HOLDEN CONSERVATION LTD

Rose Window Wall,
Winchester Palace, Southwark

Conservation Reports
2008

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Rose Window - East and West elevations

Before Conservation



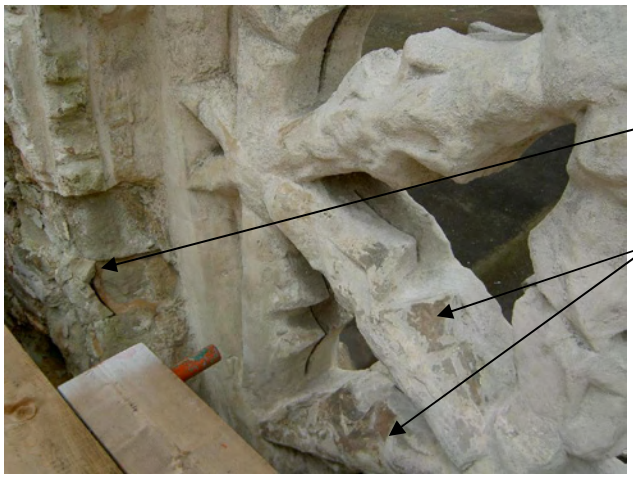
Rose window - West elevation
Before the warehouse demolition and conservation work.



Rose Window – East elevation
Before conservation

Biological growth was present on stones which no longer had any lime wash coating present.

In sheltered areas a thick coat of lime wash was still visible.



Rose Window – East elevation
Before conservation

Some stones had severe cracks where previous mortar repairs had failed.

The lime wash was cracked and flaking in areas. The condition of the stone work beneath the coating could not be seen.



Rose Window – East elevation
Before conservation

The stone was deteriorating in areas where the lime wash coating was no longer present.

Investigations

After cleaning with hot water at a low pressure enough stone work was visible to determine the repairs that had been done previously and the work that would need to be done to conserve the stone work.

Pins – only found on East elevation of Rose window

All the visible pins and pin holes have been marked on the drawing A. It could be seen that both stainless steel and bronze pins had been used, perhaps indicating two different phases of work. Although there may be other pins that were not visible we were able to determine that many of the pieces of stone work that had seemed precariously attached were in fact well adhered.

Mortars

Approximately four different types of mortar were found on the window stone work, including Roman cement, hard grey cement, resin and a soft orange mortar. It was also found that there had been extensive repairs to the window. Although some of the mortar had failed much of it was found to be sound. The failed mortar could be removed without damaging the stone but to remove all of the cement mortar would affect the structure of the window and would irrevocably damage the soft stone.

