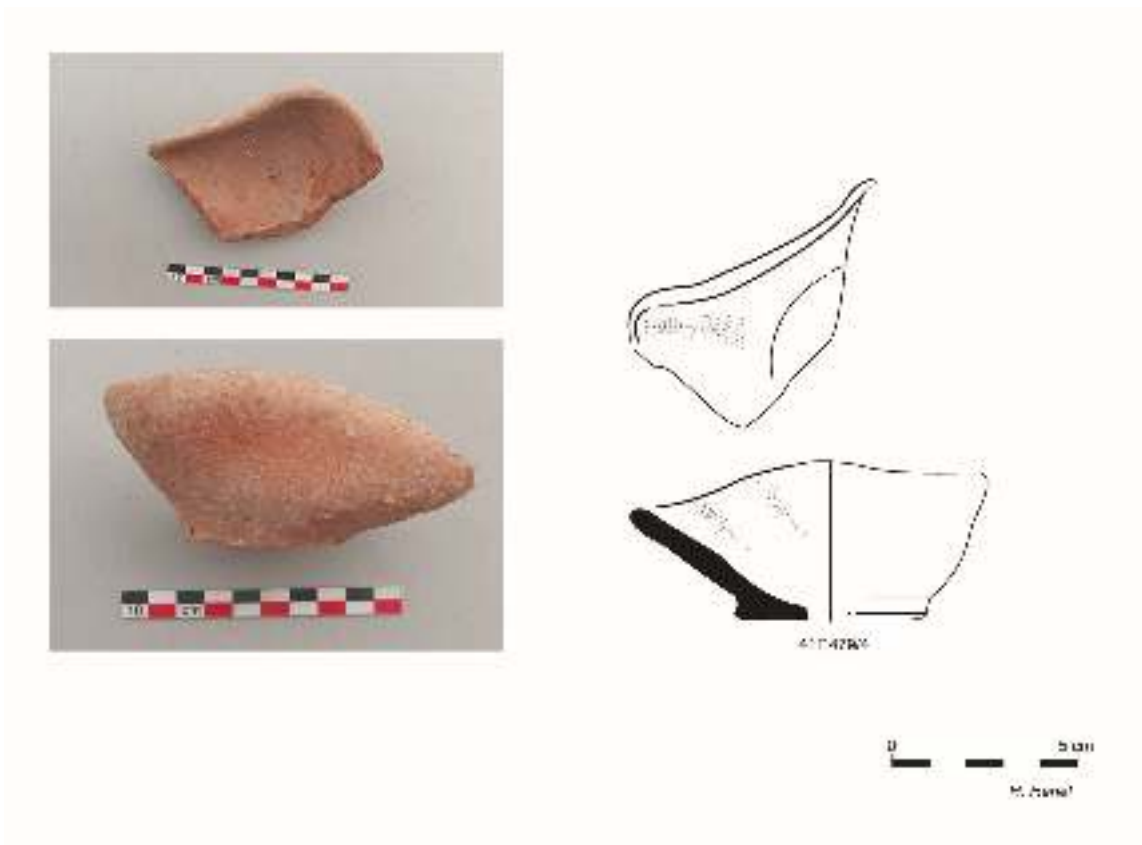
**Fig A-82 :** Local production : basins. type 1T (n° 1); type 2U (n° 2); type 2K (n° 4).





**Fig A-83 :** Local production : types of basins by phases

**Fig A-84 :** Local production : oil lamps. Type 2W





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II-D1.h Tiles (**Fig A-85**)

Two fragments of green glazed tiles in shape of cross were found in the workshop. This indicates that from the beginning of the 14<sup>th</sup> century, it produced decoration elements of the Great Mosque at Qalhat.

**Fig A- 85:** *Waste of cross*  
(UF 6046 B41-15)



## II-D2. Distribution of wasters in B41

The study of the distribution of wasters in the workshop allows to understand how potters managed their productions and their waste in a neighbourhood of potters.

### *II-D2a. Phase 2*

For phase 2, the workshop B41 produced in large quantities PL1C and PL1B jars. A large amount of PL1B sherds were found in the filling of room F while PL1C jars pieces can be found in the working levels of room G. A large amount of PL1F bowls fragments were also deposited in the landfill of room J. Small quantities of PL1F bowls were found upon the platform B41-71. It is therefore obvious that part of the production of phase 2 was reused as backfill to prepare the repair of rooms E and F, belonging to the third phase

### II-D2b Phase 3

For phase 3, potters had 3 different ways to manage their wastes. Mostly, some of the wastes remained on the levels of the workshops in room E but the larger part was stored in room G. This is the case for the large jars PL1A, PL2N and T1, the jars PL2C, the bowls PL1D, the basins PL2U. Other productions were only found in large quantities on the operating levels of room E (the jars PL1C, T4, the jugs PL2O, the bowls PL2H, the basins PL2T, and the lamps PL2W). Finally some productions were dumped exclusively in room G, as the large jars T1 and the jars PL2I.

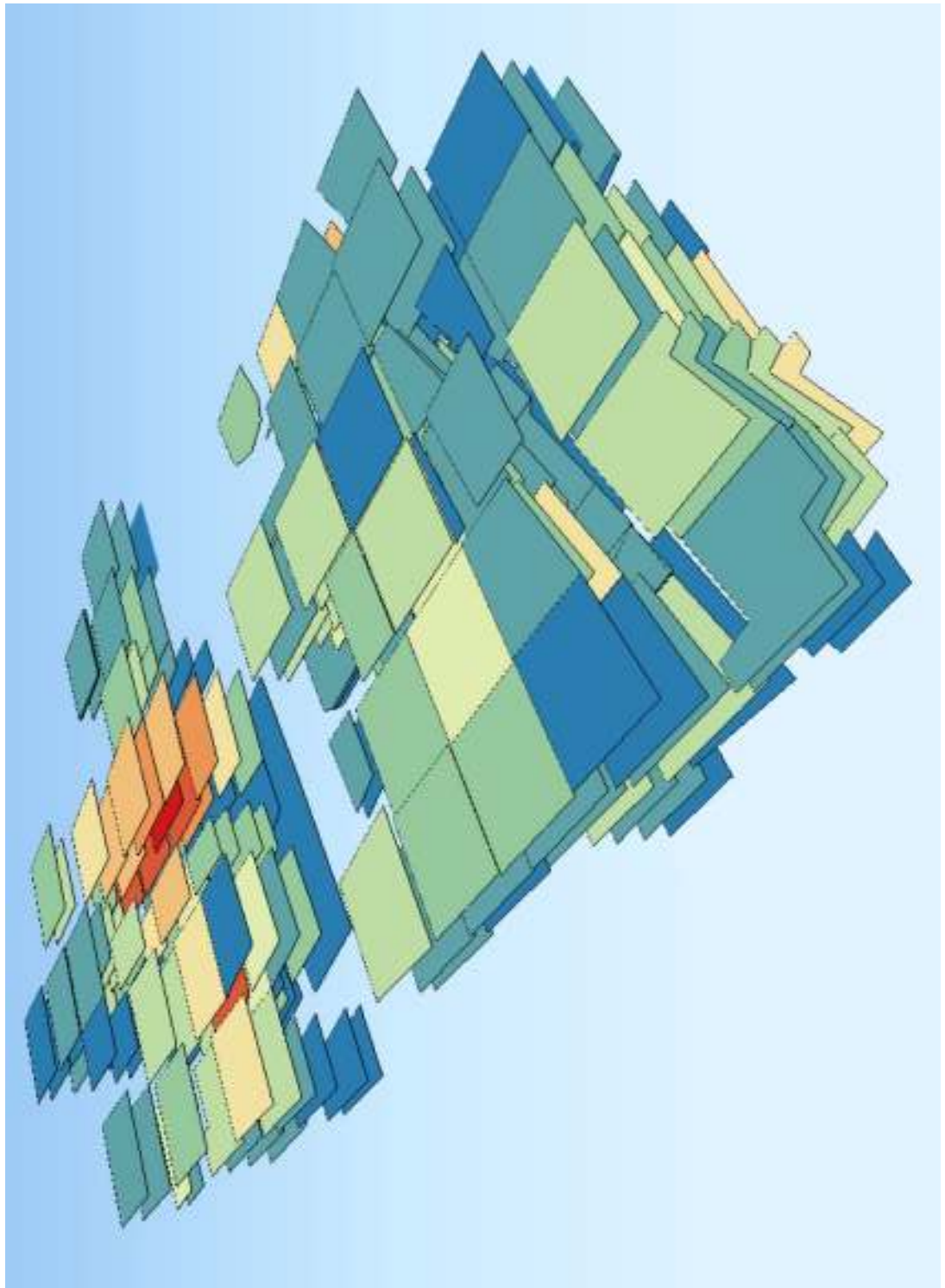
### II-D2c Phase 4

In phase 4, the potters of the workshop B41 only stored parts of the wastes in room G as for the large jars PL2N and T1, the bowls PL2H, the basins PL2K and PL2T. The rest of the production (the large jars PL2B, PL2C, T4, the jugs PL2O, and the bowls PL1D) was stored in another place not excavated because only wastes on working levels of room E remained. PL2P bottles were found in the levels of discharges of rooms E and A. They probably came from another pottery workshop located in the neighbourhood.

During phases 3 and 4, discharges in room E are probably outcome of the heating rooms of kilns. On the contrary, the dumpsite levels in room G are probably outcome of the firing rooms of kilns (**Fig A-86**).

### II-D2d Phase 5

During phase 5, the workshop B41 was already abandoned. All the local production found (the large jars PL2G, the jugs PL2A, incense burners PL2J and small bowls PL2S) come from workshops from the surroundings.



**Fig A-86:** 3D distribution of the over-firing in B4 1



## II-D3 Firing techniques.

The agglomerates of ceramics (**Fig A-87**) or tripods (**Fig A-88**) are clues of firing techniques. Tripods were found in bowls agglomerates. Comparing the evolution of the number of tripods by phases with glazed bowls and unglazed bowls, it was observed that the tripods are always used with glazed bowls (**Fig A-89**). Different sizes of tripods correspond to the diameters and thicknesses of the various types of bowls. So that the glazed bowls do not stick, potters put tripods between each piece. An agglomerate of large jars shows that they were superimposed by neck in the firing room.

The excavation of the workshop B41 allowed to answer all the problems posed. Architectural evolution of the workshop is divided into five phases between the second half of the 13<sup>th</sup> century and the 16<sup>th</sup> century. It was in fact demonstrated that workshop B41 is enrolled in a wider potter district and it functioned until the end of the 14<sup>th</sup> century. And the typo-chronology of ceramics produced in the workshop was completed.

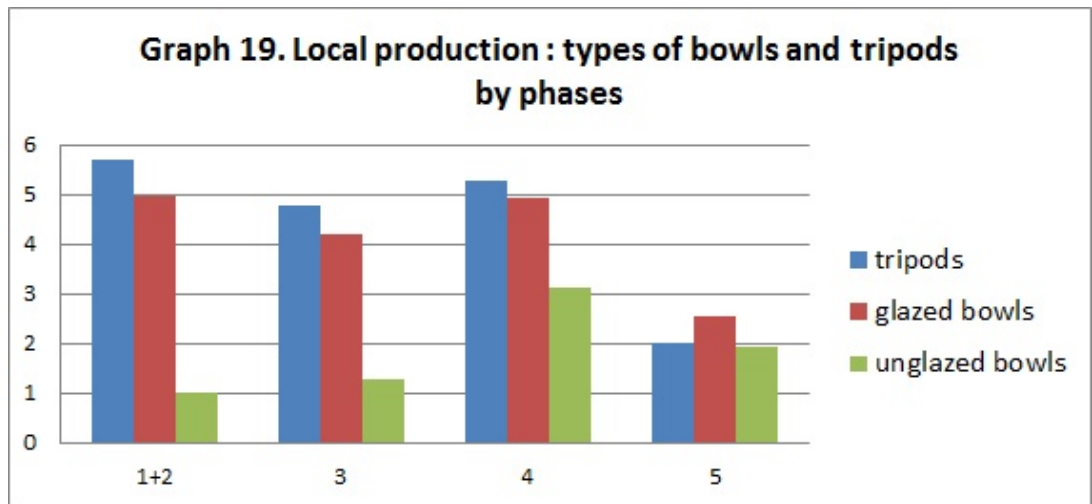


**Fig A- 87:** Waste

**Fig A-88:** Tripods (UF 6236 B41-14)



Fig A-89 : Local production : types of bowls and tripods by phases



### III. THE WEST GATE OF THE CITY (B31) IN THE FORTIFICATION WALL B6, THE NEARBY FUNERARY TERRACES (B280, B281, B282, B283) AND THE PLATFORM MOSQUE B29

Located in front of the Bibi Maryam mausoleum, the area B31 gathers the west gate of the city (B31-06) set between two sections of the fortification wall B6 (registered as B31-01 for the south section of the wall and B31-02 for its northern part), four adjacent buildings (B280, B281 and B282 at west and B283 at east) which were interpreted as funerary terraces, and two massive heaps of stones (B31-09 and B31-10) : they are located at rear of the gate, in both sides of the passageway.

