IMTO – Italian Mission to Oman

University of Pisa

SUMHURAM

Preliminary Report

February – March 2008 (SUM08A)



Sumhuram Preliminary Report SUM08A February- March 2008

INDEX

1. Archaeological Report

Excavations in Area A Excavations in Area A, eastern part Excavations in Area B The Gate Complex and its constructional phases Preliminary investigations of the well's original structure New investigations on the Âamr al-Sharqiya (Inqitat Mirbat)

2. Architectural notes about the fortifications and the masonry of Sumhuram (Ch. Darles)

3. Complementary works: further restorations and site enhancement

4. Restoration and Consolidation Activities – Technical Report

ARCHAEOLOGICAL PRELIMINARY REPORT (SUM08A)

February – March 2008

The first IMTO's campaign of 2008 (SUM08A), directed by Alessandra Avanzini, started on 8.02.08 and finished on 06.03.08.

The main goals of this campaign were focused on excavations in Area A, Area B and in the area of the city gate (tower A6). The dismantling of the covering of the well and the installation of a new grid let us to proceed with a preliminary cleaning of the area inside the Monumental Building.

The excavations were conducted by prof. Alexander Sedov, as chief-archaeologist, and by dr. Said al Mashani, dr. Michele Degli Esposti, dr. Costanza Odierna, dr. Alexia Pavan.

Dr. Said al Mashani was responsible of all the working operations in Sumhuram; Arch. A. Massa was the responsible of the topographic survey.

The consolidation and restoration of the ancient masonry structures, under the direction of prof. M. Sassu (Department of Structural Engineering, University of Pisa), have been conducted on the field by eng. Marco Andreini and eng. Federico Rosa.

Parallely some works focused on the maintenance of the site have been done with the aim of leaving the site in the best situation possible in relation to its official opening to visitors.

Arch. S. Bizzarri drawn a new project for the cafeteria exhibition room and overlooked the operations leading to the new arrangement of the well's area, specifically dealing with the safety grid placing.

The Mission had the pleasure to host Prof. Ch. Darles, since almost 30 years expert in South Arabian architecture, to allow him an accurate study of Sumhuram fortifications system and of the masonry technique witnessed by city buildings.

The work of IMTO has been possible thanks to the collaboration of the Office of the Adviser of His Majesty the Sultan for Cultural Affairs in Muscat and in Salalah. In particular, we would like to thank Ghanem al Shanfari, Said al Mashani and all the Museum's team for their kind helpfulness.

Salalah, 5.03.08

Excavations in Area A (Trench Supervisor: Michele Degli Esposti)

Works in this area were a direct continuation of SUM07B campaign (fig. 1), aiming to bring out a wider portion of the southern face of the so-called Monumental Building 1's wall M17 and to dig out at least the remnants of the latest arrangement of the area.

In parallel with this target, investigations dealt with the outlining of room A108's more ancient phases, having this room previously been only dug up to the level of its late floor US243 (see SUM07B report).

So far as the works have been carried out (fig. 2), some very late walls have been unearthed, delimitating the new double-parted room A109/A109a and possibly another space which has not been nominated yet, since its real layout still has to be fully sketched out (fig. 3).

Other newly discovered walls, M253 and M254, seems to belong to a late building phase and to be connected with the walls M242 and M237 (in its secondary use), but as for the abovementioned space, they need to be completely unearthed in the next campaigns to get their correct place inside the constructional evolution of the area.

Finally, room A108 has been dug out down to the level of US260floor, that corresponds with the adjacent room A85's floor US214 and could represent the first level of the building. Anyway, in next campaign a sounding will be carried out in order to verify the stratigraphy underlying these floors, aiming to reach the bedrock.

Stratigraphical situation e main finds

Just alike the other parts of Area A previously investigated, the top of archaeological record was constituted by US21, a massive heap resulting from the landslide of the upper part of wall M17. US21 consisted in brown, non homogenously greyish loose loam, incorporating a noticeable amount of roughly dressed limestone blocks and more regular sandstone slabs, usually smaller than the formers. Wall M17 describes a sort of niche in correspondence of its southern face' centre, thus showing two right angles: while the eastern is well preserved (and was brought to light during SUM07B campaign), the opposite underwent a severe collapse, to which should be correlated a crumbled mudbricks heap found next to this corner. The *modus* of this bricks collapse clearly indicates that their original position was just above the surviving stones of M17 niche's western end, and explains the different preservation of the two facing corners.

As had already been noticed during SUM07B, the occurrence rate of sandstone slabs on the total number of limestone blocks seems to be higher than what is visible on the standing M17 face, probably indicating that the upper part of this wall had a different layout than the surviving one, or that they belonged to the internal filling of the wall. The same situation has been verified in the new excavations area; besides, the internal stratigraphy of US21 seems to point out that the structure of M17, at least in its last arrangement, had a top mainly made up of sandstone slabs resting on a limestone blocks part. Limestone blocks originally constituted the upper part of the niche western corner as well, above the mudbricks "patch".

Differently from what had been revealed above room A108, in this area US21 did not give back anything more than very few mortar flakes, while medium size *wadi* pebbles were present at the same low rate and pottery shards, bone splinters and shells were scantly represented, probably coming from the internal filling of the crumbled walls.

Even internal stratigraphy of the US for some aspects differed from what had been noticed in the adjacent area. The quite clear separation into three main parts (see SUM07B report), in fact, was no more identifiable, thus indicating that all the fallen stones should originally pertain to wall M17.

Possible occasional periods of squatter occupation or even sporadic frequentation could be indicated by the presence of scattered masses of finds (namely shell heaps) inside the layer.

At the bottom of US21, US21floor has been recognized only in some parts of the area, strengthening the idea that this was not a real living floor but resulted its compactness from the high weights it supported; its main characteristics are greyish colour, loamy consistency and the inclusion of some medium and small size stones mixed with abundant sandstone fragmentary slabs, disposed in a chaotic way.

Only a few finds came to light removing US21 and its floor: a crucible fragment (G110), a double pierced shell plaque (Sh310), a bronze plaque fragment (MB504), and a circular lid made from a pottery shard (Cl19).

On the western side of the investigated area, US21 directly covered what appears to be a very late and poorly made building phase. The area can be divided in two almost equivalent parts (fig. 3), the southern of which has only been recognized in its general outlines. Here, US21 was covering the poorly preserved remains of the E-W oriented wall M248 and of wall M249, perpendicular to the former, and the upper surviving stone rows of a wall (M247), E-W oriented, that much possibly belongs to a more ancient phase and seems to be leaning northward, indicating that it was prone to collapsing before it got interred. M247 excavated length is 2.83 m., with a width of 0,78 m; its upper surviving level is around 30,3 m. above sea level.

Wall M248 (supposed width: 0,60 m.; visible length 3,37 m.) is only constituted by a surviving row of stones, some of which of remarkable size, with no foundation but just laid down upon the top of an older wall (yet unnamed, figs. 4,5), fact that caused the westward sloping of the southern portion of M249, equally founded above a not very compact ground (US250, see below). This latter north-south oriented wall, 0,75 m. wide, was built to link M248 and M247, for a length of 2,25 m. Between these two, below US21, US247 has been identified. It consists of a mostly greyish loamy soil, quite compact, with white and light brown streaks and including small lumps of pulverised charcoal. This could represent the alteration of a late floor of this "room" (named A110) due to post-occupational events. It has to be noted that the structure and actual layout of wall M248 is only hypothetical, since its poor state of preservation and its position on the borders of the excavated area suggested to wait for this latter's widening in order to avoid the risk of fortuitously removing some wall's stones.