Cracks and fissures

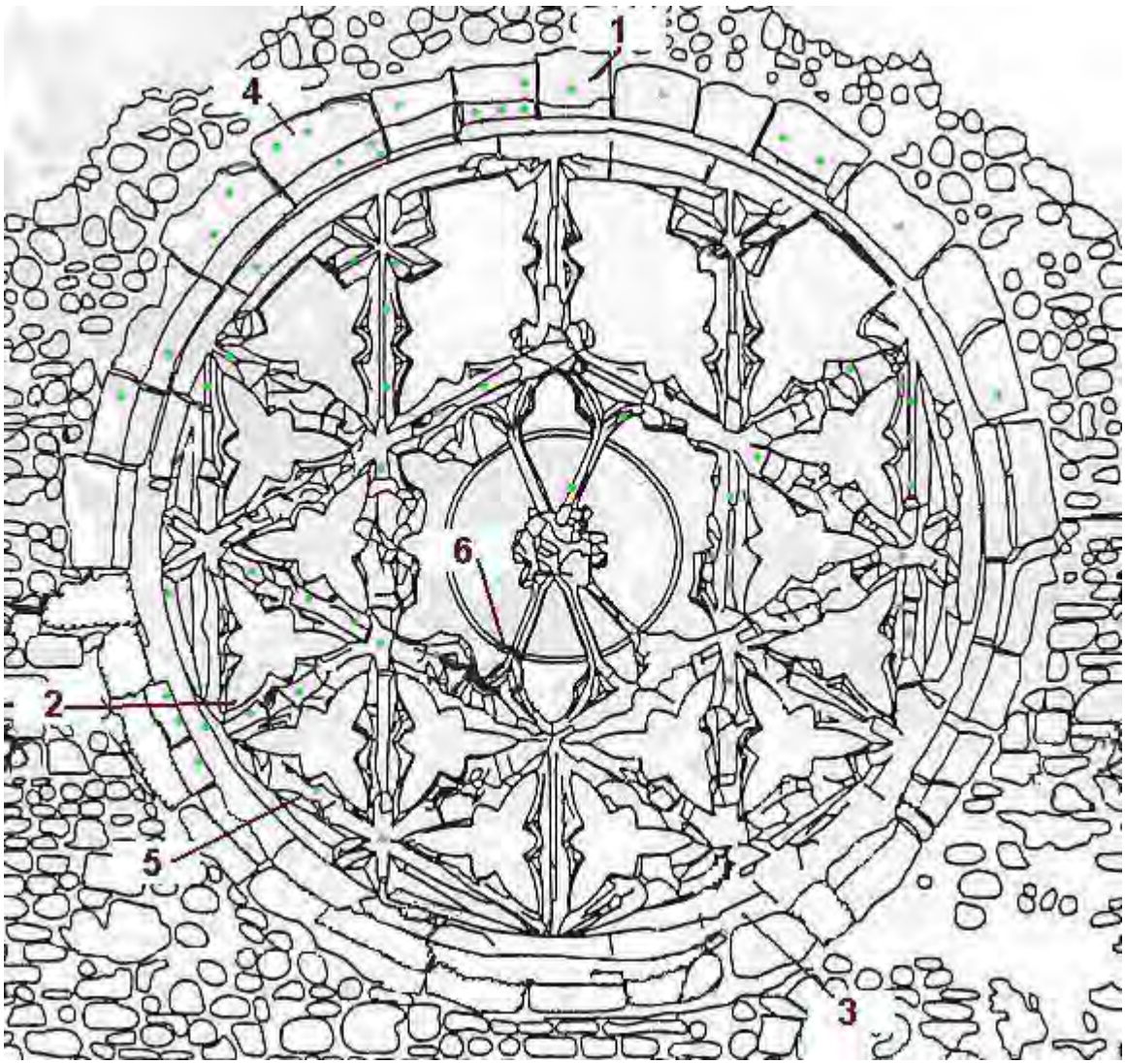
The cracks and fissures that could be seen through the lime wash coating were found to be superficial. Many of them were the edges of stable mortar repairs.

Coatings

The top layer on the window was a thick lime wash, off-white in colour. Beneath this was found a couple of paint layers in a buff colour. Much of the paint and lime wash was flaking. The loose paint and lime wash could be removed, without damaging the stone, to provide a stable base on which to re-apply a lime wash.

At the beginning of the works the type of stone was not known. As part of the works the geologist Robin Sanderson will prepare a report on the stones within the Rose window wall. (see appendix)

Rose window – East elevation (drawing A)



Key

Visible pin holes from previous works on the window

1 Refers to the similarly numbered photographs relating to the area indicated



1 Rose window – East elevation

Failed Roman cement pointing visible between the stones across the top of the window.



2 Rose window – East elevation

Grey cement mortar repair.

Visible pin hole with a resin fill on top.



3 Rose window – East elevation

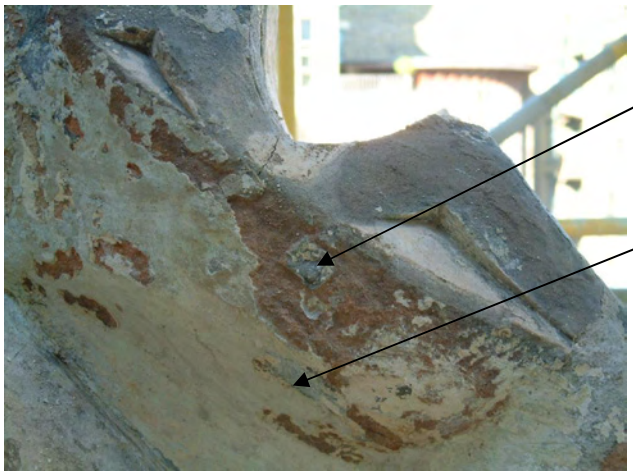
Large area of extensive cement repair that is stable.