The whole excavated area was around 550m<sup>2</sup>. Besides the two sections of the fortification wall which were covered by important volume of collapse, the others buildings were rather cleaned than really excavated as very few of them was preserved. Most of the elevation of the funerary terraces have disappeared, destroyed by a long time weathering and quite probably removed for being reused by the modern structures observed nearby.

About 80m east from the area of the city gate B31, a new building was excavated during the 2016a campaign. It is a small mosque built upon a platform (B29) which is surrounded by different constructions, some of them connected to the mosque, other ones belonging to independent buildings. In this area, the surface excavated is about 500 m<sup>2</sup>.

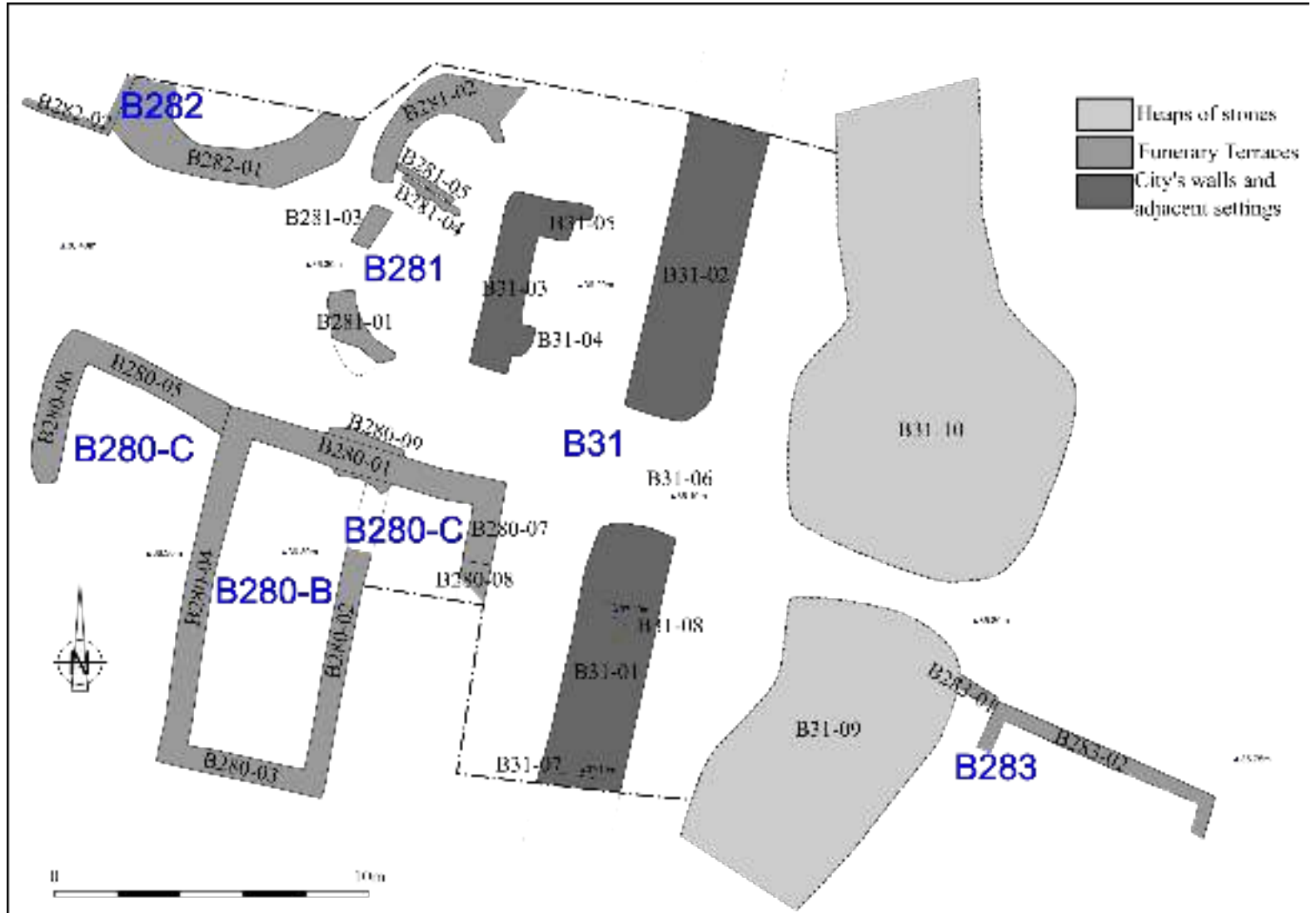
#### III-A1 The west gate (B31) and associated constructions :

**Fig 3-1** : general view of the west gate (B31), from the outside of the city





Fig 3-2 : site plan of the west gate (B31) and associated constructions



### III-A1-1 : The fortification walls and the west gate

The course enclosing walls of the city of Qalhât are visible today and some parts have been already unearthed and partially sounded during the campaigns of the QP (report 2010). In the area B31, where the location of the gate is still observable, the fortification walls have been uncovered for around 10m long toward the north and 8.50m long towards the south. Well-preserved in the lower part but nearly entirely vanished in the upper part, the walls B31-01 and B31-02 are both ca. 2.60m wide at the bottom. The east side of the walls was uncovered by its collapse for around 3m wide, from the east facing of the walls to the west edge of the massive heaps of dry stones. At the bottom of the wall, the excavations reached a hard level of backfill, that can be considered as the circulation level, but very altered by time and destruction. This layer is running above the wall

The east facing of the south wall B31-01 (Fig 3-3) is now preserved for around 1.23 m high, a little less on the west facing, both being built the same way. The lowest course is made of massive pebbles or limestone blocks, very large, some of them being around 1m wide and probably coming from the Wadi downhill as they look to have been polished by water. They are sometimes lying over a backfill and sometimes directly on the underneath bedrock.

The faces of the four upper courses preserved are mostly made with pebbles and limestone blocks which are smaller than the ones used for the foundations. Very small pebbles and corals or limestone pieces are also used to wedge the massive stones, a way of construction observed everywhere else in the city walls and now used by the Conservation Component.

The internal core is made of small and medium corals and limestone blocks bonded by earth rather than mortar. No remains of coating was observed. The way of construction of the facing strongly suggest that this wall was never coated.

The east facing of the north wall B31-02 (Fig 3-4) is now preserved for around 1.30 m high and a little less at west. It is made exactly the same way as the south wall B31-01, with larger stones on foundations and smaller blocks used for wedging. The upper elevation is a little more well-preserved but, as the binder was made of earth, it is very difficult to distinguish the collapse from the preserved structure in the absence of facing.

Though very badly preserved, it is more or less possible to guess a flat level on the east internal side of the wall, around 1.50m high in the elevation, in both south and north walls. This flat level may be identified as a walkway used by the guards and protected by a parapet at west, facing the outside. Similar fittings have been observed by the QP in the nearby south fortification wall B7. Assuming that the parapet was at least 1.50 m to conveniently protect the guards and probably a little more, the original elevation of the city wall was so at least 3 m high. Rough crenelation can be assumed as an unproved hypothesis.

The extremities of the walls B31-01 and B31-02 were also the jambs of the west gate B12-06 which is now 3.50 m wide (Fig 3-5). The south jamb is now only made of four very large limestone blocks while the north jamb is made of three courses of smaller stones, both jambs being preserved for around 0.80 m high. The different way of construction of the north jamb and the fact that its bottom is higher than the bottom of the wall and built above a thicker layer of backfill strongly suggest that the gate was lately reduced by the addition of the actual north jamb. Material was too scarce to give a dating for this refitting of the west gate, which could have been originally 4 m wide.

Absolutely no fittings for hinges or fixing of a possible door-frame was observed, and though it seems obvious to admit that the gate was closed by a wooden door, it is not possible to assume its way of construction and original appearance. It is also not possible to state if the gate was covered by a walkway like the rest of the rampart. The limited mass of collapse between the two jambs suggest that it was not the case. Therefore the north and south wall were probably not connected on the top. But it is also possible that the area was partially cleared more or less recently and that part of the original collapse had disappeared.



**Fig 3-3 :** the south fortification wall B31-01

**Fig 3-4 :** the north fortification wall B31-02

**Fig 3-5 :** the gate B31-06, with the mausoleum of Bibi Maryam in the background



Two rectangular holes crossing the wall were observed in the south wall B31-01, and others similar fittings were observed elsewhere in the fortification wall B6. The north one, B31-08, (Fig 3.6) is set around 2.60 m south of the south jamb of the gate B31-06. The south side of the crossing hole is partially collapsed, the bottom is very damaged and the top has disappeared. The structure is actually preserved for no more than 0.20 m high and its width varies from 0.36 m at west to 0.56 m at east. Its actual length is 1.10 m, the east and south extremities having collapsed but it was originally as long, like the width of the wall.

The south hole B31-07, (Fig 3-7) around 4.5 m south of the north one, is preserved for a little more height, around 0.45 m for two courses of stones and its width also varies from 0.47 m at west to 0.27 m at east, asymmetrically of the north hole B31-08. Its actual length is along 1.35 m but it was also originally around 2.60 m, as the width of the wall.

The functions of those holes is yet unclear. As their bottom is about 1.40 m to 1.5 m higher than the ground, they can have been used as scaffolding holes, or beamholes to support the assumed walkway for the guards. They can also be interpreted as arrow or gun loops but their asymmetrical setting and the fact that the western buildings were obstructing the view are not in support of this interpretation. Maybe further excavations of the others holes visible in the fortification wall could bring an answer to this question.



**Fig 3-6 :** the crossing hole B31-08



**Fig 3-7 :** the crossing hole B31-07

### III-A1-2 : A possible guardroom at west

West of the south extremity of the north wall B31-02, some upside-down L-shaped walls with a buttress were uncovered. The longest one, B31-03, (Fig 3-8) is parallel to the wall B31-02, 3.90 m at west. It is 5.70m long by 1.10m wide and its height varies from 0.40 m to 1.20 m. This wall is made of medium corals and limestone blocks bonded with earth. The way of construction is similar to the fortification wall though the stones used are a little bit smaller. Its south end is well preserved and a facing can be observed, while the north end is very damaged.

Here, the perpendicular wall B31-05 (Fig 3-9) is internally linked with the wall B31-03 but their external junction has been destroyed and the internal facing is also more preserved than the external facing. Despite its poor state of preservation, it is possible to state that its width is at least 1.30m but it is not possible to know if the wall was running until the fortification wall B31-02 at east. The preserved length is now around 2.50m externally and it is now distant for at least 2.30m from the fortification wall. This distance could be the minimal length of a possible gate which stood here, but no proper facing was observed and the assumed linked gate is only a possibility.

A south, a rectangular buttress B31-04, (Fig 3-10) quoined with the wall B31-03, was also uncovered. Though badly preserved, especially the south-east corner, it is possible to estimate its original sizes as 0.90m long by 0.50m wide for a preserved elevation of 1.10m. It is made the same way as the other walls with medium corals and limestone blocks and its location near the south end of the wall B31-03 might indicate that the buttress was part of the framing of a gate.

As they are built the same way, as the west wall B31-03 is parallel to the fortification wall B31-02 and the wall B31-05 perpendicular to them, and as the south end of the wall B31-03 is in the same alignment than the north jamb of the gate B31-06, it has been assumed that this construction was related to the fortification wall even if there is no physical relation between them. It is so possible that the gate B12-06 was externally flanked at north by a square room, about 5m wide, with one door at south and possibly a second one at north. The most obvious identification would be a simple guardroom, as there was not enough collapse to assumed the presence of a tower.

### III-A1-3 : The two heaps of stones

Two massive heaps of stones were visible at the rear of the gate at the beginning of excavations and most of them have been left in place. The stones were carefully removed, looking for dry stones facing, but the removal stopped when nothing was observed, except on each side of the passageway where more stones were removed in order to ease future circulation. The south heap, B31-09, nearly oval, is around 50 m<sup>2</sup> and the north one, B31-10, is more irregular and around 95 m<sup>2</sup>.

These two heaps were made with stones of every sizes, piled up without any organization and without earth or any kind of binder. Both heaps are built above low buildings, assumed to be funerary terraces and are therefore late fittings. The material found between the removed stones was very mixed and included plastic which was found so deep inside the heaps that it is difficult to think of a windy stealth.

The functions of these heaps of stones are still problematical. It is not collapse, as no collapsed building was found under. They can be in fact very recent, as the plastic seems to suggest, and of various origin. It could be the remains of a first unregistered attempt to cleared the gate, which was probably still guessable. The heaps can also have been made by the mechanical excavator which built the track reaching the Great Mosque. It can also be a voluntary storing place where stones coming from the decaying buildings were gathered before being reused, near the track which goes to the present downhill village of Qalhât.



