The Danish-Jordanian Islamic Jarash Project

EXCAVATION SEASON REPORT, 2009

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Summary of Heritage Program in 2009

Historical Background
The Islamic Jarash Project, which commenced in 2002, had as a primary focus the excavation and presentation of an early Islamic congregational mosque in the centre of the city, probably built in the time of the Caliph Hisham b. ‘Abd al-Malik. Excavations within the mosque were completed in 2008, and attention has now turned to restoring and presenting the mosque to the visiting public.

Tourism Potential
Islamic Jarash has been underrepresented in visitor programs at Jarash. The restoration of the Early Islamic mosque at Jarash, located at a focal point of the site, is the first major step in rectifying this long-standing omission. The intention is to present an indigenous archaeological profile for Jarash, and not just for the Islamic period. The program is focused on the intersection of the southern crossroads of the arterial street, where the restored mosque will form the centre-point of illuminating the important Islamic history of Jarash.

Area Dealt with this Season
Work focussed on the entire mosque, involving full site documentation of the exposed standing remains and the checking of earlier documentation prior to restoration activities, scheduled to commence in 2010. Particular attention was paid to Area SO, located south of the qiblah wall (Fig. 1), where a deep deposit of earth and collapsed stone from the qiblah wall remained and required systematic removal before consolidation and restoration work could begin. Clearance and recording work was also undertaken between the shops east of the mosque and the card, which had been seriously disturbed by earlier clearance excavations of unknown date and Jarash Festival activities (Area MO/09 and MO/10)

Results
Area SO
By the end of the season nearly all of the collapse of the Qiblah wall in SO had been systematically exposed, recorded and lifted. Only a small area at the far west end of the area still requires removal, scheduled to be completed during the excavation season of 2010. The collapse, which had
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fallen in three distinct layers, lies over a complex series of street surfaces, which will be sampled by sondages during a future excavation season. The removed blocks were laid out in the Mosque prayer hall, where there are now approximately 678 blocks of stone, 78 of which are diagnostic architectural elements including arch stones, cornice blocks, and window arch stones; these all received identifying numbers. Detailed recording by scaled drawings, photographs and architectural descriptions has begun and is ongoing, expected to be largely completed by the end of the 2010 season.

Upper levels, largely contaminated, of space belonging to the northernmost rooms of the macellum was simultaneously removed with the collapse of the qiblah wall, so as to reduce intolerable pressure on the northern wall of the macellum court, caused by earlier excavations that were very deep. A late (farming?) retaining wall and other late wall-like features were uncovered, but the contexts associated with these structures were all recent, as discarded aluminium drink cans and plastic containers confirmed. The top of a small kiln, probably for glass making, was located when cleaning out recently deposited rubbish (also including plastic and soft drink cans) in the northernmost room of the macellum; as the context seemed good, this was left for future excavation.

Recovered during the clearance in all areas were large amounts of roof tiles from the mosque, some complete, many buckets of pottery shards, some Islamic lamps, a fine marble capital (probably from a church altar table), a number of copper coins, glass fragments, unworked bone and other materials; however (and unfortunately), most out of any understandable archaeological context. Nevertheless, all of these items have been stored for processing in the 2010 season.

During the July-August season, special attention was also paid to clearing a large amount of architectural litter such as column drums and architrave blocks from earlier (and unknown) excavations left in the area between the east wall of the mosque and Jarash’s arterial street. Recent rubbish and wash deposits were also removed to reveal the street’s west stylobate and other features that illuminate the late antique – early Islamic transformation of this area with the construction of fresh water networks, shops, and the bath house and mosque (Fig. 2). This work has greatly clarified the relationship between the street area to the east and the bathhouse/mosque. In the November season, Barnes checked scanned drawings against the existing walling on site to ensure full coverage before commencement of restoration work. The deterioration in the condition of the shops on the Cardo, in MO/09 and MO/010, made it necessary for the recording to be completed here. Four elevations and a plan were done to complete full documentation.