4 Rose window – East elevation

Visible pin holes indicating that the stone section is securely attached to the substrate.

Failed soft orange mortar repair.



5 Rose window – East elevation

Visible pin hole.

The remains of the buff coloured paint layers on the stone work.



6 Rose window – East elevation

The thick coating of off-white lime wash was obscuring much of the detail within the stone work.

Soft orange mortar repair.

Treatment

The stone work was cleaned with hot water at low pressure to remove the biological growth and some of the lime wash.

The loose layers of lime wash and paint were scraped off manually to get back to a stable base. Not all the paint was removed as some of it was well adhered to the stone. To remove it would have damaged the stone and was not necessary to provide a stable base for the new lime wash.

Loose sections of stone were re-adhered using 'Steinkitt' polyester resin adhesive.

Dentistry mortar repairs were done on the window to consolidate the stone, fill cracks and water traps. The repairs were done using a hydraulic lime mortar to match the non fire-damaged stone;
1 part – St Astier hydraulic lime NHL 3.5
2 parts – silver sand
½ part – Portland stone dust
½ part – Bath stone dust

Fine cracks were filled with a hydraulic lime grout using St Astier hydraulic lime NHL 3.5 to ensure complete coverage for the lime wash.

Failed pointing between the dressed stones was removed and re-pointed with a hydraulic lime mortar;
1 part – St Astier hydraulic lime mortar NHL 3.5
2 parts – silver sand
1 part – Portland stone dust

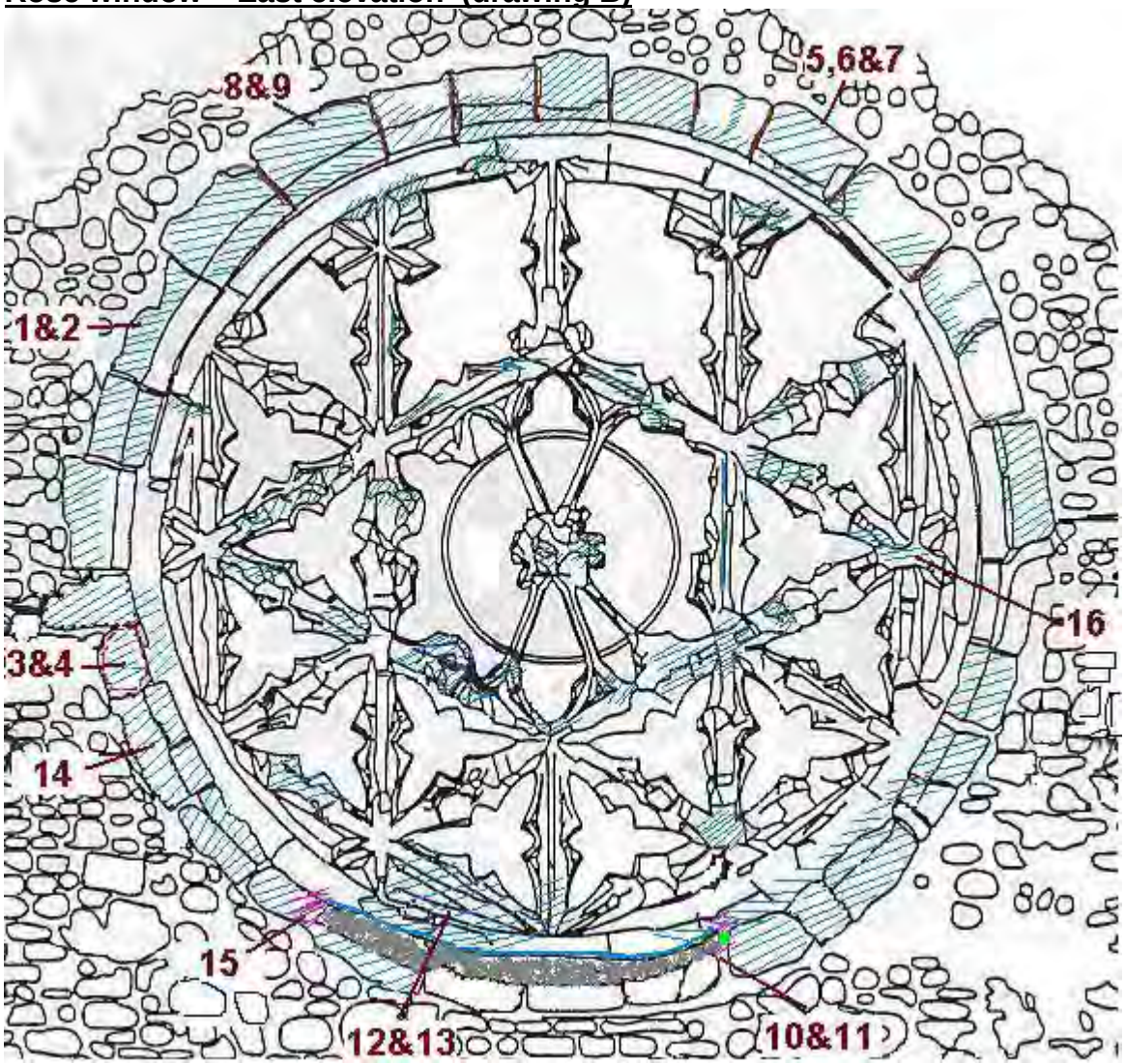
Four layers off-white coloured lime wash were applied to dressed stones. The lime wash was made up of lime putty and dry pigments including yellow ochre, raw umber and black. The lime wash was applied to damp stone work with bristle brushes.