North to this situation, US21 covered a little mudbrick wall, M250, running parallel to M17 and M248 and really close to M247's top. Its length is around 2.71 for a preserved width of 0,36 m. Between M250 and M17 a new layer, US248, has been recognized; it's a greyish loamy soil, bearing white and light brown streaks just alike US247.

Removing this layer, which gave back a coin (Co446), a bronze fragment (MB505), and a hammerstone (S1168), US248floor has been brought to light, consisting in greyish loam with almost the same colour variation of its filling, but characterized by a good compactness, that can be ascribed to the presence of some clay very similar to the one used for local mudbricks. Furthermore, very little lumps of pulverised charcoal and of lime mortar are visible. The floor seems to be laid down upon a previous landslide, very little regularized, at the average level of 29,80 m. above sea level.

Between M250 and the southern face of M17, laid upon M248floor, stands a thin E-W wall (0,36 m. wide and 2,71 m. long in the excavated portion), of which just an alignment of sandstone slabs remain: M251. It seems to have had an opening connecting the southern and the northern parts of a room, which have been given the name of A109 and A109a respectively. The room was much probably closed on the eastern side by another poor wall, M255, built with reutilised stones and with no foundation, running N-S and probably leaning on M17 niche western corner. Its connection with M250 is unclear; approximated length, if considered from M250 southern edge till M17 would be of 2,30 m., for a maximum width of 0,40 m.

All the western part of the area thus seems to belong to a very late living phase, characterized by poor buildings, raised without foundation from the top of a previous landslide and probably constituted in their elevation by perishable materials resting upon a "stronger" base.

Dealing with the eastern part of the considered area, between the "late arrangement" just described and room A108, the situation appears quite different (figs. 5,6).

Here, US21 and its floor reach a deeper level towards the Monumental Building than they do in the southern part of the excavation and in the western. This can by attribute to the higher strength that the collapse of M17 had in the proximity of the Monumental Building, and also testifies that in this portion of the investigated area no late well settled floor existed.

In the southern part of this excavation's side, US249 has been removed, consisting in a dark brown loose soil, slightly compressed at its top, including a noticeable amount of medium and small size stones and pebbles, some charcoal flecks, bones and shells. Its stratigraphical position and composition suggest that it could be compared to US29, retrieved in the upper stratigraphical record of the almost entire Area A.

This layer seems to serve here as a late raising of walking surfaces, thus allowing access to the above mentioned late structures, whose level corresponds to US249 top. Only wall M249 starts from a slightly lower level, with US249 leant on it. US249 floor was represented by a lighter brown, greyish soil, not very compact. No catalogued finding came from US249.

This latter US and US21floor, covered US250 on the whole eastern side of the excavation, except from the zone nearby its southern limit, where US203 was raising till a few cm. under US249 top. US203, as had already been hypothesised during SUM07B campaign, seems to be a garbage heap overwhelming a primary shallow pit more than a simple pit, given also its position covering many wall remains, that's to say M254 and M253, just to deal only with current campaign works area. Its features are the same described in SUM07B report, e.g. heterogeneity, a noticeable amount of ashes and charcoal (pulverised) and lots of bones and fish bones. No new finding has been retrieved in this US during current campaign.

US250 actually covers the northern slope of US203, and consists in brown-greyish loam, somewhat similar to US21 floor but with a wider loam grain size. This soil was mixed with medium size stones, scanty bones and shells, and a medium quantity of charcoal flecks.

US 254 has been initially distinguished from the previous one due to a slightly lower stones occurrence, but the average composition and colour points to a correspondence between it and US250. Besides, stratigraphy does not contradict this hypothesis, since US254 covers the northern slope of US203 too. From both these two US, that from a stratigraphical point of view could even correspond to US22, since they directly cover building structures, no finding came to light. Furthermore, it covers the newly found wall M253, E-W oriented, whose foundation level seems to correspond to the one of M241. This wall has only been unearthed to show the upper face of the preserved stones, so that nothing can be said about its structure. Anyway it seems to be quite poorly constructed, with a single stone width (0,35 m.; length is 4, 44 m.).

Perpendicular to this latter wall, that is covered in its eastern part by US203, stands the poorly preserved wall M254, equally covered by US203 but laid down at a higher level than the former and resting upon US206, whose top level is 29,52 above sea level. Only what seems the remnant of one of the wall's faces survives (thus giving back a width of 0,38 m.), and it has been excavated up to a length of 0,96 m. This layer, already recognized in previous campaigns, has been only dug out in this area to show its top, that should have represented a floor during one of the secondary building phases of the site, and seems to be limited northward by wall M253, against which it leant (its possible extension further north needs verification, but it has to be noted that if this should be confirmed, could be an evidence for its contemporaneousness with M241). It appears as a reddishbrown loamy layer, quite compact on its top, almost clean. On certain points of its surface, scanty remnant of US203 have been left *in situ*.

The just mentioned wall M254, N-S oriented, in its present condition consists of a single stone alignment, seemingly the remnant of its eastern face if it has to be judged on the limited part dug out so far.

Room A108

The room, slightly trapezoidal in shape, showed a stratigraphical record strictly similar to the one defined for the adjacent room A85 (see SUM06B report, fig. 7).

Its original floor (or one of the most ancient, awaiting the carrying out of a deeper sounding), US260floor, has been reached at the elevation of 28.12 meters above sea level, and consists in well packed brown-greyish loam, including rare charcoal powder and pulverised mortar. Contrary to US214, the earliest floor unearthed in room A85, it doesn't bear traces of an accurate plastering (fig. 8).

The filling above this floor, US260, possibly the outcome of the second storey collapse, was constituted by reddish-grey loam, mixed with a remarkable amount of animal bones and some shells, a quite high quantity of charcoal flecks (sampled for C^{14} dating), and some red clay mud bricks, differing from the grey ones commonly retrieved in the other crumbling layers or still standing in the city walls. The fragment of an unidentified bronze object (MB506) came to light digging out this layer.

No floor could be identified above this collapse heap, that actually was covered by US256, a massive reddish-brown loamy layer, characterized by numerous greyish ashy lenses. It included a high quantity of pottery shards, among which a twinned handles amphorae and two almost complete cooking bowls, handmade and steatite tempered (Type III.2.2). Some bones and shells were retrieved in the US; charcoal was present in a much lower quantity than the underlying *stratum*, and nothing but rare mortar flakes came back to light. The morphology of the layer seems to point out that it was the outcome of a voluntary filling up of the abandoned lower room levels, carried out throwing waste and non-selected available ground. One of these filling operation was represented by US255, a grey loam accumulation that owes its colour to the abundant presence of ashes and charcoal amidst it, and that gave back just a whetstone (S1169). From US256 instead came one bronze coin (Co450), two bronze plaque fragments (MB507 and MB508), and a fragmented but almost complete low cylindrical incense burner (S1170), decorated with incised letters.