Acknowledgements

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Figure 1. Location of Area SO, positioned between the qiblah wall of the mosque and the north wall of the macellum (original image courtesy of Ian Simpson)

Figure 2. Cleared area between the east wall of the mosque (to right) and Jarash’s arterial street
Area SO, 4 July – 20 August

SO/01 and SO/02

Supervisor: Ibrahim Mslam

SO/01-SO/02: these two squares are located between the mosque’s Qiblah Wall and the north side of macellum (see Fig. 1).

Why these squares were chosen

1. To excavate and expose the area between Qiblah Wall and the macellum, which probably functioned as a roadway.
2. To collect all the stones that collapsed from Qiblah Wall in order to restore the mosque in future seasons.
3. To reveal the manner of construction of the walls.
4. To expose the extent of the walls from the north side of the macellum

Excavation difficulties:

1. The area is full of wall collapse consisting of tumbled dressed stones
2. The stratigraphy of the area is often mixed, with rubbish from modern activities; also we have to remove these stones stage by stage.
3. Excavation in this area has its dangers because it is deep, so we have to dig step by step and make artificial bulk.

List of Loci for SO/01

Loc (1): Clearing topsoil; heavily contaminated (plastic, aluminium); recent dumped material.
Loc (2): Clearing sub topsoil; heavily contaminated (plastic, aluminium); recent dumped material.
Loc (3):
- Soil layer (dump-cleaning), contaminated by modern activities, very loose layer with dark grey colour, clayey silt.
- Artefacts: ceramic (common), bone (scarce), glass (rare), copper coins (6 coins).
- Extent: the whole square.
- Removed/above Loc (04).
Loc (4):
- Soil layer (dump from modern activities-rubbish).
- Location: East side of SO/01-7 m EW x 8 m NS (approximately)
- Loose earth with light brown colour, sandy clay, full of gravels.
- Artefacts: ceramic (common), glass (rare), stone (scarce), metal (rare).
- Thickness: about 50 cm.
- Removed/below Loc (03), above (05).
- Photo No’s: D-5934-37.
- Levels: 101.33-100.85.
Loc (05):
- Soil layer (Dump layer mixed with modern activities).
- Location: east and middle sides of SO/01.7 m EW x WS 8 m (approximately).
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- Medium compactness earth with light brown colour, sandy clay.
- Artefacts: tiles (common), ceramic (common), bone (rare), metals (rare), glass (scarce), shell, nails, coin
- Thickness: about 40-50 cm.
- Removed/below (04)-above Loc (06.07).
- Photo No’s: D-5983-85.
- Levels: 100.82-100.28.

Loc (06):
- Tumble stones with earth maybe collapsed from the north wall of macellum (in front of Qiblah Wall)
- Location: north west side of SO/01.10 m EW x 6 m NS (about)
- Artefacts: brick (rare)-tile (num), ceramic (common), bones (scarce), glass (common), bone (scarce).
- Photos: D-6118, 6119, 6476, 6477.
- Removed: below Loc (05)/above Loc (15).
- Levels: 100.54.

Loc (07):
- Soil layer (top soil- not contaminated-loose earth)
- Location: South west corner of SO/01.5 m EW x 4 m NS.
- Artefacts: tile (rare), ceramic (common), bone (scarce), glass (scarce)
- Photos: D-6118-6119.
- Removed: below loc (05).
- Levels: 100.35.

Loc (08):
- Soil layer (cleaning the dump in north and east sides- loose, dark soil).
- Finds: the north side full of tile and tumble stones; intact imbrex and intact tigula was found; copper coin, stone (rare), glass (rare), bone (rare), ceramic (common)
- Removed: below Loc (03) above (11)

Loc (09):
- Tumble stone with earth, collapsed from Qiblah Wall (perhaps) (First stage)
- Location: north side of SO/01.
- The earth: loose, gray, sandy clay
- Finds: tile (num), ceramic (scarce), bone (rare), glass (rare).
- Removed after Hugh drew and photographed it; above Loc (10).