The metal ring in the window was prepared and painted with two coats of black 'Hammerite' paint.

The window was sprayed with 'Microtech' biocide.

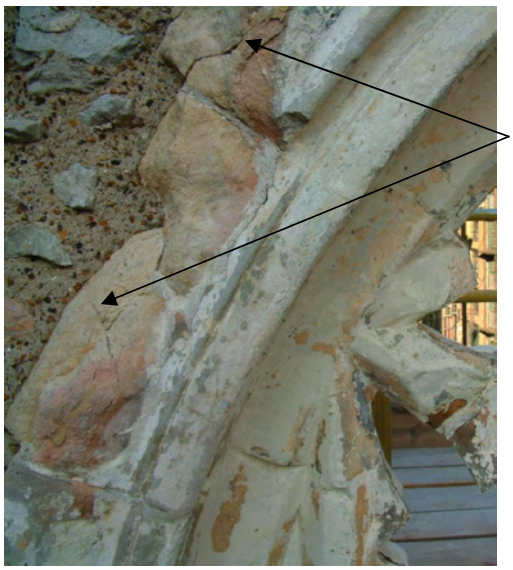
The gap between the lead flashing and the wall on the West elevation was filled with lead mastic.

Rose window – East elevation (drawing B)



Key

- Stones repaired with polyester resin adhesive
- Lead
- Area built up in hydraulic lime mortar
- Dentistry repairs in hydraulic lime mortar and hydraulic lime grouting.
- Pointing with hydraulic lime mortar
- Stainless steel bar
- 1 — Refers to the similarly numbered photographs relating to the area indicated



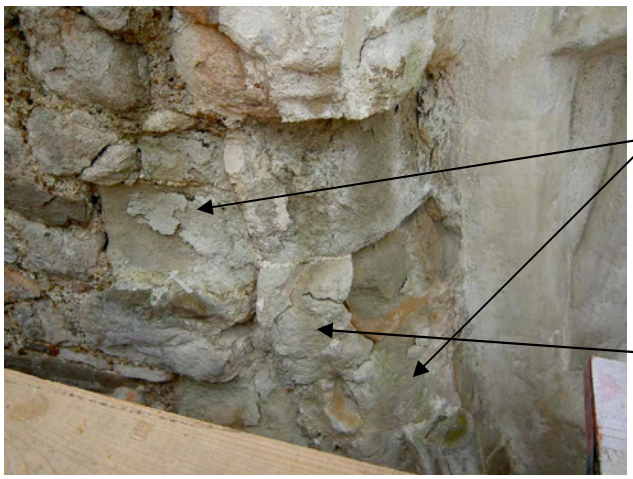
1 Rose window – East elevation

Cracked stone work. There is no longer any mortar in the cracks or any surface coating present.