3-8



3-9



3-10

**Fig 3-8 :** *the wall B31-03, outside elevation*

**Fig 3-9 :** *the damaged wall B31-05*

**Fig 3-10 :** *the buttress B31-04*



### III-A2 :The funerary terraces

Different buildings have been cleared in the surroundings of Gate B 31, which have been identified as funerary terraces. Most of them are located west of the Gate (B280-B282), which mean outside the first city wall, whereas another one has been cleared inside the boundaries of the ancient Qalhât (B283).

#### III-A2-1 : The building B280

(Fig 3-11)

**Fig 3-11** : general view of the building B280



West of the fortification wall B31-01, the building B280 was excavated for about 126 m<sup>2</sup> and three different spaces, registered as rooms B280-A, B and C from west to east, were identified. Remains are very low, sometimes preserved for only the lowest courses of stones and few collapse was removed. Although some part of collapse may have been recovered and reused, it is quite probable that most of the walls were very low, no more than 1m and more probably around 0.50 m high.

The room B280-A, west of the building, is delimited by walls B280-05 at north, B208-06 at west and B280-04, which is common with room B280-B, at east. This room was apparently opened southward. (Fig 3-12)

The north wall B280-05 (Fig 3-13) is 5.70m long for a width which varies from 0.70m to 0.95m and preserved from one to two courses of stones. The wall is not linear as the north-west corner widens, probably because the facing of the wall has slowly slid. It is made of small to medium corals and limestone blocks bonded with earth. The west wall B280-06 (Fig 3-14) is 5m long and its width varies from 0.85m to 1m and preserved for one course of stones. The wall is slightly curved and made by large limestone blocks and it is leaning, at south, against a massive limestone block which is probably a natural resurgence of the underneath bedrock.

As the north wall B280-05 is leaning against the east wall B280-04, it is very likely that the room B280-A is a later addition, and its way of construction is similar to the late constructions made of dry stones. It is so possible that the room was made recently and was used as an enclosure for goats. No occupancy layers were found and the ceramic material found in the collapse was too scarce and mixed to give a precise dating.

The room B280-B, 10m long by 3.75m wide in average, is a north-south oriented rectangular room located in the center of the building, covering an area around 38m<sup>2</sup>. (Fig 3-15)

At north, the delimiting wall B280-01 (Fig 3-16) continues at east to the room B280-C for a total length of 9m. Its maximal width is around 0.80m and it is preserved for 0.45m high, from two to three courses of stones. Its internal core is made by small blocks bonded with earth and the facings are made with medium



**Fig 3-12 :** general view of the room B280-A

**Fig 3-13 :** the wall B280-05, outside elevation

**Fig 3-14 :** the wall B280-06, inside elevation

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**Fig 3-15** : general view of the room B280-B

**Fig 3-16** : the wall B280-01, outside elevation





limestone blocks with some small corals for wedging. In the middle of the wall, a rectangular concentration of stones on each sides of the wall may be the remains of a very damaged stepped threshold (B208-09) (Fig 3-17) which is around 2.50m by 1.50m wide. Unfortunately, the structures are not enough preserved to confirm this hypothesis as no preserved steps or traces of jambs of a gate were seen.

Linked with the wall B280-01, the west wall B280-04 (Fig 3-18) separates the room B280-B ad the room B280-A. It is not linear but slightly curved in the center, where an access may have existed. Externally 11.50m long, its width varies from 0.80m to 1m, probably because of a sliding of the external facing, and its maximal preserved elevation is around 0.45m high. The internal core is strongly disorganized and the facings are irregulars, some stones being missing.

At south, the delimiting wall B280-03 (Fig 3-19) is linked with the western wall B280-04 and the eastern B280-02. Its is externally 5.40m long by 0.70m wide and 0.35m high, excavated for two courses of stones internally but only for the upper course externally at south, where the facing may continues down under. The internal core is made of disorganized small blocks bonded with earth while the facing are better built, using medium limestone blocks.

The eastern limit of the room B280-B is made by the wall B208-02 (Fig 3-20) which is common to the room B280-C. It is around 0.70m wide and preserved for a maximal height of 0.40m. Well preserved for 7.15m long from the south-east corner, the wall disappeared about 2.30m from the north wall B280-01. It is not possible to state if the wall has disappeared or if a highly damaged gate once stood here. As the eastern room B280-C was probably filled with small pebbles to create a terrace, the hypothesis of a gate is unlikely. The facings are poorly made, or badly preserved, with medium limestone blocks more or less organized and not always aligned.

In the easterne part of the building, the room B280-C was not entirely excavated. As it is badly preserved, its precise sizes and functions remain unclear.

The north limit is made by the wall B280-01 and the eastern limit is made by the connected wall B280-07 and the wall B280-08 leaning against it. The wall B280-07 (Fig 3-21) is 2.65m long by 0.80m wide for a preserved elevation of 0.80m high, made of four regular courses of medium limestone blocks bounded with earth.

In the same alignment, the wall B280-08 (Fig 3-22) is leaning against the wall B280-07 and could be a latter addition or refitting. It has been uncovered for 1.20m long and its width is around 0.80m for a preserved elevation of 0.80m high. The eastern facing is made by two low courses of limestone blocks with a gap above it which could be a longitudinal beam hole. Three upper courses of limestone blocks are topping this gap. The western face is either collapsed or missing and the southern continuation of the wall could scarcely be observed.

As the inside of the room B280-C was filled by small pebbles probably used as backfill to raise an elevated platform, it is possible to identify this room as a funerary terrace with a rectangular courtyard (B208-B) at east. The enclosure B280-A is probably a later addition notrelated to the religious of the building.

The south part of the eastern limit of the terrace, near the south fortification wall B31-01, seems to be destroyed, alike the eastern part of wall B31-05 near the north fortification wall B31-02. These walls werenot accidentally destroyed during the excavations as they were carefully searched and so slowly excavated. It is therefore possible that the funerary terrace B280 and possibly also the room made by both walls B31-03 and B31-05, exist before the construction of the fortification wall B6 and were partly destroyed by it. A possible later refitting of the fortification wall or the gate B31 could also be responsible of the destruction of the western building. One might also assume that those buildings were originally functioning with the gate B31 but that their connections with the fortification wall were voluntary destroyed, at an unknown time, to increase the defensive capacity of the city wall by destroying the possibility of sheltering behind the walls leaning against the external facing.



**Fig 3-17** : the possible threshold B280-09

**Fig 3-18** : the wall B280-04, inside elevation

**Fig 3-19** : the wall B280-03, inside elevation



3-20



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3-22

**Fig 3-20 :** the wall B280-02, inside elevation

**Fig 3-21 :** the wall B280-07, inside elevation

**Fig 3-22 :** the wall B280-08, at left of the scale



## III-A2-2 : The building B281

Fig 3-23

**Fig 3-23** : general view of the building B281



The building B281 is located at west of the wall B31-03, north of the building B280 on the other side of the access road, and gathered several different structures which were gathered as a unit even if they are not connected, for an average surface around 40 m<sup>2</sup>. The structures are very damaged and not entirely excavated toward the north where the building might continue.

The curved wall B281-01 (Fig 3-24) bound both the south and east limits of the building. It is still 1.50 m long and from 0.90 to 1m wide, and only preserved for 0.20 m high. It is built with medium limestone blocks for facing and smaller rocks and pebbles for the core, all bonded with earth. It could have originally extended southerly and have been destroyed by the circulation on the access way, or can also have been voluntary destroyed to increase the width of this passageway.

The north and west known limits of the building are made with the curved wall B281-02, (Fig 3-25) which plan is very confused. Its width deeply varies from 0.60m at south to 1.70m at east and its preserved elevation is around 0.30m high. Different stages of construction may have occurred but the state of preservation was not good enough to observe them. The wall is made of small unorganized small rocks of pebbles for the core and medium to large limestone blocks for the facing, all bonded with earth.

The two walls B281-01 and B281-02 are very similar in shape and way of construction and have so been assumed to be contemporary even if they are separated by a gap of nearly 3.60m long.

The small wall B281-03 (Fig 3-26) is built in the aforementioned gap but is not in the alignment of the walls B281-01 and B281-02. It is around 1.40 m long by 0.55 m wide and only preserved for 0.20 m high. The east and west facings are made of an alignment of medium limestone blocks without any clearly visible core. The northern and southern ends are irregular, suggesting that the wall may have originally extended. In fact, this wall may belong to a former building that was destroyed or reused when the walls B280-01 and B280-02 were built.

It can also be the case for the walls B281-04 and B281-05, which are two small parallel alignments which function is unclear. The southern alignment B281-04 is 2.20 m long by 0.30 m wide for a preserved elevation of only 0.20 m high, made by one row of medium limestone blocks without binder and apparently built over a layer of backfill. The missing of a south facing might indicate that it was used as a retaining wall for southerly backfill. The northern alignment B281-05 is similar in components and sizes, though a little bit smaller, and could be a later refitting to strengthen or replace the former retaining wall B281-04. (Fig 3-27)



**Fig 3-24 :** the curved wall B281-01

**Fig 3-25 :** the wall B281-02

**Fig 3-26 :** the wall B281-03

**Fig 3-27 :** the two walls B281-04 and B281-05



Though they have been gathered as one single building, it is possible that walls B281-03, B281-04 and B281-05 once belonged to a former building later covered by the structure made with the walls B281-01 and B281-02. As important layers of small pebbles are present between these walls, it is very likely that the final structure was a funerary terrace which may have been destroyed by the construction of the assumed guardroom.

### III-A2-3 : The building B282

Located immediately west of the building B281, the building B282 was only partially excavated and cleared and probably extends northward. Two walls have been identified, B282-01 at east leaning against the wall B282-02 at west.

The wall B282-01 (**Fig 3-28**) is curved, nearly half-oval, for a maximal length of 7.30m and a width from 0.90m to 1.30m, for a maximal preserved elevation of 0.85m high. The south external facing is made with medium to large limestone blocks without proper binder and the north internal facing is visible on the ground but not excavated, as the level of small pebbles reached is a backfill level and not a collapse layers.

The wall B282-02 (**Fig 3-29**) is more linear and misaligned with the wall B282-01, excavated for a maximal length of nearly 3m and a preserved elevation about 0.60 m high. Its width is still unknown and a possible perpendicular return may be guessed at east, along and under the wall B282-01. From two to three courses of stones were unearthed on the south side. They are made of medium limestone blocks poorly bonded with earth. This wall probably extends westward but this area was not excavated.

As the two walls B282-01 and B282-02 are not built in the same way, misaligned and not linked, it is possible that they are not contemporary. However, toward the north, they both present important layers of pebbles which suggest their identification as funerary terraces. The western part, with the wall B282-02, was probably the older one, rectangular in plan, and the eastern part, more or less circular in plan, was built afterward against the former one. It is also possible that the eastern addition is of modern origin, set after the abandonment of the city, and used as an enclosure rather than a funerary terrace.

### III-A2-4 :The building B283

The building B283 is located south-east from the gate B31, inside the city of Qalhât, and it was only excavated on its south side, alongside the incoming street. It extends northward, where it is partially covered by the massive heap of stone B31-09, and probably also at east, for an unknown distance. Only two walls, which are so the northern external walls of the building B283, have been uncovered.

The wall B283-01 (**Fig 3-30**) represent the west part of the northern limit, with an external facing made of one course of small corals and limestone blocks, poorly bonded with earth, and presenting remains of a damaged coating of pinkish plaster. It has been observed for 2 m long but extend westerly under the heap B31-09, and its width is unknown, like its southern extension remains uncovered.

The wall B283-02 (**Fig 3-31**) is the east part of the north limit, with two perpendicular returns at both ends. It is slightly misaligned with the wall B283-01 and differently built, with two to three courses of medium limestone blocks nearly without binder. Though incompletely excavated, it is about 7.60 m long by 0.50 m wide in average and has a preserved elevation about 0.40 m high.

At south, the backfill made of small pebbles and several structures which look like graves strongly suggest that this building is a funerary terrace, similar to the building B280, with a platform at west and a courtyard at east.

Though yet unseen, it is possible that a similar building stood right on the other side of the incoming street, as others are visible northerly against the fortification wall B6, while many graves and small mausoleum are visible until the south fortification wall B7.

**Fig 3-32**





**Fig 3-28 :** the wall B282-01, outside elevation

**Fig 3-29 :** the wall B282-02, outside elevation

**Fig 3-30 :** the wall B283-01, outside elevation



**Fig 3-31 :** *the wall B283-02, outside elevation*

**Fig 3-32 :** *photogrammetry of the west gate and associated constructions*



### III-B: the platform mosque B29

#### (Fig 3-33)

The building B29 is located around 80m east of the main city gate (B31) and nearly 200 m south-west of the pottery kilns (B41). Observations made before the excavations strongly suggested the presence of a small mosque built on platform, very similar to the small mosque already excavated in the north-west quarter of the city (B19) and other ones assumed in many parts of Qalhât. Excavations were here ongoing during all the 2016b season with a various number of workers according to the planned schedule, from 12 in January to 6 in February and 20 in March, following the completion of the other excavated areas.