Loc (10):
- Tumble stone with earth (the same of Loc (09)).
- Next stage (second stage).
- Location: north side of SO/01.
- Finds: tile (num), ceramic (scarce), bone (rare), metal (scarce) /nail/, stone (rare)/weight.
- Removed after Hugh drew and photographed it.
- Above Loc (13), below (09).
- We are still finding plastic in the lowest point of the way between Qiblah Wall and macellum.

Loc (11):
- Soil layer: light brown, medium compactness, sandy clay
- Location: middle of the square about 5 m EW x 5 m NS.
- Finds: ceramic (common), Bone (scarce), metal (scarce), glass (scarce), stone (rare)
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- Photos: D-6480-683
- Removed below Loc (08) above Loc (12, 14)
- Not homogenous mixed with ash spots.
- Levels: ~

**Loc (12): Kiln**
- in the south west corner of SO/01 and south east corner of SO/02, group of dark gray lime stones was found, the stones are constructed like a circle, the entrance of this kiln in the east side of it (triangle entrance), we can see the stones in the first bond. Until now we don’t have an idea about the function of this kiln, but we think it is for production of glass, since we found a lot of glass slag in this square
  - photos: D-6470-75.
  - Levels: ~
  - Until now we have just half of Kiln and the other half in SO/02.

**Loc (13):**
- Tumble stones with earth (third stage of removing tumble stones in the north side of SO/01).
  - the earth is light red, loose, clay (from wall packing).
  - Finds: tile (common), ceramic (scarce), bone (rare), glass (rare).
  - Two samples were taken:-
    1. brick (half one) bath brick.
    2. decorated plaster.
- Removed: after Hugh drew and photographed it.

**Loc (14):**
- Ash layer (very soft loose contaminated by Modern Activities (bottles, bags, Pepsi cans).
  - location: middle of the square, about 7 m NS x 5 m W.
  - Finds: this layer is very poor of artefacts; tile (scarce), brick (rare), charcoal (scarce), ceramic (scarce), bone (rare), metal (rare), glass (rare), stone (rare).
  - Photos: D-6520-21
  - Removed: below Loc (11), above Loc (15).

**List of Loci for SO/02**

**Loc (01)**
- Soil layer: loose, dark gray, clayey silt, dump, contaminated by modern activities, cleaning
  - Location: whole square
  - Finds: tile (numerous), ceramic (scarce), bone (rare), glass (rare), copper coin
  - Photos: D5622-27. BW4747-48
  - Removed: above Loc (02)

**Loc (02):**
- soil layer: loose, gray, sandy clay, contaminated by modern activities.
  - Location: whole square, except for an area of tumbled stones on the north side (Loc (03)).
  - Finds: stone (numerous), plaster (rare), decorated sample, ceramic (common), bone (scarce), metal (rare), glass (rare), stone (rare), copper coins (2), stone weight, part of oil lamp decorated with star and cross (found out of context).
  - Photos: D6237, 6238, 6239
  - Removed: below loc (01) above loc (04).
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- Levels: 101.2-100.25.

Loc (03):
- tumble and collapse stones, from Qiblah Wall.
- location: in the way between the macellum and Qiblah Wall
- photos: D6337-6338

Loc (04):
- double face wall, made of white lime stones, with different sizes and shapes (some of these stone has irregular shapes).
- direction: east to west.
- length: 65 m east west; width: about 50 cm.
- the manner of construction different from the other walls of the macellum.
- joins with wall no (1) with extent from south to north.
- function: we think it is outer wall in front of Qiblah Wall
- plan no (1).
- Levels: 100.05, 101.015.

Loc (05):
- wall no (1): double face wall made of lime with different sizes (most of it 50 x 25 cm)
- direction: south to north.
- length: 4.5 m DN; width: 90 cm EW
- manner of construction: the same manner of macellum Walls, probably from the same period.
- joint with other walls in the south side, joint with macellum Wall which extent from east to west, in the north side this wall joint with wall no (2).
- function: inner wall, between two rooms
- plan no (1).
- Levels: 100.93, 101.02.