At the foundation level of wall M241 (not removed, to supply more strength to the section left beneath), no good floor has been identified, but inside a matrix that is totally coincident with the US256's one, almost no pottery shards or bone splinter has been retrieved, suggesting that, with the aim of sustaining the yet-to-be-laid floor US243, waste was no more thrown but only "clean" loam was used.

Excavations in Area A, eastern part (Trench Supervisor: Alexander V. Sedov)

During the short stay at Sumhuram in the SUM08A season (23.02 - 07.03.2008) the cleaning of the structures excavated by AFSM mission in 1952-53 have been continued. We succeeded to reopen the eastern end of the street A45, the room A112 (room VI B 2 according to AFSM nomenclature) of the new building BA7, to determine two new streets A113 (continuation of A45) and A115 (room VI B 3 according AFSM nomenclature).

Street A45

Top part of the section left during the previous campaigns at the eastern end of the street between walls M80 and M57 have been removed following the level of the US21floor (the last habitation level in this part of the city). A doorstep made from three huge stone blocks (50x55, 50x60, 55x60 cm in size) was discovered against the wall M80 roughly in the middle part of the wall marking the entrance to the room A98 (room III O 1 according to AFSM nomenclature). As was stated in the Albright's report, "In the south end [of the room?] is a 1 m wide doorway at street level with one step inside up to the street" (Albright 1982, p. 27). It's quite probable that Albright wrote about the doorstep in question. It was roughly 0.6-0.7x2.2 m in size and 0.2-0.25 m high, and was constructed on the US21floor.

At the eastern end the street was 1.9 m wide, and it was turned to the north-south direction along the outer western wall M262 of the room A112 (VI B 2). After the turn the street was designated as A113. In its northern part it was 2.7 m wide (at the turn), and in its south end – circa 1.85 m wide. The street A113 separated the building BA6 and the structure located to the east (building BA7).

Building BA7

It seems quite probable that the building located to the east of BA6 consisted of four rooms excavated by the AFSM mission: rooms A98 (III O 1), A99 (III M 2), A114 (III O 2) and A112 (VI B 2). During the present campaign only one room was re-opened.

Room A112 (VI B 2). The room is rectangular, 2.35x4.75 m in size. It was delimited by the walls M262 (west wall), M263 (south wall), M264 (east wall) and M261 (north wall). Almost one third of the room was occupied with a stairwell, roughly 1.4x2.2 m in size, constructed against the eastern wall M264. The floor of the room was paved with re-used limestone slabs, 0.75x1.2, 0.8x1.6, 0.4x0.5 m size. At least ones the floor was repaired, and the new, cement-like floor, was placed above it on the gravel layer, 8-10 cm thick. Three steps, 0.55-0.6 m wide, 0.35-0.4 m deep and 0.15 m high, remained *in situ* ascending northwards along the eastern wall M262 of the room. It seems that the initial entrance to the room, only 0.45 wide, was located in its southern wall M263, close to its western end. It led to a very narrow space, 0.75-0.9 m wide, along the southern wall M263, through which the steps of the staircase were accessible. It was filled with blown up sand and collapsed stones (US270). Bronze coin was found in the stratum. Later the entrance was blocked with rough stones, and the new one, 0.95 m wide, was opened in the northern end of the eastern wall M264, connecting the room with the street A115 located eastwards of the building BA7.

Street A115 (VI B 3)

The street, which was parallel to A113, run in north-south direction along the outer eastern walls M260 and M264 of the building BA7. Only small part of the street, next to the second entrance of the room A112, was cleaned. The floor of the street was paved with cobblestones fixed with a sort of cement mortar. Its level was *circa* 0.3-0.35 m below the level of the pavement in the room A112.

Excavations in Area B (Trench Supervisor: Costanza Odierna)

In the present season the principal objective was to complete excavations of the cultural deposits in the A74 (what is supposed to be a "street" running between the building BB1 and the storage "bins") and to excavate room A107, which is part of the building BB1 located to the north-west of the above-mentioned "street" A74.

'Street A74'

The "street" A74 was already the subject of investigation of three previous campaigns (2005B, 2006A and 2007B), but was not completely excavated.

At the beginning of the season the section left during the 2007B season in the north-western part of the area, between walls M169 and M165 was removed. The length of the section was 4.40 m, its width -0.4 m, and the height -1.30 m. After that all the area, starting from the level 28.11 m, was excavated reaching the deepest floor covering the bedrock.

Altogether five cultural layers were distinguished, and the following is the description starting from the top.

The first cultural deposits, from where the 2008A excavations have been started, was US197 located below US181floor (the layer US181 above the floor was removed during the previous campaign). It consisted of compact light brown loam mixed with pebbles, pieces of crashed mudbricks and collapsed stones from the wall M165. The average thickness of the layer was *circa* 0.27 m. A little amount of pottery and animal bones was found together with the coin Co445. A small pit (1.22x0.76 m in size), bordered on the west side with small stones (*circa* 12x8x5 cm in size), was discovered in the south-western part of the trench. It cut the US197. The pit's filling, designated as US245, consisted of very sandy greyish light brown loam mixed with small pieces of charcoal, pebbles and collapsed stones along with small amount of animal bones and non-diagnostic shard of pottery.

The layer US197 covered the wall M238 (excavated length: 4.70 m), the rounded wall delimiting the structure A105, which was partially excavated during the previous campaigns.

The US197floor related to the US197 was reached at the 28.615 m. It's a good preserved floor made from hardly packed grey earth mixed with pebbles and lime (fig. 9). Its thickness was about 0.3-0.4 m. In the northern part of the trench, in front of the wall M165, a pit, circa 1.50x0.50 m in size, was discovered cutting the US197floor. Its filling was designated as US246. It consisted of medium compact dark brown loam mixed with medium size stones (*circa* 10 cm in size) and small quantity of animal bones. The coin Co445 was found in the US246.

The next layer designated as US199 was found below US197floor. Its average thickness was about 0.16 m. The layer consisted of medium compact reddish light brown loam mixed with mud and reddish clay. Few pieces of animal bones and few shards of pottery as well as bronze, iron and coral samples and not identified iron object (MI132) were found in the US199. The related US199floor made from hardly packed reddish brown earth was reached at the level 28.507 m.

The next stratum US200 with its related floor US200floor was discovered below. Its average thickness was *circa* 0.25 m. It consisted of a medium compact reddish brown loam mixed with pebbles, mud and reddish clay (its consistence is almost similar to US199). The stratum was nearly 'sterile' and produced only one find – the coin Co447. The US200floor was reached at the point 28.146 m. It was very good preserved near the wall M165, where it was made from light grey hardly packed clay. The rest part of the floor was badly preserved and showed reddish colour and less compact consistence.

The stratum designated as US252 was discovered under the US200floor. It consisted of dark brown very compact loam mixed with pebbles and small amount of animal bones. Its average thickness was 0.16 m. Coin Co 449 was found in the US252. The related US252floor was reached at the point 27.957 m. It was reddish brown packed floor, on which the coin Co452 and few pieces of bones and pottery were found.

The foundation of the wall M165 (excavated dimensions: l=6.77 x h=1.90 x w=0.59 m) and the closing of the entrance between the walls M163 and M168 (at the point 27.95 m), connecting the square A77 and the "street" A74, were leaned on the US252floor, as well as the foundation of the wall M256 (excavated dimensions: l=2.47 x h=010 x w=0.36 m), probably a containment wall, leaning on M165 and on the threshold between walls M163 and M168 (fig. 10). Several large stones (*circa* 50x90 cm in size) were found in the western and eastern parts of the trench. Probably, they were used to level the surface below the US200floor.