Excavations revealed a rectangular building built over a platform with an occupancy level on the first floor, reachable by a rectangular stair set to the east, and bordered to the south by a high terrace more or less at the same level than the main building, and two courtyards at ground floor. The other sides of the building are occupied either by streets, city square or open spaces. The full excavated area is around 500 m<sup>2</sup> but the building itself only occupied 150 m<sup>2</sup> and the two courtyard 85 m<sup>2</sup>, the rest being occupied by empty space and especially a large city square to the east of the building.

No other buildings are present on the south-west side until the city walls, while many funerary terraces are assumed to the north. Several buildings are visible to the east but some of them might be recent squatter constructions and it is yet impossible to state if they were used as funerary buildings, craft activities or civilian use.

Excavations also revealed three graves, one "inside" the main building and one in each courtyard and many other ones are visible near the building to north, west and south. Though it is still possible that the building was used as a small mosque by the inhabitants of the west quarter of the city, the presence of the graves is more in favor of an identification as some kind of a mausoleum with a small prayer hall for an occasional use.

#### (Fig 3-34)

### III-B1. The main building on a platform

The central core of the building B29 is made by a rectangular platform, 12.30 m long (stairs and outlying wall excluded) by 7.80m wide in average, against which all the other constructions are leaning. This central core was the first part of the building to be built, which is confirmed by the dating of the ceramic material. At the beginning of excavations, the top of the heap of collapse was covered by a level of small pebbles, which was undoubtedly the last circulation floor in use. Quite no collapse was covering the lower courses of the walls, which suggests that the walls were mainly recovered probably by the squatter who built the drystone enclosures visible in the neighborhood, and only a small cleaning was so necessary to show out the plan and organization of the main building (Fig 3-35). It appeared that the main building was divided in two nearly equal parts by a dividing wall, with the room B29-A to the west and B29-B to the east.

#### III-B1-1: the west room B29-A, a small prayer hall

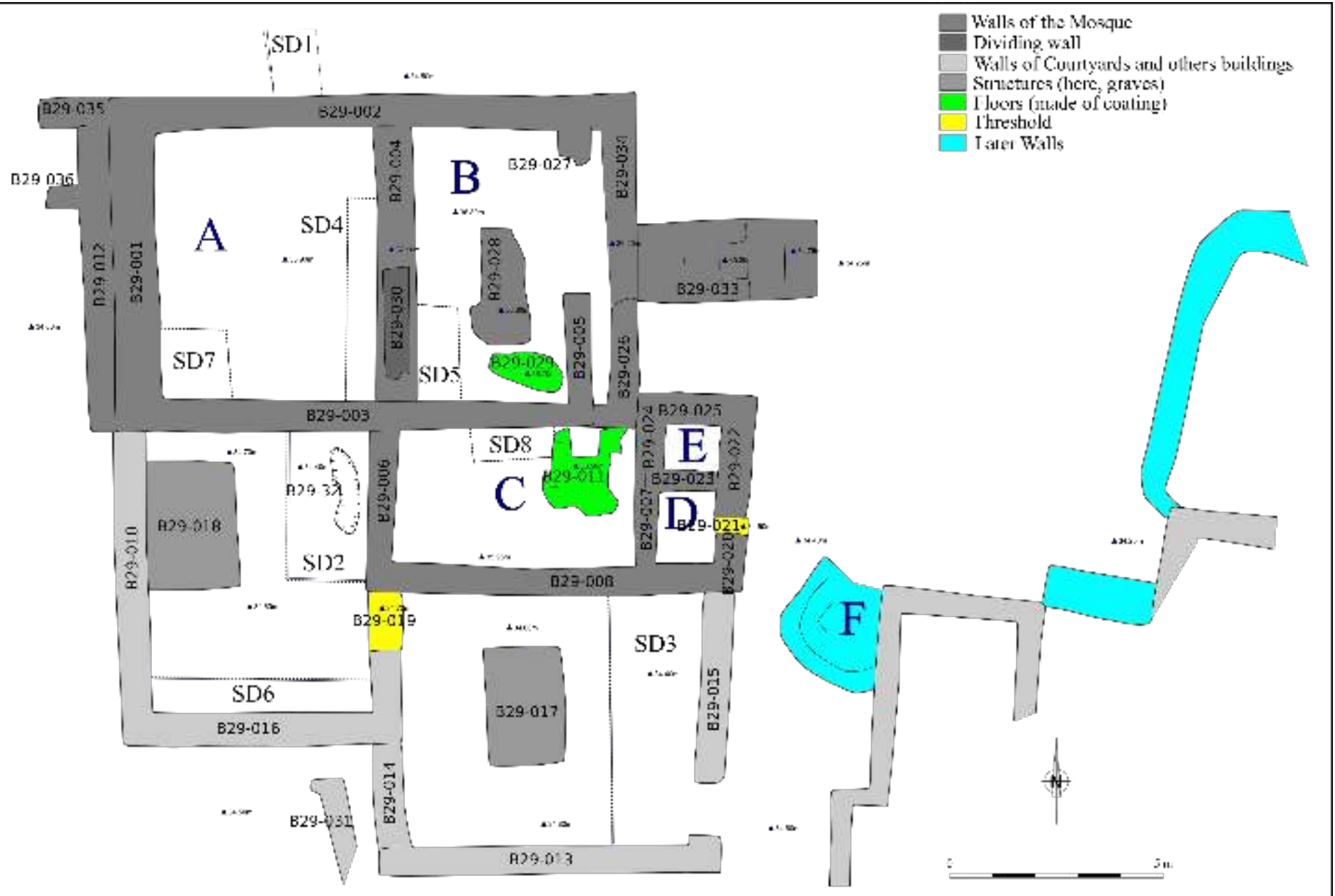
The west room B29-A measures approximately 7.80 m (n-s) x 7.00m (w-e). It is bounded north by the wall B29-02 and south by the wall B29-03, both extending eastwards to bound the room B29-B. In the room B29-A, the wall **B29-02 (Fig 3-36)** is 0.75 m thick in average and has a preserved elevation of 1 m to 1.50 m, which is less than the original height of the first floor. It is made in its lower part in massive pebbles and limestone blocks and in the higher part in medium ones, bonded by grayish earthen mortar; some very scarce remains of gray coating were observed. This wall was buried on the outer side by its own collapse, which was registered as **Uf5501** to the east and **Uf5502** to the west and which contained comparatively less corals blocks than in the Great Mosque and other excavated buildings. A sounding (SD1) opened at its feet revealed that it is built above a small layer of backfill (**Uf5507**), made of brown silt mixed with rocks and gravels and around 0.40m thick, which is leveling the underneath bedrock (Fig 3-37). The top of this backfill can be considered as the surrounding circulation level.



**Fig 3-33 :** *general view of the building B29 from the motorway*



Fig 3-34 : site plan and altitudes of the structures of the building B29



**Fig 3-35 :** the wall B29-30 emerging from the level of small pebbles, at the beginning of excavations

**Fig 3-36 :** the wall B29-02 partially excavated, with the room B29-A at right

**Fig 3-37 :** the sounding SD1, with the backfill UF5507 (nearly until the top of the scale) and the wall B29-02 (starting with the massive pebbles) and the natural bedrock (down the sounding)





The south wall **B29-03** (Fig 3-38) is also common with the room B29-B but it is here hidden by the south terrace B29-C (*infra*). In the room B29-A, the wall is internally 5m long by 0.75m wide in average for a preserved elevation of 1.50m to more than 2m near the corner with the room B29-C. It is also made with massive pebbles and limestone blocks in the lower courses and medium ones in the upper ones, bonded with grayish earthen mortar. A large plaque of grayish coating was also found still preserved on the wall. The layer of collapse **Uf5504**, which was covering the wall, contained few corals and remains of coating and plaster which could come, according to the location, from the wall at first floor. A sounding (SD2) was opened in the corner between the main building and the south terrace, which showed that the wall B29-03 is partially built directly over the bedrock and partially over a very thin layer of backfill (maybe from natural origin) which is leveling it (Fig 3-39).

The west limit of the room B29-A is made by the wall **B29-01** (Fig 3-40) which is externally 7.80m long by 1m wide for a preserved elevation of almost 2m. The lower part is now hidden behind an outlying wall B29-12 but is probably also made with massive pebbles and limestone blocks; medium ones are visible in the upper part, bonded with grayish earthen mortar. No remains of coating were observed on the visible parts of the wall but many remains were found in the collapse (**Uf 5505** and **Uf5506**), which can in fact also come from the elevation of the wall at first floor.

The wall B29-01 is bonded to the west by the outlying wall **B29-12** (Fig 3-41), the function of which is problematical. It is 7.20m long, and so does not outline the wall B29-01 on its entire length, and 0.75m thick for a preserved elevation around 0.80m maximum. Though the top of the wall is badly preserved in its middle and south parts, a flat level to the north might be the original elevation of the wall, which was therefore not as high as the wall B29-01 behind. The wall B29-12 is mainly made with medium limestone blocks and few corals or pebbles and only bonded by earth and no remains of coating were observed. The shape and dimensions of this construction suggest an identification as a high bench but, as the wall B29-01 is believed to be a *qibla* wall, the location of this bench is rather unusual. There is however no better interpretation.

Two small walls were also found to the west, near the assumed bench B29-12. They will be described below, together with the surroundings of the building, as they are not part of the room B29-A proper.

The east limit of the room B29-A is made by the wall B29-04 and the dividing wall B29-30 built above it, both separating the room B29-A from the room B29-B. The wall **B29-04** (Fig 3-42) was observed on the surface, 6.40m long by 0.90m wide, and also partially on both sides in the soundings SD4 and SD5. The wall is leaning on the wall B29-02 to the north and B29-03 to the south; it is made with medium pebbles and limestone blocks bonded with earthen mortar. No coating was observed and, as the wall was not intended to be visible, it is obvious that there never was any. The wall **B29-30** (Fig 3-43) is built over the wall B29-04 more or less in its south half. It appears that the main function of the wall B29-04 was to support the wall B29-30 which was rising at first floor and so dividing the main building into the two rooms B29-A and B29-B. The dividing wall B29-30, which is the only remain of the elevation at first floor, is preserved for 2.60m long by 0.60m wide and only 0.20m high. It is made by medium limestone blocks with earthen mortar and no remain of coating was observed, but several fragments found in the nearby soundings suggest that it was covered with white plaster (Fig 3-44). The north edge of the wall is quite probably the jamb of the gate leading from the room B29-B to the room B29-A and a similar wall was undoubtedly in existence above the northern half of the wall B29-04 but it has entirely collapsed. In this hypothesis, the gate was so not exactly in the middle of the wall.

After the cleaning of the inside of the room B29-A, two soundings were opened, one (SD7) in the south-west corner of the room where the walls were damaged to prevent their collapse, the second (SD4) along the wall B29-04, in order to get information about the backfill and ceramic material for the dating. The floor of the room was made by a thin level of rammed reddish earth (**Uf5516**) mixed with a some small pebbles. It is quite probable that this earthen floor was regularly covered by a sanitary level of small pebbles, as it was the case in the Great Mosque. Directly above that floor was found a fragment of plaster (**IsoArc 1159**) (Fig 3-45) with a curved size which is probably the remain of a vaulted gate.

Under the earthen floor, the backfill (**Uf5517**) was excavated for around 0.50m deep only. It is a mixture of small rocks, various rubbish, ashes, charcoals and black soil (Fig 3-46). Its facies undoubtedly confirms its identification as a backfill and not a layer of collapse and proves that the circulation level was at first floor,



**Fig 3-38** : the wall B29-03, partially excavated, with its remains of coating

**Fig 3-39** : the sounding SD2, with the wall B29-03 (in the background) built over the bedrock

**Fig 3-40** : the wall B29-01, in the background behind the scale

**Fig 3-41** : the outlying wall B29-12, at bottom behind the scale



**Fig 3-42 :** the wall B29-04, partially visible in the sounding SD4

**Fig 3-43 :** the dividing wall B29-30, built above the wall B29-04

**Fig 3-44 :** remains of plaster found near the wall B29-30 (at right)





**Fig 3-45 :** the fragment of plaster (IsoArc 1159) with the remain of arch (down, at right)



**Fig 3-46 :** view of the sounding SD4, with the reddish earthen floor Uf 5516 (at right of the arrow) above the backfill layer Uf 5517 (down, and behind the arrow)

around 2.50 above the neighboring ground (Fig 3-46). So, apart from the dividing wall B29-30 and probably the center of the wall B29-04, all the other walls are now preserved under the level of the first floor. All possible internal fittings have so disappeared.

Especially, no trace of a *mihrab* in the wall B29-01 was found. The collapse west of the wall was carefully removed, looking for coated remains which could come from the niche but, unfortunately, nothing was found. However, the shape of the building B29, its orientation and comparisons with other buildings (especially the building B19 where remains of the *mihrab* were found) strongly conduct to identify the building B29 as a religious building and so the room B29-A as a small prayer hall, 6.3 m long (north-south) by 5 m wide (east-west) for an internal space of 31.5 m<sup>2</sup>.