Loc (06):
- soil layer: light brown, medium compactness, sandy clay
- location: south east corner, bout 1.5 m EW x 3 m NS
- finds: stone (common), ceramic (scarce), bone (rare), metal (scarce), glass (rare), coin, nail
- all the tumble stones in the locus were removed.
- below locus (02).
- photos: D6450.
- Levels: 100.46.

Loc (07):
- soil layer: light brown, loose, sandy clay
- location: north east side except loc (4, 3), 1.5 m EW x 4 m NS
- tell 15.7.09 just one day of excavation in this locus without collect any artefacts, (nothing interesting of these artefacts), some ash spots were found mixed with the earth, so the soil was not homogeneous
- still, below locus (02).
- photos: D6451.
- Levels: 100.55.

Loc (08):
- stone tumble with earth, perhaps collapsed from the north wall of macellum.
- location: middle of square 8 m EW x 4 m NS.
- Levels: 100.25.
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- Until (15.7.09), no excavation occurred in this locus.
- Photos: D6458-61

**Artefacts**

**Pottery**

**Platters and Bowls:**
1. Heavy pronounced rims semi-straight platter/Jerash Bowls
2. Semi-rounded profiled pattens
3. Hole mouth bowls

**Jars:**
1. coloured jar rims
2. short neck inverted rim jars
3. high straight necked jars
4. bulging necked jars
5. pithoi

**Cooking pots:**
1. flattened rims open cooking pots
2. straight walls cooking pots

**Jugs:**
1. short and straight necked jugs
2. bulging necked jugs
3. short and flaring necked jugs.

**Oil lamps:** slipper shape.

**Bases:**
1. flattened bases
2. disk bases
3. ring bases
4. omphalos bases
5. rounded bases

**Decorations:**
1. ribbing
2. thump impression
3. incisions
4. herring bone design
5. painted decorations
6. excised decoration

**Handles:**
1. vertical
2. horizontal

**Bones**
Only animal bone was recovered. We don't have any articulated bone; all of these bones were found out of context.

**Shapes:** jaw, part of skulls, horns, joints, teeth, leg bones.
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Glass
A lot of glass fragments found in this area (body shards, handles, bases, rims)
Glass waste: this is an evidence for making glass.

Metal
1. coins
2. nails (iron)

Tile
Imbrex and tegula, some intact.

View of SO/01 and SO/02 during removal of tumble, looking towards area of SO/03 (unexcavated in this photograph)
The collapse of the South wall of the prayer hall (Qiblah wall) in SO/1 has now been cleared. The 3D coordinates of 420 blocks of stone were recorded and those stones which remained relatively intact on being lifted were laid out in the Mosque prayer hall where there are now approximately 380 blocks of stone, 52 of which are architectural elements with numbers painted on them, leaving approximately 330 blocks to choose from as future building material.

The 1996 disturbance (dated from ‘sell by’ dates on the soft drink cans) means that not much can be said about the position of the architectural elements within the wall and there is some risk of contamination (two cement blocks were found, SO1.169 was kept as an example). In those areas undisturbed it was clear that the larger blocks were on layer 3 (the lowest layer) which also had only three architectural elements present, strongly suggesting this was the bottom of the wall.

Hopefully in the undisturbed areas of SO/2 and SO/3 more information can be gained on the actual collapse and the position of the elements within the wall.
Architectural Elements:

These obviously need to be photographed and drawn in their entirety; to date, selected representative photos have been taken in the 2009 season.

List of Architectural Elements (description of photograph is given above the illustration)

SO1.144/ 100.88 m shaped block with plaster
SO1.143/ 100.63 m arch stone with groove, plastered on the curved narrow face and the sides and with a central metal fitting embedded in the curved narrow face.