The US252floor covered the wall M252, closing the room A111 (fig. 11). A fireplace, *circa* 0.24 x 0.26 m in size, cut the US252floor. The filling of the fireplace, designated as US258, consisted of very soft loam mixed with charcoals. The coin Co451 was found in the US258.

The deepest cultural layer, distinguished below the US252floor, was US259. It consisted of medium compact light grey loam, and its average thickness was 0.10 m. The related US259floor was made from hardly packed earth mixed with pebbles and gravel. It was very good preserved near the entrance between the walls M163 and M168, and was reached at the point 27.774 m. The coin Co454 (*head/owl* series) was found on the floor.

The US259floor was set directly on the bedrock. The above-mentioned wall M252 (excavated dimensions: $1=1.15 \times w=0.34 \times h=0.16 m$) erected on the US259floor was going under the structure A105.

Resulting from the excavations, the "street" A 74 had at least four phases of existence (from bottom to top).

The 1st phase

The first occupational layer was US259floor. Between the walls M163 and M168 there was a small entrance (dimensions: w.=0.94 m) connecting the square A77 and the "street" A74. Its threshold was set on the US259floor. The wall M252, leaning to the wall M168 and running along south-east – north-west direction, probably, divided the space of the "street" A74 (fig. 11).

The 2nd phase

The entrance between the walls M163 and M168 was narrowed (0.66 m) by setting a row of vertical stones (dimensions: h. excavated dimen. $0,51 \times w.1 \times 1.0,20 \text{ m}$) leaning on the M163 and on the threshold (fig.12). The wall M165, delimited the Building BB1, was built along with his containment wall M256 that leaned directly on the threshold of the entrance between the walls M163 and M168. Apparently a few time later, the entrance was closed (dimensions of the closing remains: 1.0,70 x w.1 x h. excavated dimen. 0,57 m) and the occupation layer was raised up to the level of 28.147 m (corresponding to the US200floor). The first entrance in the room A73 through the wall M165 was closed (at the point 28.295 m).

The 3rd phase

During this phase the reconstruction of the walls M165 and M163, visible at the level of 28.459 m (fig. 13), was made. It corresponds also to the construction of the wall M164 in the room A73 of the Building BB1. It could be also possible that the wall M164, which closed the room A73, was build to reinforce the collapsed and rebuilt wall M163. The related occupational layer in the room A74 was the US199floor, corresponding to the stratum US267, reached this year in the north-eastern part of the room A73, on which the wall M164 was constructed (at the level 28.539 m).

The 4th *phase*

It's the later phase determined after the present season of excavation. The occupational layer was the US197floor, on which the wall M238 of the structure A105 and the steps leaned on M165 showing the raising of the threshold connecting the "street" A74 and the room A73 were built (fig. 14).

Room A107

During this season it was decided to excavate part of the room A107, partially investigated during the previous campaign 2007B, when the US244 was excavated.

A trench of about 2.50x2.40 m was opened on the south-western part of the room.

Below the US244 the stratum designated as US261 was discovered. It's average thickness was 0.19 m. It consisted of very soft reddish brown loam mixed with collapsed stones and iron slag (total weight 0.194 Kg.). Its thickness was *circa* 0.18 m. Coin Co460 and few shards of pottery were found in the US261. The related US261 floor was very badly preserved, and was traced only in the section (at the point 29.37 m) and thanks to the archaeological evidence of the collapse of a ring base of a jar, which was found overturned with its mortar (made from a very strong mix of sand and crashed shells).

The wall M257 (dimensions: l. 1.54 x h. 0.50 x w. 0.50 m.) was set on the US261 floor. It leaned on the wall M244 (excavated dimensions: l. 0.71 x h. 1.68 x w. 0.50 m).

The next stratum designated as US263 was discovered under the US261 floor. It's average thickness was 0.16 m. It consisted of medium compact light brown loam mixed with pebbles and crashed mudbricks. Its average thickness was *circa* 0.20 m. The coin Co455 and a shell bead (Sh311) were found on it.

The stratum US265 was determined below US263. Strata were not separated with a floor. The US265 consisted of very soft reddish light brown loam mixed with medium amount of animal bones. The average thickness of US265 was 0.28. The related US256floor (reached at the point 28.87 m.) was made from hardly packed grey earth mixed with gravel and pebbles. Several shards of pottery were found on the floor (fig. 15). The wall M166 belonging to the later phase of the Building BB1 and divided the room A73 was constructed on the US265floor. Thus, the US265floor was the first occupational level of the room A107.

Below the US265floor the layer designed as US267 was determined. It's average thickness was 0.30 m. It consisted of very soft brown loam mixed with pieces of white plaster, collapsed stones and mudbricks (well visible in the section), large amount of animal bones and pottery shards. The following objects were found in the US267: Sh312 (bead), Co 458, MB510 (needle), MB511 (not identified object), MB513 (fr. of clamp with fragment of stone vessel) S1177 (pendant), iron slag (weight: 2.992 Kg.).

The above-mentioned wall M164 was set on the related US267floor (reached at the point 20.57 m). A pit, circa 0.20 x 0.16 m in size, encircled by small stones, was discovered near the wall M215. It cut the US267floor. Its filling, designated as US268, was very soft brown loam mixed with modest quantity of animals bones.

The last occupational layer determined this year, but not completely investigated, was US269. It's average thickness was 0.18 m. It consisted of very soft brown loam mixed with collapsed stones, large amount of animal bones, pottery shards and iron slag (weight: 4.438 Kg).

The Gate Complex and its constructional phases (Trench Supervisor: Alexia Pavan)

The operations of dismantling and reconstructing of wall M3, the eastern side of tower A6 in the gate complex, let us to start again the archaeological works in areas A1 and A7 with the aims of cleaning and rebuilding the external and the internal faces of wall M3 and clarifying the relations of the wall with the southern side of the tower (wall M10) and with the platform M30.

The results of these excavations brought us to re-think the constructional phases of the city gate and the general topography of the area as follows:

First phase (fig. 16)

During the first constructional phase of the city, the monumental gate was less articulated and composed by an internal door in A5 and an external one in A4, disposed according to a L-shaped setting comparable with the scheme used in Naqb al-Hajar (See Orazi in Report 1: 83) and in Greek cities of Ionia (Ch. Darles, personal communication).

The entrance was flanked by the two bastions, M15 in the western side and M14 in the eastern one. The pavement related with this first phase was US35floor reached at point of 26.85 (fig. 19). It was made from greyish hardly packed soil reinforced with small stones and it has been partially dug during SUM06A.

If in this campaign only a small portion of floor has been brought to light, the present excavations made clear its original extension, which was partially covered by the southern portion of M3, built in a later phase and dismantled during the consolidation works performed in this campaign (see above) to show the original and most ancient arrangement of the city gate.

We are not sure of the height reached by wall M10 in this first phase; we can image that at least the lower part has been constructed contemporary to the foundation of the city and the first fortification system, probably as retaining wall to contain the natural inclination of the bedrock.

In this way could be explained the presence of the skin or buttress made from seven/eight rows of stone blocks placed vertically sloped from bottom to top (Cfr. Report 1: 105). A similar arrangement is visible for the buttress built against M15, probably made with the same retaining function.