### III-B1-2: the east room B29-B, a high terrace with a masoned grave

The room B29-B, east of the main building, is a little bit smaller than the room B29-A but more internal fittings were found.

The room B29-B is bounded to the north by the wall B29-02, which is here 4.40 m long internally and 0.80 m thick for a preserved elevation of around 2 m; to the south by the wall B29-01, which is here 4.40 m long internally and 0.65 m thick; and to the west by the walls B29-04 and B29-30, which have been described already. To the east, the limit is made by the walls B29-26 and B29-34 which is the same wall but differently registered on each side of the stair. The wall **B29-26 (Fig 3-47)** is 3 m long and 0.70 m thick for a preserved elevation of around 2 m; it is made with large to medium pebbles and limestone blocks, almost without corals, bonded with earthen mortar. Small remains of beige coating were observed on the top of the wall, while a very strong grey coating, which is nearly cement, was observed at its foundation. The wall **B29-34 (Fig 3-48)** is 3 m long and 0.70 m thick for a preserved elevation from 1.50 m high near the stair to less than 1 m high at the north-east corner. It is made the same way than the wall B29-26 though the remains of the beige coating were scarcer. The same strong gray coating was found on the lower courses of the wall, and a small sounding opened at the feet of the wall revealed that it was built directly on the bedrock or on a thin backfill layer and that the gray coating has partially leaked on the bedrock and could so date back to the construction of the building.

A sounding (SD5) opened along the wall B29-04 to the west revealed exactly the same layers as in the west room B29-A, with a reddish earthen floor (here registered as **Uf5518**) over a level of backfill (**Uf5519**) with the same facies and the same components. The earthen floor is better preserved in the room B29-B than in room B29-A and the remains of the elevation and internal fittings of the first floor are also better preserved, mainly to the south and east, but only for the lowest parts.

East of the room B29-B, a low wall **B29-05 (Fig 3-49)** was uncovered, 3.10 m long and 0.60 m thick, for a preserved internal elevation of around 0.20 m (only one course of stones) and an outside elevation on its east side of around 0.50 m (three to four courses of stones). It is made with medium pebbles and limestone blocks poorly bonded with earthen mortar and no remain of coating was observed. The wall is built over the lower part of the wall B29-03 but is with the upper part which is the remain of the elevation at first floor. It is so contemporary of the construction of the building and was undoubtedly the eastern limit of the inside of the room B29-B. Between the east side of the wall B29-05 and the eastern end of the building made by the wall B29-26, a narrow external space, around 1 m wide, was so in existence. It could have been used as a passageway to the south terrace B29-C but it was in existence before this later addition to the building. Some kind of high gallery or external tribune might be a better interpretation, the function of which could be decorative by creating animation on the east facade of the building.

To the north, the small wall **B29-27 (Fig 3-50)**, only preserved for 0.80 m long, 0.75 m thick and 0.20 m high, is quite probably the counterpart of the wall B29-05 but less preserved, because of the collapse of the north-east corner of the building. The same gallery must so be considered north of the stair.

In the center of the room B29-B, a more or less rectangular masonry **B29-28 (Fig 3-51)** was visible since the beginning of excavation. It is a very damaged construction, 2.70 m long by 0.75 m to 1.30 m wide, made with large and medium pebbles and limestone blocks bonded with earthen mortar. The construction was at least 0.20 m higher than the floor and the collapse of the backfill eastwards has shown that it continues for at least for 0.50 m under the floor level. Though it cannot be proved without further excavations, the dimensions of the structure, its location and appearance, and the general pattern of the area, strongly suggest that it is a masoned grave. A small fragment of coating (**IsoArc1166, Fig 3-52**) found in the collapse south of the building could come from the cover of the grave, which could so have been of trapezoidal or pyramidal section, but it is difficult to be affirmative.



**Fig 3-47** : the wall B29-26;  
with the room B29-E at left  
and the stair B29-33 at right

**Fig 3-48** : the wall B29-34,  
with the stair B29-33 at left

**Fig 3-49** : the inside  
elevation of the wall B29-05,  
with the top of the wall B29-  
26 behind





**Fig 3-50 :** *the small wall B29-27*

**Fig 3-51 :** *the assumed masoned shrine B29-28*

**Fig 3-52 :** *fragment of coating (IsoArc 1166), possibly coming from the shrine B29-28*

There is no possibility to know if this grave was built together or after the construction of the main building. However, as no difference was observed between the backfill in the sounding SD5 and near the shrine, and regarding to the general organization, it is very likely that the main building was precisely made to host the grave and the corpse inside it. It was undoubtedly an important person and the building must so be considered as some kind of a mausoleum rather than as a quarter's mosque. The shape is quite different from the actual preserved mausoleums west of the city, but it has some kind of similitude with the mausoleum B197 near the Great Mosque and there is also a possibility that other buildings on platform in Qalhât, which have until now been interpreted as small mosque, could in fact be similar mausoleums.

South of the grave B29-28, a small piece of coated floor **B29-29 (Fig 3-53)** was found, above the earthen floor, for 1.70 m long by 0.70 m wide. Absolutely no other remain of coated floor was observed anywhere in the main building and it can be exaggerated to assume that the whole room B29-B was covered with coated floor. Though the coating is not exactly waterproof, a small area for ablution might be considered and the remains of floor could in fact be the bottom of a basin.

The room B29-B, 6.40 m long (north-south) by 3.40 m wide (east-west, the eastern gallery excluded) and so around 22 m<sup>2</sup>, was firstly believed to be a high terrace in front of the prayer hall B29-A. According to the presence of the masoned grave, the it can better be interreted as a burial space which is the real core of the main building, as the building is built for hosting the grave. In this configuration, the prayer hall is more a secondary space.

Regarding to the ceramic material found in the soundings SD4 and SD6, which is strictly similar, the main building was constructed between the second half of the 13<sup>th</sup> century and the beginning of the 14<sup>th</sup> century. The earthen floors might be a little bit newer, in the first half of the 14<sup>th</sup> century, but the material was too scarce to be strictly affirmative. It is so possible that the mausoleum was built at about the same period than the Mausoleum of Bibi Maryam, and in any case during the heydays of Qalhât.

As most of the elevation of the first floor seems to have been pillaged before the general collapse it is very difficult to assumed the original height of the building. It is very likely that the walls of the prayer hall were at least 2 m high but the walls of the room B29-B could have been lower, less than 1 m high, and have only consist on a guard-rail. Also, the prayer hall must have been covered by a roof, maybe only made by palms, but the room B29-B could have been at open sky. In any case, the fragments found in the collapse strongly suggest that the building was covered by simple coating without any particular decoration. It is possibly this simplicity which explains the use of a platform, to distinguish the religious buildings from the civilians nearby.

### Fig 3-54

#### III-B1-3: the stair at east

The first floor of the main building was reachable by a rectangular stair **B29-33 (Fig 3-55)** built to the east, perpendicularly to the walls B29-26/34, more or less in the middle of the east side. The structure is yet 4.20 m long by 1.80 m wide in average, for a maximal preserved elevation of 1.60 m against the facade of the main building. It was apparently made with medium pebbles and limestone blocks bonded by earthen mortar on the edges and internally filled with brown silt, sand and gravels. The steps were also apparently built above this backfill.

Several remains of coating were observed on both sides of the stair, with a beige one on the upper part and a strong gray one, similar to cement, all around its foot. The north and south sides have also suffered a pressure, due to the internal filling, which has pushed the elevation to the outside and some of the stones from the facing have either collapsed or slide, explaining why the facings are not yet strictly vertical and some stones are missing (**Fig 3-56**).

The stair B29-33 is built against the walls B29-26 and B29-34, covering the coating of the west walls. It is so possible that the stair is a later addition and that a former was once in existence before the rebuilding of the actual one. It is however a common feature in Qalhât that contemporary walls are leaning on each other, including on coated parts, and without further investigations it is not possible to state if the stair B29-33 dates back to the construction of the main building or was lately made. In any case, a stair was necessary since the beginning and there is no reason to doubt that, if the actual stair is not the original one, the former one was not in the same place. Furthermore, the presence of the strong gray coating at the foot of the walls B29-26 and B29-34 and the stair B29-33 might be sufficient to assume that the actual stair is the original one.



**Fig 3-53 :** the remains of coated floor B29-29

**Fig 3-54 :** general view of the building B29 at the end of excavations from the north, with the rooms B29-A and B29-B on each sides of the dividing walls B29-04 and B29-30, on top

**Fig 3-55 :** general view of the stair B29-33



The steps are not preserved but more or less guessable by the alignment of stones which are the remains of the facings. Five steps can yet be seen and, according to the actual altitude and the assumed restitution, at least a sixth one must be considered and a seventh one is very likely. The two first steps, which are the best preserved (**Fig 3-57**), are wider and lower than the upper ones, around 1.80m long by 0.75m to 0.90m wide and most probably about 0.30m high. Those two steps were not outlined by handrail and it is very likely that they were covered by coating but no remain of it was found.

The upper steps are more damaged and it is difficult to be affirmative about them (**Fig 3-58**). They were apparently bounded at north and south by a handrail, which is very badly preserved, and so were smaller than the low steps, about 0.80m long by 0.60m wide. They could also have been higher, probably 0.50m but five steps about 0.30m high were probably enough to reach the east upper gallery, where one large step or two small ones were sufficient to reach the floor of the room B29-B.

In the layer of collapse (**Uf5531**) excavated around the stair B29-33, a fragment of masonry with a half-round face covered with strong gray coating (**IsoArc1165** ; **Fig 3-59**) was found. According to its location, it could be the remains of the handrail outlying the upper steps, the top of which was half-round. This handrail could have been very low, no more than 0.50m high, as some examples of stairs with low handrail are still visible today in the oldest houses of the actual village of Qalhât. The handrail could have extended until the walls B29-05 and B29-27 and have the same height; in this configuration, the access to the upper gallery in front of the room B29-B was blocked by the pursuit of the handrail, and was so probably not used as a passageway.

(**Fig 3-60**)



**Fig 3-56** : the south side of the stair B29-33, with the beige coating on top at left, the gray coating at feet and the disturbed facing at right

**Fig 3-57** : the first two steps of the stair B29-33





3-58



3-59



3-60

**Fig 3-58 :** the first two steps (in the foreground) and the upper steps (guessable in the background) of the stair B29-33

**Fig 3-59 :** lateral view of the possible remains of a handrail (IsoArc 1165)

**Fig 3-60 :** general view of the east side of the building B29, with the stair B29-33 at right

### III-B2. The south high terrace and associated structures

The room B29-C, south of the main building, is considered as a high terrace but, as it will be seen below, this identification might be nuanced. It is bounded to the east by two small rooms B29-D and B29-E, the functions of which remain enigmatic. Apart from some refitting in the eastern rooms, these three areas are a single coherent whole which was built in one time.

#### III-B2-1: the high terrace B29-C

The room B29-C is built against the eastern half of the south side of the main building, in correspondence with the room B29-B : the western limit of the room B29-C is more or less aligned with the dividing wall B29-04/30, while the eastern limit is leaning on the south-east corner of the room B29-B and its upper gallery.

The room B29-C is delimited to the east by the wall **B29-06 (Fig 3-61)**, which is built against the wall B29-03 and over the bedrock partially leveled. It is 3.76m long and 0.60m thick for a preserved elevation from nearly 2m near the wall B29-03 to 0.80m at its south end. It is made with medium pebbles and limestone blocks bonded with earthen mortar with few remains of coating.

The south limit is made by the wall **B29-08 (Fig 3-62)** which is common with room B29-D. It is here 6.30m long and 0.65m thick for a preserved elevation of 0.80m in average, made with medium pebbles and limestone blocks bonded with earthen mortar and few remains of beige coating were observed in the lower parts of the wall.

To the east, the limit is made by the walls B29-27 and B29-24, which are common with the rooms B29-D and B29-E and will be described below.

The top of the room B29-C was only cleaned as quickly appeared a level made with small rocks, gravels and pebbles (**Uf5509** and **Uf5510**), which was not looking as collapse (**Fig 3-63**). A sounding (SD8) opened to the north of the room confirmed that this layer goes at least 0.50m downwards, and probably until the bottom of the construction (**Fig 3-64**). The room B29-C, internally 5.50m long by 3.30m wide, was so a high terrace, only usable at first floor and reachable through the room B29-B or the east upper gallery, or by both. A remain of a beige to gray coated floor **B29-11 (Fig 3-65)** was found in the north-east quarter of the room and was probably covering all the top of the structure. According to the volume of collapse (**Uf5511**) excavated south of the room, it is very unlikely that there ever was any elevation at first floor, apart from a small wall probably bounding the edges of the terrace. Even if there is no clue to be affirmative, it is also strongly probable that the space was not covered by a roof and was used as a high terrace at open sky.