SO1.139/ 100.38 m block with plaster
SO1.129/ 100.72 m arch stone with groove
SO1.136/ 100.65 m possible dome to mihrab
SO1.135/ 100.59 m mihrab stone with slot
SO1.109/ 100.66 m curved central mihrab block
SO1.128/ 100.24 m curved central mihrab block

SO1.130/ 100.21 m shaped block with plaster
SO1.131/ 100.29 m block with plaster
SO1.95/ 100.30 m cornice
SO1.96/ 100.22 m curved mihrab block

SO1.110/ 100.17 m shaped block
SO1.127/ 100.52 m arch stone with groove
SO1.111/ 100.33 m curved mihrab block

SO1.86/ 100.38 m curved block
SO1.87/ 100.44 m shaped block
SO1.89/ 100.41 m possible dome to mihrab
SO1.95/ 100.30 m cornice
SO1.68/ 100.37 m shaped block
SO1.69/ 100.57 m fragmentary cornice
SO1.41/ 99.71 m curved window arch stone

SO1.42/ 99.50 m curved window arch stone
SO1.49/ 99.83 m re-used door jam
SO1.55/ 100.03 m plaster on block
SO1.421/ 99.35 m block with square ledge
SO1.169/ 98.50 m is a plastered cement block (modern)
SO1.171/ 98.73 m unidentified shaped block
SO1.174/ 99.08 m corner cornice
SO1.188/ 99.62 m stone with ledge
SO1.191/ 99.45 m cornice
SO1.210/ 99.81 m re-used door jam
SO1.211/ 99.54 m block with plaster
SO1.204/ 99.57 m broken cornice block
SO1.220/ 99.19 m corner cornice
SO1.264/ 100.18 m stone with slot
SO1.259/ 100.05 m door jamb re-used as mihrab block?
SO1.270/ 99.88 m curved mihrab block (exterior)
SO1.271/ 99.71 m curved mihrab block (exterior)
SO1.273/ 99.02 m cornice
SO1.320/ 98.27 m window arch
SO1.322/ 98.39 m worn pillar base
SO1.324/ 98.65 m slot in block
SO1.323/ 98.52 m door or window sill
SO1.319/ 98.50 m stone from interior of small mihrab dome with ledge on exterior
SO1.318/ 98.34 m cornice
SO1.309/ 98.27 m ledge on stone
SO1.307/ 100.25 m block with ledge
SO1.373/ 100.70 m undefined building element
SO1.374/ 100.02 m re-used door element
SO1.404/ 99.56 m cornice
SO1.405/ 99.76 m block with groove
There are 4 architectural elements marked simply with SO1, such as this cornice (also including a window arch block). These were removed along with other blocks from the 1996 disturbance and their position not recorded on the plan.

The Qiblah Wall
There is material evidence for a wall height of at least 3 m, not including the stones in the stone graveyard or robbed stones. There is evidence of at least 2 windows (on the basis that each window would require 3 arch stones) and the large number of cornice blocks suggests a running cornice around the building, either at half height or at the top of the wall to support the roof (SO/02 ought to provide better information on this). The exterior top of the central mihrab was domed, as was the interior. The square exterior face of the eastern Mihrab is a replacement to an earlier rounded exterior. I suggest a slit trench be dug from the macellum wall, through the end of the 1996 disturbance and through the embankment to the back of the eastern Mihrab and the prayer hall wall (see plan) to investigate both the mihrab, the embankment, the lower Qiblah wall and what lies beneath the embankment. From the east facing section left by the clearance of the 1996 disturbance it would appear that the embankment extended across the entire alley at this point, basically blocking the lane.

Roofing
SO1.127/ 100.52 m arch stone with groove
SO1.129/ 100.72 m arch stone with groove
SO1.143/ 100.63 m arch stone with groove, plastered on the curved narrow face and the sides and with a central metal fitting embedded in the curved narrow face.