2 Rose window – East elevation

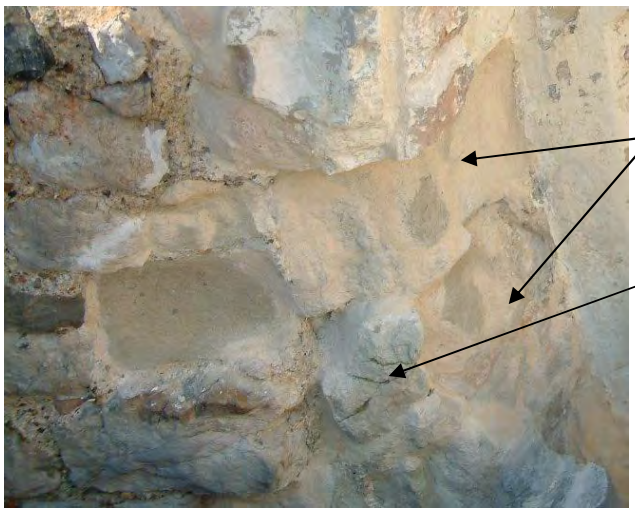
The cracks and water traps were filled with a hydraulic lime mortar.



3 Rose window – East elevation

The surface of these stones was severely deteriorating.

Sections of this stone were loose.



4 Rose window – East elevation

Deteriorating stone consolidated with hydraulic lime mortar.

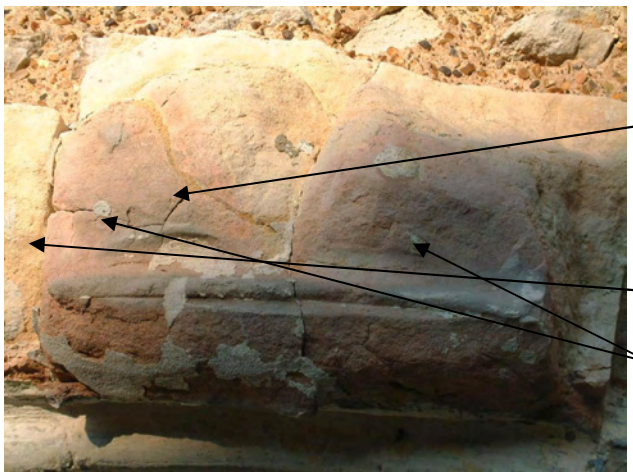
Loose fragments of stone re-adhered with polyester resin adhesive.



5 Rose window – East elevation

The stone on the hood moulding were cracked and both the pointing and mortar repairs had failed.

The top of the hood moulding was found to be capped with same mortar that had been used to point the rubble wall and was in good condition.

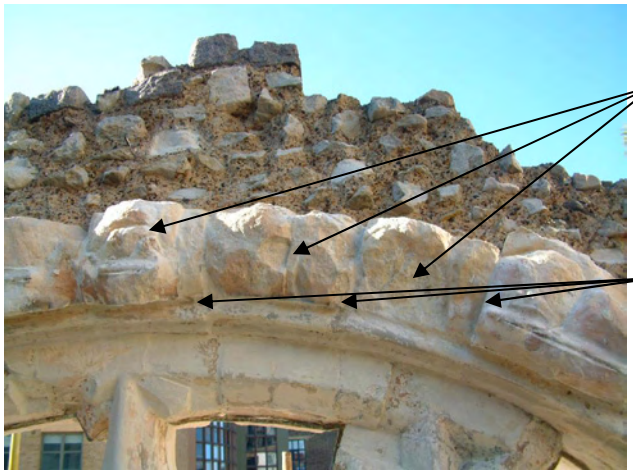


6 Rose window – East elevation

Detail of the hood moulding showing the cracked stone, with missing mortar repairs.