However, regarding the proximity of the masoned grave in room B29-B, the other graves in the courtyards down, the shape of the structure and the organization of the building, it is also possible to consider the room B29-C as a burial area. Even if it can only be confirmed by excavation, it is likely that the structure was made to cover a grave dug in the bedrock down under the internal backfill of the room, and had looked very similar to the burial area in room B29-B.

According to the ceramic material found in the backfill of the terrace, B29-C is a later addition which was built during the 14th century, and most likely during its second half. The building B29 was so extended to the south-east, by a high terrace or most likely a second grave, a few decades after its foundation.

#### III-B2-2: the small rooms B29-D and B29-E

The room B29-C is bounded to the east by two square small rooms B29-D and B29-E at ground level, which were built at the same time though an internal later refitting has probably occurred. (**Fig 3-66**).

The south room B29-D is now 1.70m long by 1.30m wide and is reachable at east by a very narrow gate. The south limit is made by the wall B29-08, common with room B29-C and which is here 1.30 m long internally and 0.70m thick for a maximal preserved elevation of around 1.30m (**Fig 3-67**). The west limit is made by the wall **B29-07 (Fig 3-68)** which is also the east wall of the room B29-C. It is 1.60m long and 0.55m thick for a maximal preserved elevation of 1.80m; it is made with large and medium pebbles and limestone blocks poorly bonded with earthen mortar and without any remain of coating.





3-61



3-62



3-63

**Fig 3-61 :** the wall B29-06 (at right) leaning on the wall B29-03 (at left)

**Fig 3-62 :** the wall B29-08, in the background

**Fig 3-63 :** general view of the room B29-C with the level of backfill Uf5510, mainly made of rocks



**Fig 3-64 :** *the sounding SD6*

**Fig 3-65 :** *the remains of coated floor B29-11, in room B29-C*

**Fig 3-66 :** *general view of the rooms B29-D and B29-E, with the high terrace B29-C behind*





**Fig 3-67** : the internal elevation of the wall B29-08 in room b29-D



**Fig 3-68** : the wall B29-07 in room B29-D



To the east, the limit is made by the wall **B29-20**, which is 1.30m long externally and 0.70m thick for a maximal preserved elevation of 0.80m, and by the wall **B29-22**, common with room B29-E and which is here 0.60m long internally by 0.75 m thick for a preserved elevation less than 0.80m, both being separated by the threshold **B29-21**, which is only 0.35m wide (**Fig 3-69**). The walls are made with large limestone blocks and medium pebbles bonded with earthen mortar. The same strong gray coating was found at the foot of the walls, mainly north of the wall B29-22. The threshold B29-21 (**Fig 3-70**) is made with medium pebbles partially polished and apparently only bonded with earth. As the south jamb of the gate has a little slide, it is possible that the gate was originally a little bit wider than it is today, but in any case no more than 0.40m wide.

The north limit of the room B29-D, and its separation with the room B29-E is made by the wall **B29-23** (**Fig 3-71**), which is a wall with only one facing on the south side. If it is leaning on the wall B29-22 to the east, its west connection is more complex as it is leaning on the wall B29-07 in its low half but enters into it in its upper half (**Fig 3-72**). The most convenient explanation for this unusual connection is that a niche was in existence north of the wall B29-07, around 1.50m above the ground, and that the wall B29-23 was built against its south facing.

The room B29-E, north of the room B29-D, was found without any access. The area is now 1.20m long by 1m wide and delimited to the east by the wall B29-02, common with room B29-D; it is here 1.80m long externally and 0.80m thick and is only preserved north for a little more than 0.40m high. The north limit is made by the wall **B29-25** (**Fig 3-73**), which is built against the wall B29-06 of the main building. It is 2.80m long and 0.70m thick for a preserved elevation of 1.80m near the main building, 0.40m at its east corner. South, the wall B29-23 has no facing in the room B29-E and, because of this weakness, it was not completely excavated. West, the wall **B29-24** (**Fig 3-74**), which is the east limit of the room B29-C, is badly preserved. It is 1m long internally and 0.70m thick for a preserved elevation from 1.30m at north to 0.70m near the wall B29-23. Above the preserved elevation are visible the backfills of the room B29-C which are collapsing down into the room B29-E. This state of preservation is in favor of the presence of a niche, the back wall of which could have collapsed, and the backfills of B29-C with it. The excavated layer inside the room B29-E (**Uf5533**) was a mix between the elements of the backfills of the room B29-C (small and medium rocks) and bigger stones, gravels and corals with very few remains of coating or mortar, suggesting a voluntary filling. On the contrary, the main part of the excavated layer in the room B29-D (**Uf5520**) was made by the collapse of the nearby constructions.

Considering the strongly probable voluntary filling of the room B29-E and the fact that it has no access, it is very likely that the area B29-E was never a room but a reduction of the room B29-D. Originally the room B29-D was extended until the north wall B29-25 and was so about 3.20m long by 1.30m wide with probably a niche on the west side. At a certain time, the niche collapsed and instead of repairing it, the northern half of the room was closed by the wall B29-23 and filled.

In the room B29-D was found, under the layer of collapse that filled the room, a level of smooth brown silt, very airy and from organic origin (**Uf5528**) which looks like disintegrated wood or vegetables. It can be the remains of a collapsed roof or rubbish put here by late squatter inhabitants, possibly the one who made the drystone enclosures nearby. According to the ceramics found in it, the phase of waste use took place in the late 15th century or the beginning of the 16th century. As this layer was not found at the bottom of the room B29-E, it means that the reducing of the room B29-D occurred between the second half of the 14th century and the abandonment of the building around the time of the arrival of the Portuguese, sometimes during the 15th century.

**Fig 3-75** and **Fig 3-76**



3-69



3-70



3-71

**Fig 3-69 :** general view of the east side of the rooms B29-D and B29-E, with the wall B29-20, the threshold B29-21 and the wall B29-22 from left to right

**Fig 3-70 :** the threshold B29-21

**Fig 3-71 :** the wall B29-23 in the room B29-D

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**Fig 3-72 :** the complex connection between the walls B29-07 (at left) and B29-23 (at right)

**Fig 3-73 :** the wall B29-25, outside elevation

**Fig 3-74 :** the wall B29-24 in room B29-E

**Fig 3-75 :** general view of the room B29-D at the end of excavations

**Fig 3-76 :** general view of the room B29-E at the end of excavations



### III-B3. The courtyards to the south and the surroundings

Two courtyards were found south of the building B29, bounded with low walls leaning against the main building or the high terrace (Fig 3-77). West and south, the collapse were removed down to the level of the actual ground, while to the north some parts of the late colluvium were removed until the actual track, which marks the north limit of excavation. A more important space was excavated to the east, where some walls were visible and partially excavated, in order to create a coherent visual ensemble.

#### III-B3-1: the south-west courtyard

The south-west courtyard, 6.50m long by 5m wide, is set against the south side of the prayer hall B29-A and the high terrace B29-C to the east. The west limit is made by the wall **B29-10** (Fig 3-78), 7.30 m long and 0.75 m thick, 0.60 m high in average, built with large pebbles and limestone blocks bonded by earth. No coating was found on the outside face, but the internal elevation is partly covered with the strong gray mortar (Fig 3-79).

The south limit is made by the wall **B29-16**, 6.50 m long by 0.80 m thick and 0.60 m high, also made with large pebbles and limestone blocks bonded with earth and entirely covered by strong gray coating only on the internal face and partly on its external side (Fig 3-80). A sounding (SD6) opened along the internal face of this wall also showed that this gray cement was also put above the bedrock and its leveling, at least in the south part of the courtyard. It is very unlikely however that the entire floor of the courtyard was ever cemented.

The south-west courtyard was reachable from the east, through the south-east courtyard, by the threshold **B29-19** (Fig 3-81), which is set right at the foot of the south-west corner of the high terrace. This threshold, 1.30m long by 0.80m wide, is made with large and flat pebbles, partially polished, bonded with earth and partially covered by a strong mix of plaster, mortar and small pebbles, which was probably the circulation level.

The sounding SD6 also showed that the bedrock was leveled by a thin layer of compacted brown silt mixed with gravels (Uf5512) and afterward covered by a layer of pebbles mixed with brown silt (Uf5526), about 0.10 m thick. This level was found more or less preserved in the entire courtyard and must be regarded as the circulation floor.

Along the west wall B29-10, a large rectangular grave (**B29-18** ; Fig 3-82) was found, with its north half heavily destroyed by the collapse of the wall B29-03 but the extent of which is still visible by the imprints on the floor. The construction was originally 3 m long by 2.10 m wide and probably around 0.40 m high. It was made with a rectangular formwork made of large pebbles and limestone blocks bonded with mortar and covered with strong gray coating to the south and apparently white plaster to the north. The inside of the masoned formwork was afterwards filled in with gravels and small pebbles until its top, which could have been coated, though no remain was found. According to its shape and location, it is possible to identify this structure as a rectangular masoned grave.

In the middle of the sounding SD2, an irregular oval pit was also uncovered (**B29-32** ; Fig 3-83). Around 2 m long by 0.40 m wide and 0.60 m deep, it was probably a failed attempt to dig a sepulchral pit, and the grave B29-32 could be the successful attempt.

(Fig 3-84)

#### III-B3-2: the south-east courtyard

The south-east courtyard, around 7m long and 5.90m wide, is set south of the high terrace, its west and east limits being more or less aligned with the west limit of the room B29-C and the east limit of B29-D/E. It was probably made after the south-west courtyard according to the connections of the walls to the west but, but it could also be a later refitting, it is difficult to be affirmative. (Fig 3-85).

The east limit is made by the wall **B29-15** (Fig 3-86), 4.40m long, 0.70m thick and 0.50m high in average, leaning on the high terrace to the north and made with large pebbles and limestone blocks bonded with earth. The south limit is made by the wall **B29-13** (Fig 3-87), 8m long, 0.65m wide and 0.50m high in average, built in the same way. Between these two walls, in the south-east corner of the courtyard, an opening without any particular fitting is the access to the south-east courtyard and beyond to the south-west one (Fig 3-88).



**Fig 3-77 :** *general view of the south courtyards, under excavations*

**Fig 3-78 :** *the wall B29-10, outside elevation*

**Fig 3-79 :** *the wall B29-10, inside elevation*



**Fig 3-80 :** the wall B29-16, outside elevation

**Fig 3-81 :** the threshold B29-19

**Fig 3-82 :** the grave B29-18, with its imprints visible on the ground





**Fig 3-83 :** the oval pit B29-32 in the sounding SD, half excavated

**Fig 3-84 :** general view of the south-west courtyard at the end of excavations

**Fig 3-85 :** general view of the south-east courtyard at the end of excavations



3-86



3-87



3-88

**Fig 3-86** : the wall B29-15, outside elevation

**Fig 3-87** : the wall B29-13, inside elevation

**Fig 3-88** : the access to the south-east courtyard

To the west, the limit is made by the wall **B29-14 (Fig 3-89)**, which is leaning on the south wall B29-13 of the south-east courtyard and on the south wall B29-16 of the south-west courtyard and has only one internal facing. It is possible that this wall is a later addition related with the wall B29-31 to the west (see below) and that the passage was originally opened.

The sounding SD3 opened east of the courtyard revealed the same stratigraphy, with a thin layer leveling the bedrock (**Uf5523**) covered by a thicker layer of small pebbles mixed with brown silt (**Uf5522**) which is the circulation floor of the courtyard. The only difference was a presence of a thin layer of disintegrated wood (**Uf5521**) over the floor of pebbles, which could be the traces of the possible wooden roof of the main building, but the hints are too scarce to be affirmative.

Nearly in the center of the south-east courtyard, a rectangular structure (**B29-17; Fig 3-90**) was also unearthed. The structure, 2.80m long by 1.90m wide, was damaged by the collapse and some of it was accidentally removed during excavations before its identification. The south-west corner is however well preserved and the structure was originally at least 0.40m high. As for the grave B29-18, the structure B29-17 was made with a formwork of massive pebbles and limestone blocks, nearly without binder, and afterwards filled with small pebbles and gravels. No remain of coating was here observed. According to its location and shape, this structure must also be identified with a masoned grave, similar to the western one but simpler made.

The ceramic material recovered in the soundings was not numerous enough to give a precise dating for the construction of the two south courtyards. Considering the general chronology of the building, they were made in the course of the 15th century, and most likely the western one before the eastern one.

(Fig 3-91)





**Fig 3-89** : the wall B29-14, outside view

**Fig 3-90** : the grave B29-17

**Fig 3-91** : general view of the south side of the building B29

### III-B3-3: the surroundings and later constructions

Around the building B29, several constructions were unearthed, more or less close to the building. No excavation work was made to the north but graves and other burial structures are yet visible beyond the actual track.