These three arch stones, all found to the south of the central mihrab, could not have collapsed from the arches spanning the ground floor pillars. The spacing between the column supports in the central North-South interior aisle, opposite the central mihrab, is 4 m as opposed to the 3.7 m average between other surviving pillar bases. The fragmentary remains of pillars opposite the central mihrab are 56 cm in diameter as opposed to 46 cm elsewhere in the prayer hall.

All this suggests a two level North-South central aisle in the prayer hall. The roofing would thus be more complex than is discussed here but in order to give an initial impression it is considered here to be a level section of roofing.

The roofing must have been at a very shallow pitch. There have been two areas of numerous tile fragments, where up to 10 tiles must have fallen together; otherwise it has been a fairly regular distribution. Both clusters are in areas of undisturbed deposits against the north macellum wall,
one opposite the gap between the central and eastern Mihrab and the other extending opposite the central Mihrab into area SO/02. The first cluster was in layer 2 and the second just below layer 1. It seems likely that the 1996 disturbance removed all traces of other similar clusters. There are no securing features on the complete examples of either the tegula or the imbrex, though some fragments do show a finger moulded indentation on the lower corners possibly meant for pegs. The Tegula are slightly curved along their vertical length, made in a mould and then, when still wet, tipped out and usually marked with finger striations. Three wavy finger lines along the vertical axis is common, less common is one straight line and one wavy line also along the vertical axis, a third type of marking are three jagged lines incised with a tool and some are unmarked. Approximately 288.8 Kilos of Tegula (rhomboid in shape, varying in size between 35-38 cm across the narrow upper end and 41-43 cm across the lower end with a length of 47- 48 cm) and 56.7 Kilos of imbrex (nearly semicircular in cross section they are 12 cm wide at the bottom end, 15 cm wide at the top and between 42-44 cm long) have been removed from amongst the blocks. It appears as though the Tegula were laid side by side, then the imbrex were filled with mortar and pressed into place arching over the gap between the Tegula, their broader end being at the top where the tegula are widest apart. This would mean the row of Tegula above would sit on top of the tegula of the row below, with the imbrex slotting into each other and forming a continuous ridge up the roof. This amount of mortar must have greatly increased the weight of the roof. In order not to have a leaking roof, the height of each row would have been from 40 to 42 cm. The roofing in SO/01 can only represent an area of 2.5 m by 20.5 m (approximately 50 sq. m.) of roof at most. This would mean six rows of tegula with, at most, 43 tegula per row which would be 258 tegula and 252 imbrex, assuming a level piece of roofing. With the complete examples of tegula that we have weighing around 7 kilo and the imbrex about 2 kilo it means we are missing at least 6 out of 7 tegula and an even higher proportion of imbrex.

Hypothesis

As the wall collapsed, the lower blocks hitting the ground first, the angle of the roof steepened until the tegula and imbrex could no longer hold together and the lower edge of roofing separated and came away as a sheet cascading off the crumbling roof supports and shooting across the alley to hit the north macellum wall, intermingling with the upper levels of the collapsed wall. Those tegula maintaining a slightly greater level of cohesion with the roof support would thus collapse inside the prayer hall into MO/8 and MO/5.

Again, the undisturbed deposits in area SO/2 ought to provide more reliable information.
Report on the material cleared from SO/02
Supervisor: Hugh Barnes

Layer 1

Approximately 125 blocks were retrieved and laid out in the mosque, consisting of the following.