Detail of the failed pointing.

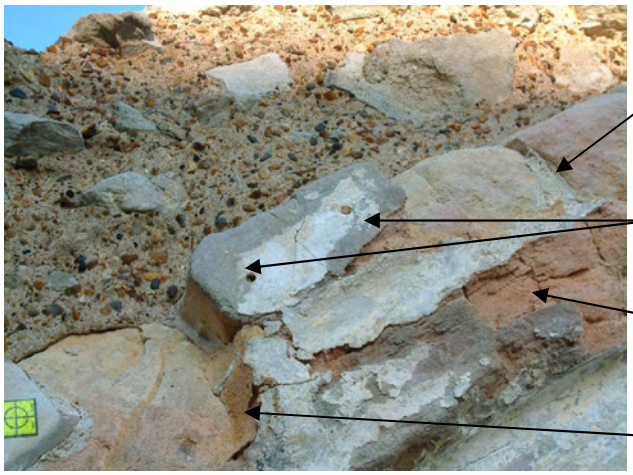
Two previous pin repairs could be seen in the stone work.



7 Rose window – East elevation

All the cracks and water traps within the stone work were filled with a hydraulic lime mortar to match the stone.

The failed pointing between the stones was cut out and re-done with a hydraulic lime mortar.



8 Rose window – East elevation

The pointing between the stones had failed.

Two previous pin repairs could be seen in the stone work.

The stone in this area was deteriorating.

The mortar repairs had failed, allowing the stone to deteriorate beneath them.



9 Rose window – East elevation

The failed pointing between the stones was cut out and re-done in a hydraulic lime mortar.

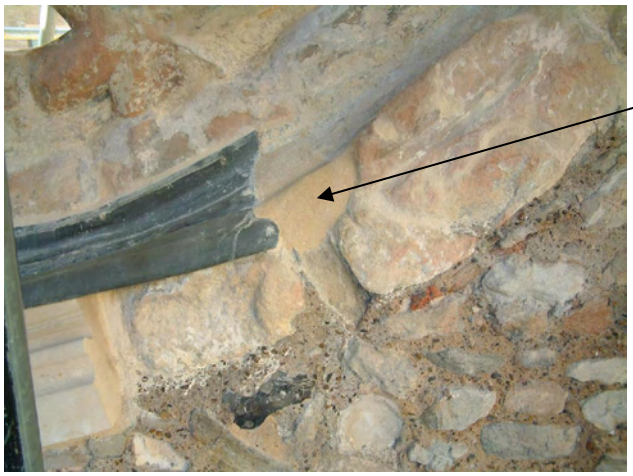
The failed mortar was cut out and the cracks, water traps and old pin holes filled with a hydraulic lime mortar to match the stone.



10 Rose window – East elevation

The extensive cement mortar repair in this area was in good condition and was left in situ.

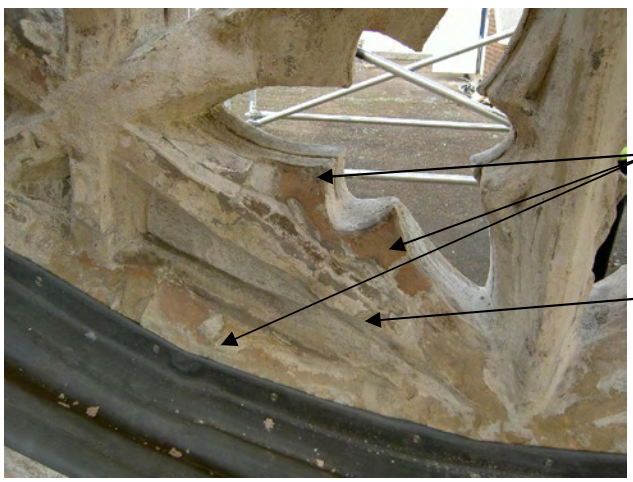
The cement mortar was removed from around the deteriorated stone and the area built up with a hydraulic lime plastic mortar repair to prevent water run-off.



11 Rose window – East elevation

The finished plastic mortar repair channelling the water run-off onto the lead.