To the west, a very small wall (**B29-36 ; Fig 3-92**) was found, built against the wall B29-12. It is now only 0.75m long, 0.50m thick and 0.40m high and, as it is built above the circulation floor and not over the bedrock, it could reasonably be considered as a late addition and its function remains unknown.

To the north, the low wall **B29-35 (Fig 3-93)** is also problematical. It was observed for 1.60m by 0.70m wide and is preserved for one to two courses of stones, made by large and medium pebbles and limestone blocks bonded with mortar and partially covered by the circulation floor. It might extend westward and, to the east, it goes under the wall B29-12 and the corner of the walls B29-01 and B29-02, with which it is perfectly aligned. It could so be part of a former building entirely leveled and of which nothing visible remains. It can also participate to the original setting of the building. The wall B29-35 might have been built first, not much higher than it is today, to indicate the direction of Mekka, and it was shortly after used by the builders to make the whole building, following the orientation given by the low wall. This is only a hypothesis but there is no much better explanation.

At the junction of the two south courtyards, a small and badly preserved wall (**B29-31 ; Fig 3-94**) was uncovered. It is now 2.40m long, 0.55 m to 0.80 m wide, and 0.40 m high, made with medium pebbles and limestone blocks bonded with earth with a facing to the east, north and west, the south part being too damaged to be known. The bottom of this wall is a little bit higher than the foundations of the enclosure walls of the courtyard and could be a later addition. The space between this wall and the east wall B29-14, which has no facing on this side, was filled with pebbles and small rocks. It is possible that a bench was made here in a late stage of the building, blocking what was firstly an access to the south-east courtyard from the west but no facing was observed to the north. It could also have been some kind of a ramp to climb over the enclosure wall.

Several walls were partially observed to the east, which were not part of the building but are closing the large empty space eastwards. Some of these walls were built over the bedrock or its leveling (gray walls on the site plan) and so must belong to the medieval phases of the city, while others are built over an important layer of collapse and colluvium (blue walls on site plan), nearly 0.80 thick, and must so belong to a more recent phase. As the buildings to which they belonged were not excavated, these walls were not registered.

About 3.30 m east of the south-west courtyard, a more or less U-shaped wall was observed, which could belong to a building, a courtyard, or even a funerary terrace. In this narrow passageway, a nearly circular structure was uncovered (**B29-F ; Fig 3-95**), made with medium pebbles and limestone blocks without binder and built over collapse. It is obviously a late structure which was made when the building B29 has started to fall into decay but it looks too small to be an enclosure for goats. It could also be a late grave, set here when the sacred use of the building B29 was still clearly visible.

More to the west, about 9.75m far from the rooms B29-D/E, a corner of wall was also partly uncovered, belonging to a medieval building extending south-east. Two late walls, made of drystones and built over an important layer of collapse and colluvium, were observed. They were both made after the abandonment of the city and quite probably used as enclosures. If the open space which is bordering the east side of the building B29, and which could be named as a city square, is now about 10m wide, it may have extended originally eastwards for several meters more. (**Fig 3-96**)

**Fig 3-97**

**Fig 3-98**



**Fig 3-92 :** *the small wall B29-36*

**Fig 3-93 :** *the low wall B29-35*

**Fig 3-94 :** *the wall B29-31, at right*



314



**Fig 3-95** : general view of the structure B29-F

**Fig 3-96** : general view of the building B29 at the end of excavations, with the city square at left

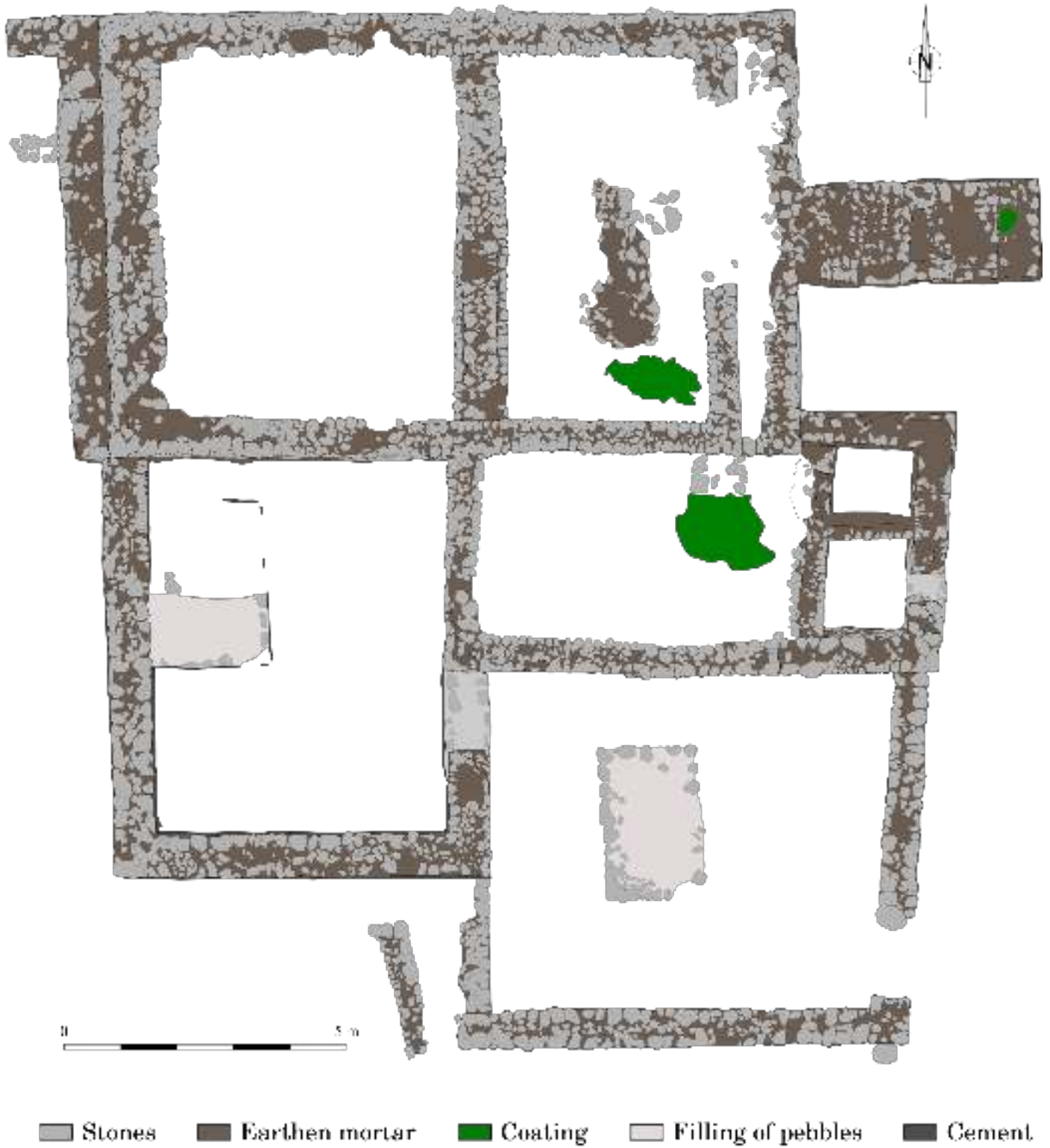


**Fig 3-97** : photogrametry of the building B29 and its surroundings





Fig 3-98 : archaeological site plan of the building B29





## SUMMARY

The first stage of the building B29 dates back to the turn of the 13<sup>th</sup> century to the 14<sup>th</sup> century, probably during the reign of Ayaz of shortly after. It was firstly a rectangular construction, made as a mausoleum built on a platform. The first floor was reachable by a stair on the east side, climbing to the high terrace (B29-B) occupied by a masoned grave, from where a small prayer hall (B29-A) was accessible west, through a vaulted gate. The prayer hall was apparently very simple, without decoration, and quite probably covered by a roof, while the high terrace could have been at open sky and only bounded by low walls. The east facade of the building was outlined by a high gallery while a bench could have existed west at the foot of the *qibla* wall.

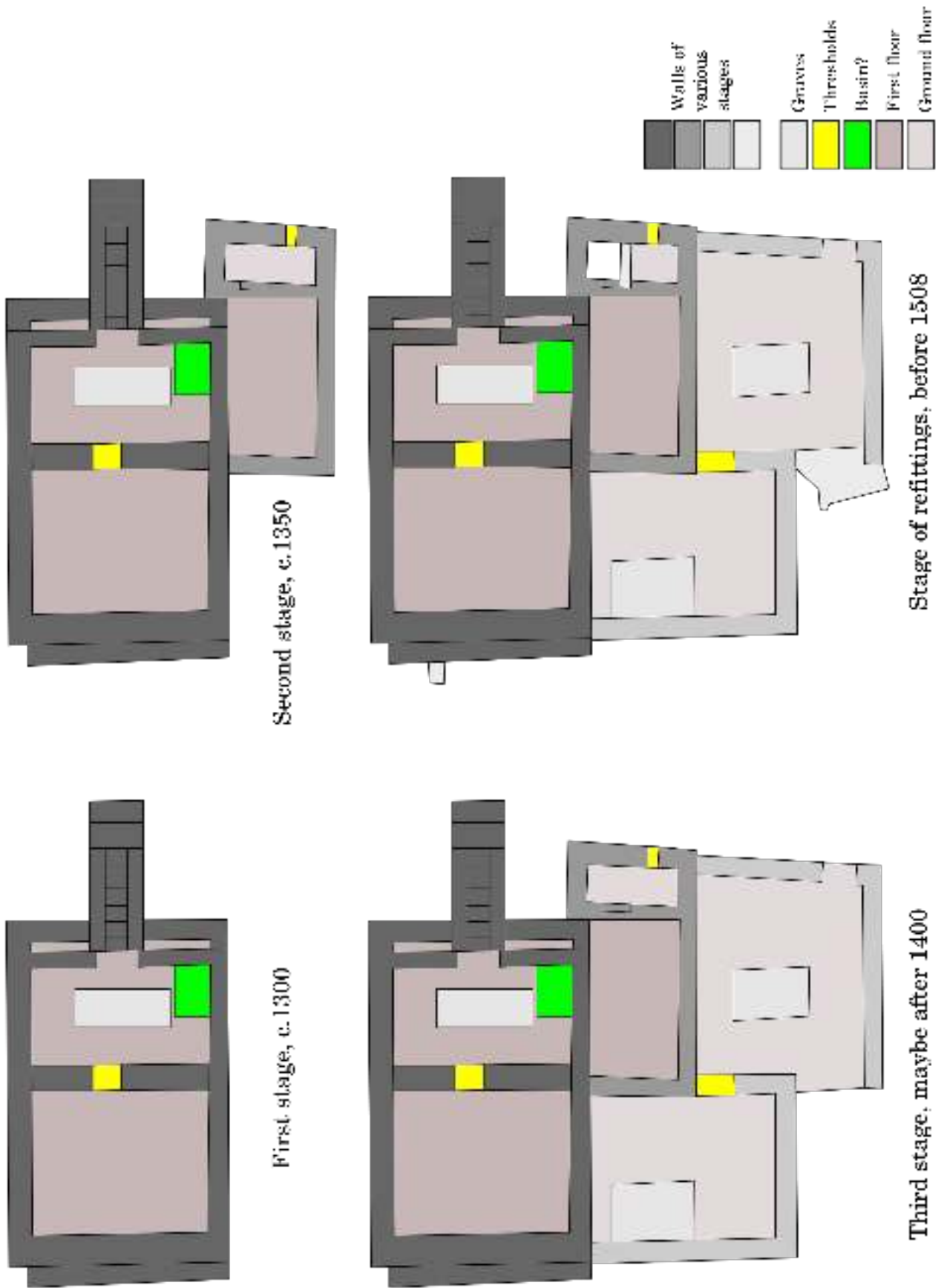
A few decades later, a second construction was built to the south, with a second high terrace (B29-C) which could also be a funerary construction, and a small rectangular room (B29-D/E) at ground floor, which function is unknown. At a certain time, probably during the 15<sup>th</sup> century, the back of a possible niche in the west side of the room may have collapsed, leading to the reducing of the room by the construction of a one-facing wall and the filling of the northern part of the previous space.

Also probably during the 15<sup>th</sup> century, two courtyards on the groundfloor, each one with a more or less well masoned grave, were added to the south, the western one probably before the eastern one. The building was still standing when the city was seized by the Portuguese invaders as the room B29-D was shortly used as a rubbish area in the beginning of the 16<sup>th</sup> century. The building was abandoned afterwards and many of its elevation at first floor was recovered and reused to build the late drystone enclosures visible all around.

The building B29 was finally quite different of the small mosque B19 in the north-west quarter, not in plan which are nearly similar, but in use as the primary function of the building B29 is funerary. This small building on a platform is so a new type of building, other examples of wich may exist elsewhere in Qalhât.