Architectural elements
424/ 100.97 m block with ledge
425/ 100.49 m block with ledge
423/ 100.79 m broken window arch
426/ 100.63 m block with ledge
427/ 100.95 m arch block with anchor groove on one side and square groove on the other
422/ 100.88 m broken doorsill
429/ 101.24 m cornice block
428/ 101.14 m block with groove
430/ 100.88 m block with ledge
431/ 101.08 m block with ledge
432/ 101.51 m shaped block with ridge and broken curve
439/ 100.73 m block with ledge
447/ 101.04 m block with slot
440/ 100.88 m small block with triangular groove and 2 adhering shards. See block with adhering shards and 2 layers of plaster removed from the disturbed area in SO1.
484/ 100.84 m arch stone with metal ring embedded centrally in lower curved face
470/ 100.77 m possible window arch stone
478/ 101.11 m broken arch stone
487/ 101.14 m arch stone
480/ 101.15 m broken arch stone
491/ 101.05 m broken window arch
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529/ 101.51 m broken window arch

Layer 2

Approx. 40 blocks laid out in the mosque

Architectural elements
562/ 100.18 m block with ledge
564/ 100.43 m block with ledge
566/ 100.67 m block with slot and large pipe groove?
587/ 100.81 m block with plaster
592/ 100.81 m block with plaster
609/ 101.29 m block with slot
612/ 101.30 m block with ledge

With an average block size of 60 cm by 45 cm, the removed stones represent five courses of stonework, or approximately 2.25 m wall height. To this should be added a third layer (at least) of blocks yet to be removed.

Roofing material from Layer 1 and 2 in SO/02

All tiles were found in groups, mainly between layers 1 and 2, in the southern half of the alley against the north macellum wall.

619.4 Kg of tegula were recovered along with 103.3 kg of imbrex

At least 12 nails were found in a cluster of about 3 sq. m. to the SW of the main mihrab. They are square in cross section with what appear to be flat heads, under the corrosion. Some were bent over 7-8 cm along the shaft suggest they had been driven through timbers 7-8 cm thick and then been hammered flat. These could be from the A frame which would have supported the roof two storeys above the central mihrab at the south end of the north-south running central aisle. This would have been the only roofing support which could have fallen outside the building.

Given that a level piece of roofing next to SO/02 would be 25 sq. m. (10 m by 2.5 m) this would be roughly 360 tegula at 7 kg each (2520 kg) and 360 imbrex at 2 kg each (720 kg).

This means, so far we have just under a quarter of the roofing falling outside the building. This is a substantially higher amount than in SO/01. Either the 1996 disturbance in SO1 removed a large volume of tiles or more of the roofing fell into the alley from the western roof than from the eastern.

The possible A frame collapse indicated by the collection of nails was to the SW of the central mihrab between layers 1 and 2 suggesting the roofing was not the last thing to collapse.
The Danish–Jordanian Islamic Jarash Project (Restoration Program)

Blocks available for restoration work

The stone graveyard includes 290 blocks on the west side of the lane and 422 blocks on the east. A further 157 blocks makes up the wall next to the graveyard and 110 in the wall next to the tents. This makes, in total, 979 blocks with a medium to high risk of contamination from other areas.

There are 25 blocks from MO/05 of which 2 are from the outer walling of the central Mihrab and one is an arch stone. At present these are to the south of GO/04.

There are 39 blocks from MO/11 including three interior blocks from a mihrab, one definitely from the central mihrab. They are at the moment sitting next to a group of blocks from MO/15.

The large capital adapted into a basin does not belong to MO/11.

Both these groups need to be moved down to the courtyard next to the approximately 69 blocks from MO/13.
Summary of material available for restoration

There are approx. 380 blocks from SO/01 (left),

with approx. 165 from SO/02 (left).

These make a total of 678 blocks with a low risk of contamination. Both groups are laid out in the Prayer Hall.

Apart from the completion of SO/02 and the removal of collapse in SO/03, the exterior wall elevation of the Qiblah wall obviously needs to be drawn, as does the north elevation of the north wall of the macellum, and the 78 architectural elements need to be removed from the prayer hall, recorded and looked at in more detail.
Results, 7 – 26 November
Supervisor: Hugh Barnes

A three week season had been planned (7th - 26th November) to complete the work begun in SO/01-2-3 in July 2009, which was the recording and removal of the collapsed Qiblah wall to the south of the mosque. Due to a delay with the permit, there was not enough time to undertake this work and it was decided that R. Hugh Barnes should carry out other essential tasks necessary before renovation work can begin.