In the buttress inside the tower it's possible to distinguish some inserts of modern mortar which fills the space among the blocks. This kind of mortar, reddish in colour, seems to have been an addition made during the restoration works after the American excavations and before the Italian ones. It was used also on the southern face of wall M10 and in the walls M20/M21 inside the Monumental Building.

If we suppose the existence of wall M10 or at least of part of it, we have to keep in mind also the presence of wall M30 which tied to M10. We suppose that the function of these two walls was to reinforce and to contain the ramp placed eastern from the entrance, brought to light during the present campaign. The ramp covers a noticeable gap and it follows the natural inclination of the bedrock.

It's made of huge stones and it connected the external and lower part in front of the city with the pavement US35floor.

During the first phase the postern gate was already existing, probably with the military scope to let the troops enter to the city and exit from it.

The small gate was double-L shaped; now the internal side was blocked by stones probably placed during the arrangements made after American excavations, while the external one has been walled up in the present campaign for safety reasons. A preliminary cleansing of the interior has shown that the ceiling is very damaged and partially collapsed so at the moment is not practicable. However since the masonry seems in a good state of preservation the goal is proceeding with the consolidation of the structure in one of the next campaigns (fig. 20).

During the first phase the entrance to the city is supposed to have been protected by an isolated tower, placed north-western from the entrance, A47. The structure which now appears made from two units (M2 and M9) probably in origin was a single construction and it was placed directly on the bedrock by means of huge monoliths which totally covered a surface, in plan, of 6.4x6.4 m.

Second phase (fig. 17)

During the second constructional phase the city gate was enriched by the presence of the imposing tower A6 which changed a lot the general setting of the area.

From the eastern side the entrance was blocked by wall M3 which leaned to the eastern bastion M14, covering the floor of the first phase (US35floor), part of the ramp connecting the lower part of the slope with the upper one, and wall M30 which in this phase was dismantled in its upper part creating a kind of platform (fig. 21).

The relations among the walls testify clearly that the tower, as already noticed by arch. Orazi in Report 1, was not built in a single moment but at least in two different phases: M11, the western wall of the tower, in the lower part just leans to M10 and not tied to it, and the same is for M3 which clearly is just leaned and not tied to M10.

In the case of M3 the relation is clearer because of the presence of a vertical cut between M3 and M10 which confirms that at least the lower parts were not joined together (fig. 22).

The situation is different on the top where the two compartments have been tied probably after a general reconstruction of all the building. We can notice the same difference also at the junction between M11 and M10: looking at the bottom and at the lower part it's clear that M10 was built before M11.

On the southern side of wall M10 three inscriptions have been found by AFSM expedition (from left to right KR5, KR3 and KR9) whose original position is not possible to define because of the probably later reconstruction of the southern face of the wall.

The aim of the construction of tower A6 should be the amplifying and the development of the fortification system: during the second phase the entrance was flanked not simply by two bastions but by two towers (A47 and A6), giving an idea of monumentality immediately from the access.

Regarding the tower, the excavations of this year denied the hypothesis of Albright about the existence of a door on the northern wall M12. No entering device has been recognized, as well as was incorrect the general lay-out of the wall M3 which was supposed to be larger. The entrance was, probably, from the top, as well for the towers A102 and A62 where, in fact, no entrances have been discovered.

Third phase (fig. 18)

During the third phase the gate complex became much more impressive and more strengthened, since it was closed, in the western part, by wall M8. It's probably that, before its erection, the ancient tower A47 has been levelled and this explains the relations among the walls M2/M9 and M8 which, above the lower rows of monoliths, seems tied together.

In this phase the third and more external door was added: as well as the internal one and differently from the middle, it was with two shutters.

According the alignment of the walls and the relations with the compartments near by we can affirm that the wall M13 was added in this period.

Fourth phase (fig. 18bis)

Just small changes have been performed in this period also if one, the erection of wall M1, was really impressive. The isolated wall M1 was a kind of barrier closing the entrance to the city and it could be interpreted as a wall shuting out the direct entrance to the city, closing the view of the passage and the frontal access to the city or a defensive platform connected with the tower A6 (Ch. Darles personal communication).

The arrangement of the space between M1 and the two towers was facilitated by the construction of wall M97 connecting the two structures M1 and A47, placed on the bedrock with the aim of supporting and regularizing the surface of the new passage.

Stratigraphy

In order to clarify the elevation of the bedrock in front of the tower A6, the deep sounding excavated in SUM07A along the northern face of the wall M12 and in the corner with M3, was enlarged.

For this reason we made a L-shaped trench measuring 10.9x4.70 which follows the perimeter of M3 and M12. In this way it has been possible to discover the foundation level of the tower and, contemporary, to recognize the last level of pavimentation joining the northern part of the city gate with the postern gate and the city wall (US274).

The difference of elevation is really impressive covering a gap of 5 meters with the bedrock reached at point of 22.69 and the entrance to the postern gate at point of 27.71.

The floor brought to light (fig. 23), corresponding to the last habitation level, should be contemporary to the highest floor discovered in area A1 (US17floor) and it's very bad preserved, disturbed from the stone blocks collapsed from the wall M3. It's made of whitish plaster, crumbled in many parts.

In the northern part of the trench, 2.7 meters from the corner between M3 and M12, the traces of a big pit (US273) can be recognized. The pit, extending until the corner of the two walls, is very soft in consistence, brown in colour with a lot of charcoals, animal bones and a quite large amount of pottery shards. No small finds have been registered.

About the foundation level, while in a first time it was argued that the base of wall M12 was at point 23.17 which was supposed to be the elevation of the bedrock in this part of the city, the excavations revealed that the foundation are upon the bedrock but at an elevation of 22.69.

The elevation of 23.17 is so to be referred to the elevation of US229 floor which was one of the pavements discovered in the area (the others were, from the more recent, US17 and US228).

Below US229 in fact has been discovered a different layer, US266, made of very compact earth with some amounts of bones and some shards of pottery, among which the rim of an amphora. This layer has an average thickness of 50 cm *circa*.

If in the trench in front of M12 we were able to reach the bedrock, in the area in front of M3 we decided to clean the top surface showing the sloping floor connecting the lower part near the tower with the ramp.

In this way in front of wall M12 it's possible to recognize a sequence of habitation levels: floor US17 (elevation 24.01), floor US228 (elevation 23.72), floor US229 (elevation 23.17) and the foundation filling above the bedrock with a thickness of 30 cm *circa*.

Preliminary investigations of the well's original structure (Supervisor Alexia Pavan)

Among the works for the official opening of the site to the tourists, the structure protecting the well has been completely dismantled and replaced with a new grid with the aim of making more comprehensible the original structure, of being less invading regarding the surrounding environment and, in the meantime, of warranting the more complete safety for the visitors.

Unfortunately the protection built after the American excavations have been changed a lot the original setting of the well since many stones have been removed or translate to create a plan surface over which the protective structure has been built.

The general setting of the area inside the Monumental Building is almost the same visible in the pictures published in Albright (1982: 20,21, figs. 9-12) (figs. 24-25).