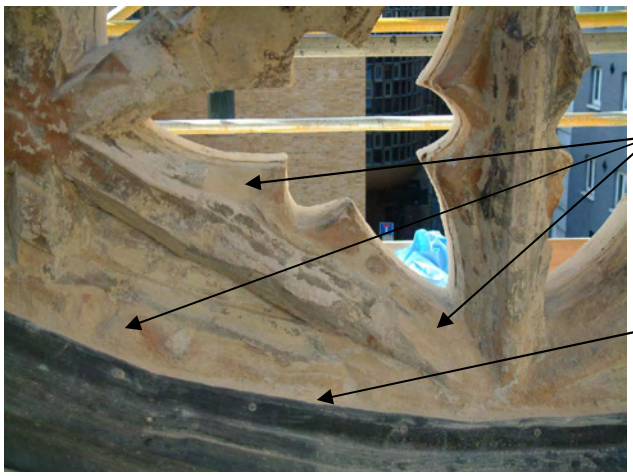
The repair was built up using a stainless steel armature and a coarse backing mortar and then finished with a top coat of hydraulic lime mortar to match the stone.



12 Rose window – East elevation

The stone work was deteriorating in areas.

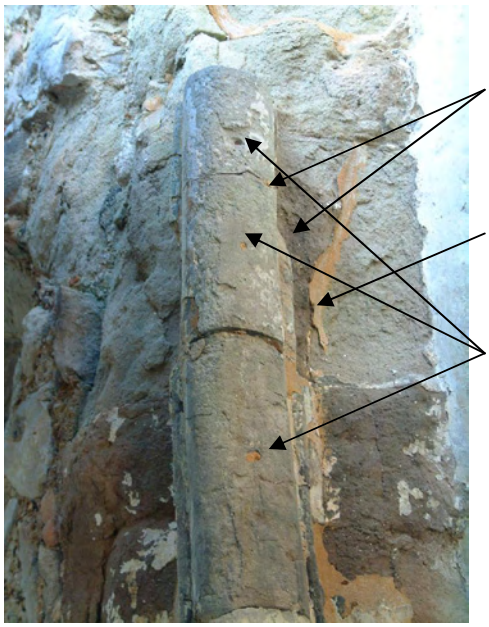
The cement repair was in good condition so was left in situ.



13 Rose window – East elevation

Extensive consolidation of the stone work was done using a hydraulic lime mortar.

A mortar cap was built along the gap at the top of the lead flashing.



14 Rose window – East elevation

This area of moulding had a number of cracks including one at the back of the moulding so that it was detached from the rest of the stonework.

Much of the mortar repairs had failed or was missing.

Three pins could be seen securely holding the moulding in place so only dentistry repair work needed to be carried out to fill all the cracks, holes and fissures.



15 Rose window – East elevation

The finished plastic mortar repair channelling the water run-off onto the lead.

The cement mortar was removed from around the deteriorated stone and the area built up with a hydraulic lime plastic mortar repair to prevent water run-off.

The repair was built up a coarse backing mortar and then finished with a top coat of hydraulic lime mortar to match the stone.



16 Rose window – East elevation

The loose lime wash and paint were manually scraped off to get back to a stable surface upon which the new lime wash could be applied effectively.

A previous pin hole could be seen in the stone work.



Rose window – East elevation

The stone work after four coats of off-white lime wash had been applied.