**Fig 3-99**

Fig 3-99 : stages of evolution of the building B29



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## PRELIMINARY ARCHAEOBOTANICAL ANALYSIS OF QALHÂT (SULTANATE OF OMAN)

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### Introduction

This report describes the progress of the analysis of the archaeobotanical remains from Qalhât. The first mission which has taken place from the 19<sup>th</sup> of February to the 17<sup>th</sup> of March 2014 has confirmed the potentiality of the site regarding archaeobotanical remains (seeds, fruits, charcoals, dried wood). That's why another mission has been programmed from the 26<sup>th</sup> of October to the 14<sup>th</sup> of November 2015 in order to get more archaeobotanical material for a larger diversity of contexts. During these missions, the objectives were sieving and sorting all the sediment samples made by the archaeological team from the buildings 94, 21, 12 and 39 as well as recording the hand-picked samples, especially the dried wood pieces excavated from the Great Mosque.

This analysis gives us the opportunity to get the first archaeobotanical data available for the medieval period in the whole Oman Peninsula. Indeed, it allow us to provide the first information about the food plant diet of the inhabitants of Qalhât as well as to define their agrarian practices. Moreover, since Qalhât has been the main seaport of the Arabian Sea during its occupation, this study may increase our knowledge about the diffusion of plants on the Indian Ocean during the Islamic period, as it has already been documented for ancient periods (Boivin and Fuller 2009). The analysis allow us also to make hypothesis about the area of supply regarding the consumed plants: what is the part from the trade and from the local agriculture? These preliminary results allow us to begin to answer that questions. A part of the results presented below have already been published (Dabrowski *et al* 2015).

### Material and Methods

We can distinguish two types of samples: hand-picked samples and floated samples of sediment.

#### Hand-picked samples

During previous sessions, a lot of hand-picked samples have been processed. First, a lot of dry woods have been unearthed, mainly from the Great Mosque (B12) and its annex (B95). Their preservation is caused by the hot and dry climate in which the site is situated; this way of preservation is called desiccation. A total of 104 samples of dry woods have been made. They have been sent into the national Museum of natural History in Paris for further analyses with the agreement of the MHC. However, some of them were too big to be transported. So, after they had been recorded, photographed and measured, one part of each has been sampled. Some of them represent timber as it has been suggested by their size and their context of discovery. In the laboratory in Paris, they will be identified under the form of thin-blade with a light-microscope and it will permit us to check if exotic wood have been brought from remote areas such as India or China or if wood locally available have been purposed for the Great Mosque. Moreover, we will determine which part of tree has been used, looking at anatomical features such as ring boundaries.

Besides, a total of 32 hand-picked samples of charcoals and 18 of seeds and fruits have been processed. Concerning these types of remains, this method is usually not used because it does not allow us to get whole the archaeobotanical remains present in the sediment. Consequently, the results from this type of sample are usually incomplete. Nevertheless, they provide useful information, especially when a new taxa is present in the sample. They are mainly from the building B94 but also from B21, B12 and B95.

#### Floated samples

The aim of the flotation method is to sieve excavated sediment in a water bath, in order to allow the organic material to float to the surface. So, a flotation-machine built during the 2014a campaign has been used. (fig. 1).

**Figure 1:** Flotation-machine

The sediment, sampled in different types of archaeological contexts, is added in the main barrel. By doing so, the big fraction of the sediment and other heavy material (ceramic, glass, metal, pearls) are recovered on a bottom sieve (meshes: 1mm), while the less dense organic material (charred seeds, charcoals, bones) float to the surface. The material that floats to the top, called light fraction is recovered with a sieve (meshes: 0.3mm). After drying the light fraction, the macro-botanical remains (seeds, fruits, charcoals) are sorted out by looking with a binocular loupe (Nikon SMZ 1000).

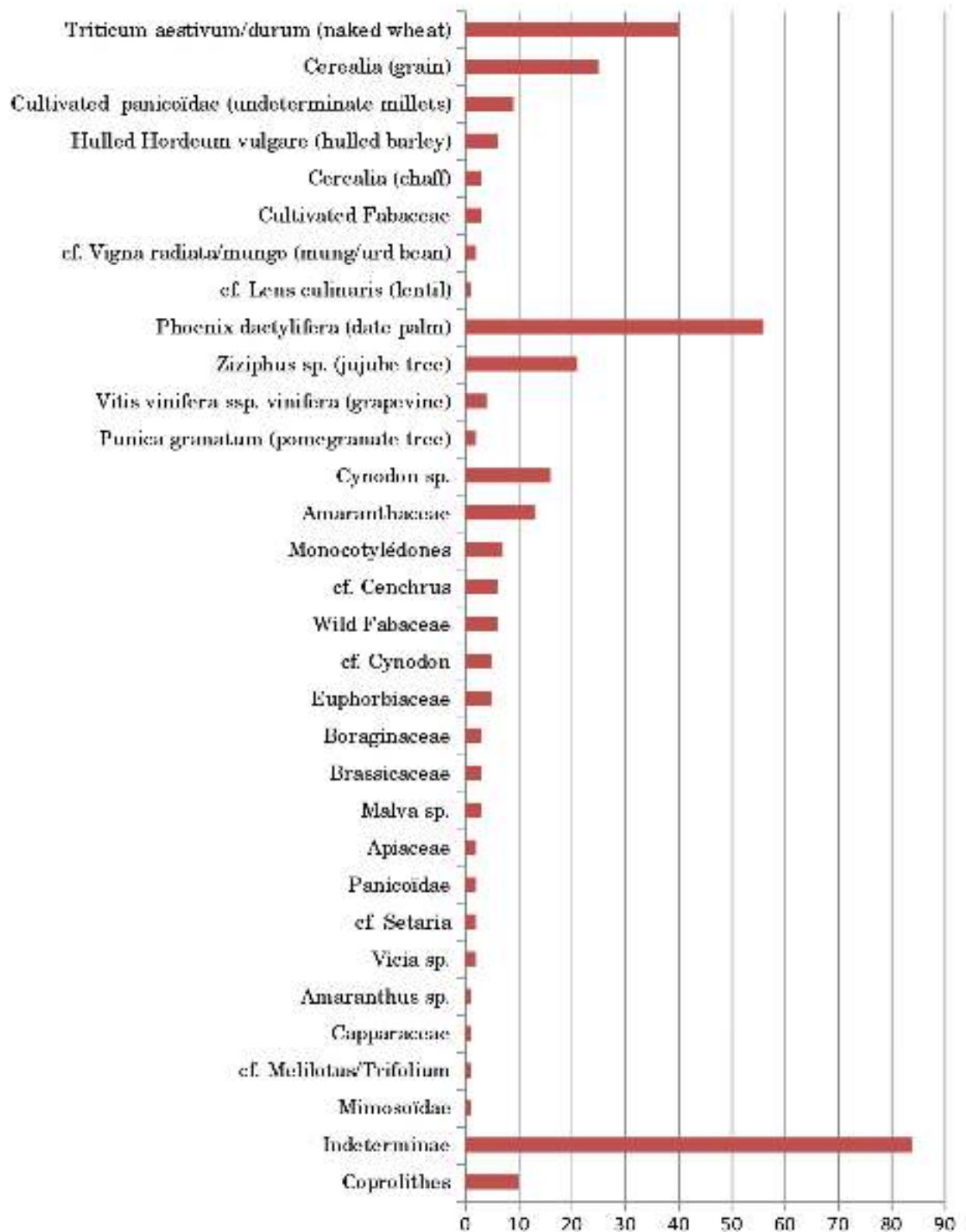
During the 2014a session, a total of 80 samples from the houses B94 and B21 have been sieved by using the flotation-machine. Regarding the session of 2015b, a total of 57 samples from the jeweler's workshop (B39) and the Great Mosque (B12) have been sieved but none of them have been sorted out for now. A wide range of contexts could have been tested, allowing us to get different types of information (fireplaces, occupation levels, fire levels, embankments...). The volume of the different sieved samples is variable, depending on the type of context sampled, and is ranged from less than 1 liter to 41 liters. All the samples have been sent to the National Museum of Natural History in Paris with the agreement of the MHC. For this report, only the seeds and fruits from the samples of the buildings 94 and 21 have been studied entirely.

## Results

All in all, 683 seeds and fruit remains have been counted corresponding to a minimum of 356 individuals (fig. 2). They are mainly preserved by carbonisation but also by dessication (1) and mineralization (4). According to the general results, we can notice the predominance of both cereals and fruit trees. For the first category, we can see that the naked wheat (*Triticum aestivum/durum*) is dominant compare to the hulled barley (*Hulled Hordeum vulgare*). Some millets (*Panicoidae*) have been found but, due to their morphological diversity, their identification remains unclear. Further analysis will be undertaken in order to precise their identification. Concerning the fruit trees, we can point out that they are mainly represented by the date palm (*Phoenix dactylifera*) then by the jujube tree (*Ziziphus sp.*)(fig.3). Other fruit trees are present in few quantities such as grapevine (*Vitis vinifera ssp. vinifera*)(fig.4) and pomegranate tree (*Punica granatum*). Pulses are very poor numerically: most of them doesn't have sufficient morphological and anatomical features to be identified more precisely. Nevertheless, a hypothesis have been given for some of them, one may correspond to lentil (*Lens culinaris*) and others to mung/urd bean (*Vigna radiata/mungo*) which originate from the Indian sub-continent. Several weedy taxa have been identified in the assemblage. Among them, we can note the presence of wild taxa which are common in arid environment as this of Qalhât such as *Amaranthaceae*, *Malva*, or even *Cenchrus* ; the most represented weed is quackgrass (*Cynodon sp.*) which characterizes irrigated fields. Finally, some rodents and goats dung have been retrieved in several samples. The undeterminate will be analysed more precisely to try to identify them.

Concerning the charcoals, none of them have been identified yet. However, several samples from a wide diversity of contexts have been selected. They will allow us to get more information about trees and shrubs used as fuel and consequently to reconstruct the composition of the vegetation cover situated near the site.

Figure 2: Composition of the whole seeds and fruit assemblage from B94 and B21





**Figure 3:** Stone of jujube (*Ziziphus* sp.)**Figure 4:** Grapevine seed (*Vitis vinifera* sp. *vinifera*)

## Discussion

The preliminary analysis has provided a large taxonomic diversity of plants and consequently allows us to get the first information about the food plant economy of the site. First, the general results show us the main components of the food plant diet which are cereals (naked wheat, hulled barley, millets), fruit trees (date, jujube, grape and pomegranate) and, to a lesser extent, unknown pulses (maybe lentil, mung/urid bean). These taxa are already attested on others historical sites of the Arabian Peninsula (Bouchaud 2013). Then, we can wonder from where come the consumed plants retrieved on the site. Indeed, to begin with, the date palm may have been cultivated near the site since it grows locally nowadays. Moreover, the whole composition of the seed and fruit assemblage (date palm, fruit trees, cereals, pulses) seems to indicate the organization in three levels of an oasis agrosystem under the form of a date palm garden. This oasis agrosystem is archaeologically attested in Eastern Arabia since the end of the 4th millennium or the beginning of the 3rd millennium BC (Tengberg 2012), so its presence during the medieval period in this part of the Arabian Peninsula seems very likely. The case of jujube tree may be discussed because its remains could be from cultivated trees as well as wild ones. Besides, the presence of quackgrass (*Cynodon* sp.) in the assemblage testifies the irrigation of field crops. However, we can wonder if the oasis agrosystem was present locally or if the consumed plants are imported from another place, maybe from the hinterland.

Finally, others taxa may have been brought by long-distance trade. Indeed, a great amount of foreign potteries has been found in Qalhât which implies the site was involved in long-distance trade networks. For example, the millets could belong to the genus *Panicum*, *Pennisetum*, *Echinochloa*, *Eleusine*, *Setaria*, *Brachiaria*, *Eragrostis* and *Digitaria*, most of them originating from different parts of the Indian sub-continent and the Eastern Africa (Fuller 2006). Regarding the pulses, the unidentified pulses might correspond to Asian or African species. Some of them may correspond to the mung/urid bean which originates from the Indian sub-continent (Fuller and Harvey 2006). Nevertheless, most of these foreign taxa can grow in arid conditions such as those of Qalhât, consequently we have to be careful considering their possible place of growth. So their further identification will help us to determine what is the part of foreign taxa in the plant economy of Qalhât.

## Conclusion

To sum up, the field missions and the analysis in laboratory have shown the archaeobotanical potential of the site. Even if the study is ongoing and therefore still incomplete, the first results give us the main components of the food plant diet of the inhabitants of Qalhât. The composition of the assemblage reflects the organization of a date palm garden which has supplied the food plants present on the site. Further investigations on unidentified millets and pulses will help us to define the part of the long-distance trade in the food supply of the inhabitants. Moreover the charcoal analysis will provide us the general composition of the vegetation cover situated near the site as well as to treat the question of the fuel management in specific contexts (ex : potter's ovens...). Besides, the study of the others samples from the Great Mosque (B12) and the jeweler's workshop (B39) will permit us to complete these preliminary results and to have a more faithful representation of everyday-life aspects of the inhabitants of Qalhât.

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