The well is in the centre of the area and according the measures took by the Americans was 25.60 m deep; following the first observations made by Albright the perimeter is decreasing towards the bottom where the sides measure 1 meter. Two flat slabs interpreted by AFSM as altars were placed near the well in the eastern and the western side of the space and let Albright to interpret the complex as temple. The tank with the flowing hole was placed western from the well and at the present it's in the same position.

It's not possible to understand if the three huge sandstone blocks (measures: 117x21x42; 144x16xnot rec. height; 145x24x50) placed between the western side of the well and the tank are in their original position also if the dimensions and the weight let us to suppose that they were too heavy to be removed. The pictures do not help us in the comprehension of this part of the structure which seems covered by earth closing the hole for the flowing of the water.

At the present the well (dimensions: 1.10x1.10 m) is closed by a double structure of stones creating two quadrangular frames (dimensions: 2.20x2.20 metres; 2.80x2.80 circa – the more external frame has been just partially excavated), while the masonry is protruding of one and half row of stones from the upper frame (figs. 26, 27). The building technique does not use mortar among the blocks which are simply placed near by and the binding material visible between the ashlars is the modern concrete used during the intervention of restoration/consolidation made after the American excavations. The external frame is instead covered by a whitish plaster made from gypsum and calcium carbonate similar to the other sample of plaster collected on the site, well preserved along all the surfaces of the structure and partially damaged just near the south-eastern corner.

It was not possible to perform archaeological investigations because of the presence of the many blocks of masonry collapsed from the walls of the Monumental Building so it will be necessary to consolidate the structure before going on with the archaeological works.

However, the preliminary cleaning of the area, necessary after dismantling of the protecting covering, reveals that the area, as well as the well, had different interventions of reconstruction/rebuilding as attested by the three levels of floors discovered during the first cleaning operations

Below the surface at point of 27.61, has been discovered US264floor, recognizable just in the part comprised between the later walls M20/M21 and the northern side of the well. The floor is made from compact earth with small gravels, greysh in colour. The walls M20 and M21 have their foundation on this level.

Also if the floor is not preserved in the southern side of the well, the semicircular structure made of stones of irregular shape and medium dimensions recognizable in the pictures of Albright and preserved until today is related with this pavement. Below this irregular row of stones without binding material between them we found mudbricks, mostly crumbled, and some of them partially preserved. While the stones were already exposed, the bricks have been covered by a yellowish

layer, US262, with an average thickness of 15/20 cm, rather compact and with crumbled clay and gravels. An unidentified fragment of iron object with traces of bronze visible in section (MI134), some animal bones and very few pottery shards have been found in the layer. Contemporary with the removal of the layer, a nice stone quadrangular slab (dimensions: 40x39 cm), probably used as platform, was exposed southern from the well.

Stratum US262 covers US262floor reached at point 27.30, a whitish plastered pavement which we decided to not clean before the restoration of the walls of the Monumental Building planned for the next year. The floor seems well preserved but since the nature of the support is rather fragile we decided to post-pone the excavations.

In the trench western from the well, probably dug during the American excavations but not quoted in the Albright's report, we were able to recognize at point of 27.15 an older floor, plastered too, with no number. It seems to stay over a collapse of stones exposed for an height of 1,5 metres.

The installation of the grid, made out removing and replacing the stones of the upper levels, let us to make some considerations about the masonry of the well for which have been used stones of special quality worked according to a specific technique or with special tools (Ch. Darles personal communication). However the level of the well has been raised in the time, it's possible to notice that the rebuilt levels have been constructed with stones of the same quality, probably quarried from the same place. The only exception is represented by the huge stone placed on the western side, upon the block with the traces left by the ropes, which seems to have been an addition made already in antiquity.

This consideration seems to find a confirmation in the text of Albright (1982: 21) who speaks of the upper two courses of casing as a later addition built up when the floor grew in the course of the time. The author quoted the top stone on the western side which showed deep traces left from the ropes used to draw the water. At the moment the stone was not preserved while a lower one with the same usage traces is recognizable.

New investigations on the Âamr al-Sharqiya (Inqitat Mirbat)

The necessity to leave the site of Sumhuram as clean as possible, if on the one hand forced us to suspend the excavation of Area A, north to the Monumental Building 1, while waiting for the dug out earth to be removed, on the other gave us the possibility to take up new works on the promontory that overlooks the eastern side of Khor Rori bay's entrance. The main scope of these works was to clarify if any archaeological trace among those visible on the promontory could date back to Sumhuram period.

Thus, new surveys and restricted excavations have been carried out on the Âamr al-Sharqiya (Inqitat Mirbat), the general outline of which, in terms of archaeological remains scattered upon it, had already been defined in past investigations (SUM00B).

The general frame has been confirmed: the eastern part is occupied by some circular or more or less elliptic structures, actually consisting of just a low stone alignment, probably dating back to Bronze Age, as seems to confirm the presence of some shell middens.

The opposite side of the promontory hosts an Islamic settlement, three areas of which have been excavated in past years.

Between these two main areas stands a square structure, that could possibly be contemporary with the city of Sumhuram but needs a specific investigation.

Almost the whole northern edge of the *Inqitat* is defended by a long wall curtain (nearly 700 meters long), showing - at least in its western part - little square towers protruding towards the inland. A raising pathway cut in the promontory bedrock leads to the only opening left in this curtain, that has been subjected to some digging operation in order to bring its structure back to light (figs. 28-29). This also by virtue of the fact that the entrance results almost aligned with the N-S axis of the abovementioned square structure standing at the centre of the promontory.

Measuring and accurate drawing of the unearthed structures could not be achieved due to time shortage, but will be among future goals.

Another gate complex

What can be identified as a little gate complex has been dug out, composed by a square tower on the western side (from here on referred to as T1), facing an F-shaped wall (or tower?, T2 from here on) which defines two doors separated by a sort of little *atrium* (see the sketch in fig. 30).

Actually, T1 has not been studied in depth: its perimeter has been partially brought to light removing a remarkable number of stones, thus allowing the sight of its north-eastern and south-eastern corners and of its northern face's profile, actually representing the continuation of the promontory enclosure that runs westward (fig. 31).

The walls of T2, possibly an open room and not a proper tower, resemble the letter F, with the vertical shaft N-S oriented (perpendicular to the long defensive wall of the Inqitat) and the two horizontal stems E-W oriented, with the lower one standing on the same alignment of the western part of the enclosure and of the northern wall of T1. This alignment presents no interruption, since at a low level that can be much probably identified with that of the foundations (even though bedrock has not been reached yet), a sort of step made up of limestone blocks links T1 to T2. This step is followed by a lower one that delimitates a floor realized laying down medium size pebbles and broken stones, which seems to represent the original arrangement of the entrance's walking ground, especially if we take into account that the lower step is clearly tied with the two towers northern walls (that actually could be considered as a whole in their lower rows – figs. 32,33). The width of the passage results in approximately 2.5 meters, against the 0.8 m. wide path left practicable by the repeated landslide of the walls blocks, as it appeared before the beginning of the works.

A quite well-dressed stone, with a circular hole visible on one of its long faces, found crumbled just "outside" the described step (fig. 34), could indicate the original presence of a door, close by means of a beam running from T1 to T2.

The abovementioned floor has only been brought to light for a little extension, since later operations seem to have modified the outline of the area, in particular with a raising of the walking floors linked with the construction of what seems to be a covered draining channel (fig. 32), whose course could run around T2 and reach a N-S oriented wall retrieved south to T2 and aligned with this latter's eastern wall (fig. 35). The area could not be investigated deeply enough, and certainty about its actual situation is lacking.