During the six seasons that the Copenhagen University excavation has been conducted on the site 618 plans, elevations and sections had been drawn. These are of individual features and sections of walling which were within areas of excavation. A complete stone by stone plan of the mosque and every elevation of exposed walling must be compiled from these drawings and checked to make sure no feature or walling has been left unrecorded. In pursuance of this goal the scanned drawings were checked against the existing walling on site.

The deterioration in the condition of the shops on the Cardo, in MO/09 and MO/010, to the east of the mosque, made it particularly necessary for the recording to be completed here. It proved necessary to draw four elevations and a plan in order to ensure full documentation.

Information was acquired from Thomas Lepaon (a member of the French expedition) to place the plan of the mosque within the Jarash site plan which he has produced for his dissertation and the street documentation was updated after clearance work in July had revealed previously unrecorded postholes. These were registered as drawing numbers 619a, 619b, 620, 621, 622 and 623.

The problems of plant growth on the site

Plant growth in Jordan is very rapid during Spring and Autumn; these plants die off during the summer leaving a tough and often thorny tinder dry residue on the surface but the deeper root systems often survive to develop further in the following year. This poses serious problems throughout the archaeological site every year.

To facilitate low cost and easy maintenance on the restored mosque site the levelling and fill material to be used within the mosque and courtyard will have to subdue the growth of plants.

Ideas so far raised have been:

1. A sublayer of thick plastic sheeting below the fill and packing material. This will have to be carefully overlapped with the edges rising up the exterior walls to avoid roots being established between the fill and the wall and be thick enough not to tear during the levelling process.
2. The 'rolling' and compacting of the fill and levelling material to create as compact and firm a surface as possible. This may need to be done in stages. Fill then compression then surface material then compression.

3. The use of ‘unfertile’ fills and levelling material (this will only be relative as no completely sterile material is available). The use of carefully 'rolled' white limestone gravel within the mosque (used elsewhere on the site to create ramps, etc.) would be relatively cost effective. The use of the same material but with a change in colour tone in the courtyard would emphasise the transition between open and enclosed spaces. The addition of a plant inhibitor in the courtyard material might also create an effective colour change between the prayer hall and the courtyard.

Problems still to be tackled are the growth of plants between the stonework in the wall faces and the creation of an effectively drained surface within the mosque and courtyard.

Photographs taken in November 2009 on the Mosque site, Jarash
Available restoration material

An assessment of the condition and availability of stone blocks available for restoration work was made. Of the approximately 1600 blocks of stone which have been recovered from the excavated areas within the mosque and mosque courtyard over the last 6 years of excavation approximately half, 800, of these blocks are suitable for re-use in the consolidation, repairs and the raising of the wall heights in the mosque and courtyard.

This is roughly 450 m of walling. The mosque has approximately 196 m of walling requiring varying numbers of courses, fewer on the west side of the site, more on the east. The North prayer hall wall in particular may need considerable structural definition. This would thus seem, at the moment, to be sufficient. If it proves necessary to acquire more stonework, a careful choice should be made from material excavated from the GO areas to the west of the Mosque.

After inspection of the exterior face of the east wall of the prayer hall, in MO/10, it was obvious that at least three blocks would require replacing or consolidation. Two of the blocks are within the top two courses and stonework can be removed and the blocks replaced, but one block is on the third course. Removing the walling to this level would be unpractical and cause too much disturbance of material. The front face of the block is crumbling, though the block itself seems to be maintaining its shape without cracking. This block does not seem to pose any structural problem if the wall above it is raised only by two or three courses but its complete deterioration would cause serious problems and look out of place in a reconstruction. Some thought needs to be given to the repair of stonework which is inaccessible to reconstruction but nevertheless requires restoration.

The restoration construction material is located in storage sites to the west of the mosque and includes various architectural elements which must be separated from the reconstruction material. Obviously, no architectural element can be used in the reconstruction work.