Anyway, the N-S wall that runs toward the middle of the promontory, starting from the external face of southern T2's wall, shows the presence of a passage, in correspondence of which the channel seems to run through. This wall, whose foundations were not reached, seems to be realized laying rough stones upon a coarsely dressed limestone blocks base; should this be the clue of different building phases or just constitute a foundation levelling, would need further excavations to be defined.

The tower T2

This building has been set free from most of the sand, debris and landslide that were covering it, for a height of nearly 2 m.

At the upper levels, only the F-shape resembling walls were visible, and excavations initially aimed at allowing their sight. The top of the stratigraphy was actually constituted by a noticeable heap of aeolian origin sand. Below this, stood a loamy yellow-greenish layer, some 50 cm. deep, that gave back just a few shards of recent ceramic.

This earth heap directly covered what appears to be the original floor of the room, made up of hardly packed grey sand and clay, quite well preserved and easily distinguishable by the upper deposits. At this floor level, a new wall, much narrower than the others T2 walls (60 cm *circa*), came to light, serving as a limit to the floor extension and linking the two "F" horizontal stems (fig. 32). This wall was undoubtedly built contemporarily with the other T2 walls, but its different size and the fact that its upper "face" seems to be the outcome of a deliberate operation more than the surviving remains of the crumbling of its upper parts, could indicate that it was only meant to act as a contention wall for the floor instead of constituting the fourth side of a real tower.

This room could thus be an open guard place behind the (first?) door, standing slightly raised in comparison with the pathway level.

A deeper sounding has been conducted below the floor, revealing an accurate preparation for its settling. A packed greyish loam layer, mixed with small stones in order to afford it more strength, stood upon a yellow loam one, less compact and characterized by a wider clay component and bigger stones, laid down in a coarser way. The lower reached point, some 65 cm. below the floor level, doesn't yet correspond to bedrock, but could represent the foundation settling by means of loamy soil and rock chips. The sequence needs further study, but what seems to emerge from the preliminary observations of the scanty ceramic shards retrieved is that the structure belongs to a late Islamic period and has no connections with Sumhuram (even though most of the shards are of a coarse ware whose chronological frame is not so easily definable).

The F-shape of the main walls of T2 finds its reason in the need to close the possible westward development of the raising path, directing visitors towards the gate, and to connect T2 with the eastern part of the Inquitat enclosure, which stands a few meters more to the north than the western one.



Fig.1: Area A before excavations



Fig. 2: Area A after excavations



Fig. 3: Area A, western side of the excavation area; room A110 and rooms A109/109a



Fig. 4: Area A, section



Fig. 5: Area A, walls M253, 254



Fig. 6: Area A, section



Fig. 7: Area A, section



Fig. 8: Area A, room A108 after excavations



Fig. 9: Area B, room A74, US 197floor



Fig. 10: Area B, room A74, US252, wall M165



Fig. 11: Area B, room A111, wall M252



Fig. 12: Area B, room A74, US259, reduction of the passage between M163 and M168 and later walling up



Fig. 13: Area B, room A77, evident traces of rebuilding on wall M163



Fig. 14: Area B, room A74, US197 floor and structure A105



Fig. 15: Area B, room A107, US265floor



Fig. 15bis: Area B, section



Fig. 16 Gate complex, First building phase



Fig. 17 Gate Complex, Second building phase

Fig. 18 Gate Complex, Third building phase

Fig. 18bis Gate Complex, Fourth building phase

Fig. 19 City gate, US 35floor (the most ancient floor of the gate complex) and in the foreground the ramp

Fig. 20 City gate, particular of the postern gate's interior

Fig. 21 City gate, southern part of M3, leaning to the eastern bastion. The picture clearly shows that this part is a later addition On the left the platform M30.

Fig. 22 City gate, tower A6, the vertical cut between walls M10 and M3

Fig. 23 Area A7, the last floor (US274) and the ramp

Figs. 24-25 The interior of the Monumental Building after Albright's excavations.

Fig. 26 The interior of the Monumental Building after the removing of the protective structure and the first cleaning of the area

Fig. 27 Detail of the area with the well and the tank (see the hole for the flowing of the water)

Fig. 28: T2 seen from the west, before excavations

Fig. 29: T1 seen from the west, before excavations

Fig. 30: General outline of the investigated area (non scale sketch)

Fig. 31: T1 seen from the west, after excavations

Fig. 32: T2 seen from the west, after excavations. Outside the paved room, covering stones of the draining channel are visible

Fig. 33: The entrance step, aligned with T1 and T2 northern walls

Fig. 34: Dressed limestone block with a possible closing beam slot

Fig. 35: N-S wall south to T1

Architectural notes about the fortifications and the masonry of Sumhuram (Ch. Darles)

A unitary project

Sumhuram appears to be a densely populated site, provided with impressive bayonet-shaped enclosing walls realized with the so called *emplecton* technique and double faced. The walls, massive and made up of good stones, given their width, don't seem to have the static need of any reinforcement corner, contrary to what could be said of other sites, such as, for example, Shabwa, whose external enclosures were built like them with pebbles.

The study of the relative width of the walls points out that the gate complex, as a whole, between wall M14 and wall M23 (moving clockwise), is homogeneous and presents an almost constant width whose variations are without any doubt due to the nature of the substrate, that's to say to foundation operations.

Useful surface area/total surface area ratio and enclosure surface area

The surface of the city, measured *extra-muros*, is 8.530 m². The area occupied by the enclosure is 1.285 m², for an useful internal surface area of 7.290 m². The fortification occupies 15 % of the total. It is necessary, to have the true useful surface area, to deduce the thickness from the walls and to apply a coefficient of 0,30, which gives 5.100 useful m² for interior and urban spaces. As for its occupation, we do not think that the city could accommodate more than thirty buildings, that carries its population to 200-300 inhabitants.

Length/width ratio

Measured on the level of the surviving higher levelling course, the cumulated length of the curtains, to which we add the length of turns and the width of the two doors, is 406,35 meters. That of the little portions in return between two curtain walls is 49,20 m. The developed overall length of the enclosure of Khor Rori is thus 450,55 m. The average length of the curtains is 8,30 m for an average width of wall of 2,85 m that can result in a ratio close to 1:3 which is identical to the one we find for the external enclosure of Shabwa.

Joint ownership

The internal organization of the city is original and actually differs from that of the other Ha^orami cities. For example, the buildings built inside are neither isolated nor independent but linked, except buildings BA6 to the south of the principal door and large building BF 5. This kind of establishment indicates perhaps a particular legislation over the joint ownerships and multi-propriety.

Urban comparisons

Is possible to compare the ashlar masonry Sumhuram's enclosure with those of Al-Asahil. These walls are made up of a double facing construction with a thickness between 2,50 m and 4, 00 m; they are preserved *in situ* up to a height of almost 5 m. The curtains measure on average more than 12 m. in length and are separated by variable returns not exceeding 2 m. Mortar is not used in Al-Asahil. Regarding the masonry, the most evident comparison is to be made with the enclosing walls of Makaynun (Ha°ramawt).

Bayonet-shaped enclosures comparisons

This kind of implantation is known in the Hellenistic period and also in South Arabia, specially little in the Jawf, in Kamna, Main and Jidfir ibn-Munaykhir, and also in the kingdom of Saba in the old town of AL-Asahil in the VIIIth century B. C., where this arrangement represents half of the perimeter (something like 370 m.). In Shabwa we find such a curtain wall in the external enclosure, between the III-II century B.C.

Dimensional comparisons

Out of 39 studied cities, Sumhuram has the eighth shorter perimeter. With a length of 450 m, and a surface around 0,85 ha, the city is just so big as Yala or other little towns near the Djebel al-Nisiyin. Such a dimension is very far from Hajar Kuhlan-Timna: 1850 m - 23,0 ha, Shabwa (ext): 2845 m - 55,0 ha, and Marib : 4000 m - 98,0 ha.

Gates comparisons

The first building phase of the big gate of Sumhuram is comparable with others we find in Makaynun (two doors), with a path along the walls, and in Naqab al-Hajar (frontal access). It's a Z-shaped entrance that forces the besiegers to present their flank to the defenders.

The last building phase involves a doubling of this system, unic case in the whole South Arabian antiquity.

Towers comparisons

Isolated towers located as defensive outside devices, are only known in Hinu az-Zurayr and also in Shabwa between the doors 7 and 8, corresponding to the two passes in the north of the site. These towers in Sumhuram are related to the remaking works of the whole north face of the city walls, of which the monumental gate is the most emblematic building.

Difficulties in material supplies

Quarried blocks arrived on the site only roughly worked, in order to be dressed under construction, directly at Sumhuram, thus fitting the needed shapes and measures. Wider blocks are approximately cut into a parallelepiped shape, slightly made thinner on the back, while other blocks are roughly squared and strongly reducing. Builders, due to this poor quality supply and to the heterogeneity of the pieces, had to align, approximately, vertical joints, not having the possibility to lay them down following their structural layers, which could allow a better resistance to compression.

Blocks dimensions and lithic tools

Stones used for the masonry are, as said, roughly dressed. Some visible tool marks results from first works in quarries. This preliminary dressing would be realized with a big hammer (or with a handstone tool, many of which have been retrieved on the site).

Dressing produced irregular surfaces, left unrefined. Stone fragments coming from this operation were subsequently utilized for walls internal filling.

Doors

Several stones used for doors frames have been more accurately dressed. Blocks have been marginally chiselled, and currently shows the outcomes of the so called « taille ciselée perpendiculaire » technique.

Chisel size are between 32 and 34 mm. Same tools are also used for the flagstones laid on the top of the *intra muros* temple entrance (M35, M36, M37).

A different tool, a 16 mm chisel, has been used on the vertical stones of the little eastern door of the city.

Difficulties on the buildings' corners

The corners benefited of the best worked blocks (the most of which quite long), aiming to realize a stable junction; unfortunately, many difficulties of works can be seen between the corner and the adjacent face of the wall.

Peculiarity of the well

The well was dug through practically solid rock and there is no pressure from outside. Thus, stone masonry is very nice but with no structural need. According to American archaeologists, its depth was around 25 meters.

"There is no sign of shifting of the casing stones, unusually for Sumhuram masonry, for, as we have noticed in the city wall, little or no attention was given to the placing of the vertical joints." (Albright 1982:20).

This work, executed after stone had been put into place, was very accurate and realized with chisel of 28 mm, that we only find used on these stones.

Perhaps the opinion of American archaeologist that the well had been at a certain moment deepened could be true, but what is sure is that, following an area rearrangement, it has been uplifted.

Complementary works: further restorations and site enhancement (Michele Degli Esposti)

During SUM08A campaign many works have been carried out beside archaeological investigation and main walls restoration. The principal goal of these operations has been leaving the site in the best situation possible in relation to its official opening to visitors.

Western and northern city walls

The western wing of the imposing walls that surround the city had not been unearthed so far. Here, a preliminary operation of digging has taken place, bringing to light the external face of a quite long portion of the walls, that showed at least three (possibly four, but the southern excavated portion had severely collapsed) corners of the same kind of those already visible in the northern side of the city (fig. 1).

On this latter side, a little portion of the walls, east to the gate complex, was still laying under a massive heap of earth and collapsed stones, because of its bad structural situation. A similar intervention to the one described for the western side has been carried out in order to allow a nicer view of the city when reaching it from the inland. The weakness of the curtain's structure in this point anyway, didn't permit to remove much of the covering debris (fig. 2).

The postern gate

The little postern, on its outward entrance, has been initially opened to check for its stability and evaluate the possibility to leave it open to visitors. Its structure turned out to be very unstable, prone to collapsing, so that it has been walled up again (fig. 3).

Since its path from the eastern side of the eastern gate rampart to the corridor behind the second door had already been drawn, and the inward door architrave had been for sure shifted, it seems that during some old work accomplished in the site at least the most part of the postern had been uncovered and afterwards very carelessly roofed up again.

Wall M60 windows

Inside building BA4, on its eastern wall M60, originally stood two windows, one belonging to room A40 and the other to room A33, later walled up as a consequence of building's rearrangements. Both this late "patches" had crumbled down due to their loose connection with the surrounding wall structure and heavy rains.

During this campaign it has been decided to give the windows back their primary appearance. To do this, the upper part of the wall has been dismantled, then a couple or big stones found fallen on the site have been reutilised to serve as an architrave for the two windows. Subsequently few more stone rows have been built to reach the initial preserved height of the wall (figs. 4-5).

Cleaning in Area B

In Area B, towards the lagoon and beside one of the tourists patios, a few rooms had been excavated by AFSM and afterwards never dealt with anymore (fig. 6). Aiming to allow a clearer comprehension of their structure, the zone has been cleaned from vegetation and the main crumbled stones accumulations have been removed (fig. 7).

New tourists paths

The visitors' tour of the city has until now exploited mainly three paths, one E-W oriented and two almost perpendicular to the former. To allow a more widespread circulation of tourists on the site, four other new paths have been settled, reusing ancient stones found fallen on the site to define their course.

The first path starts at the end of the western modern stairs' fence, goes northward passing beside the so-called Monumental Building 2, and then reaches a point from which rooms A41a, A41b and

A 42 are visible; in the first of these rooms two big stone basins have been placed back in their finding position (though they actually belonged to a later phase during which only room A41 existed as a whole - fig. 8).

The second path starts from the high-standing platform facing Area F, and after a step run northward to allow a clear view of the temple surroundings; then it bends rightward and encloses Area A recent excavations, till it joins the existing N-S path leading to the gate complex.

The third path is a short segment that, starting in front of Area B excavations, points toward the lagoon, climbing up the little mound that surmounts AFSM's investigations area, thus allowing this latter's view, besides a good sight of the internal *khor*.

The last path links the existing E-W path, from a point midway between the city centre and the walls eastern side, to Area B, in order to get a new sight of the storerooms area (see map, fig. 9).

Fig. 1: Western side of the city wall

Fig. 2: Northern side of the city wall, east to the gate complex

Fig. 3: The postern gate after safety walling up

Figs. 4-5: The windows rebuilt in rooms A33 and A40

Fig. 6: Area B, AFSM, before cleaning

Fig. 7: Area B, AFSM, after cleaning

Fig. 8: Area F, rooms A41a and A41b with placed back basins

Fig. 9: New tourists' paths in Sumhuram