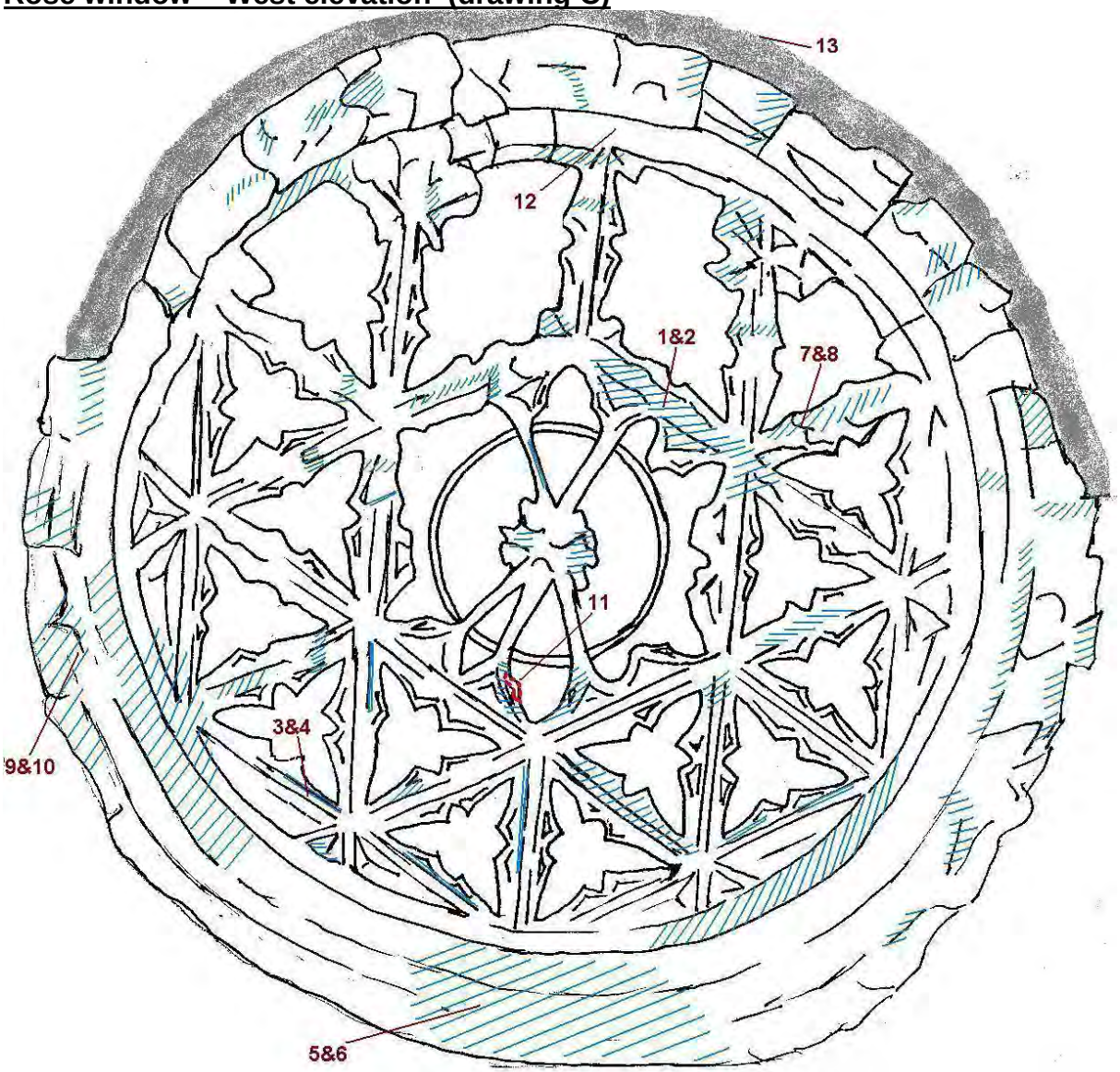
The iron ring having been prepared and coated with two coats of black paint.



Rose window – East elevation

The stone work after four coats of off-white lime wash had been applied.

Rose window – West elevation (drawing C)



Key

Stones repaired with polyester resin adhesive

Lead

Dentistry repairs in hydraulic lime mortar and hydraulic lime grouting.

1 — Refers to the similarly numbered photographs relating to the area indicated



1 Rose window – West elevation

This extensive cement mortar repair was in a stable condition. It was decided to leave it in position rather than damage the soft stone by trying to remove it.

Deteriorating stone around the large cement repairs was consolidated and filled with a hydraulic lime mortar.



2 Rose window – West elevation

The cement mortar repair was in good condition and was left in situ.

The deteriorating stone around the repair was consolidated and filled with a hydraulic lime mortar to match the stone.



3 Rose window – West elevation

Fine cracks and fissures within the stone work were examined and having been found not to be structural were filled with hydraulic lime grout.



4 Rose window – West elevation

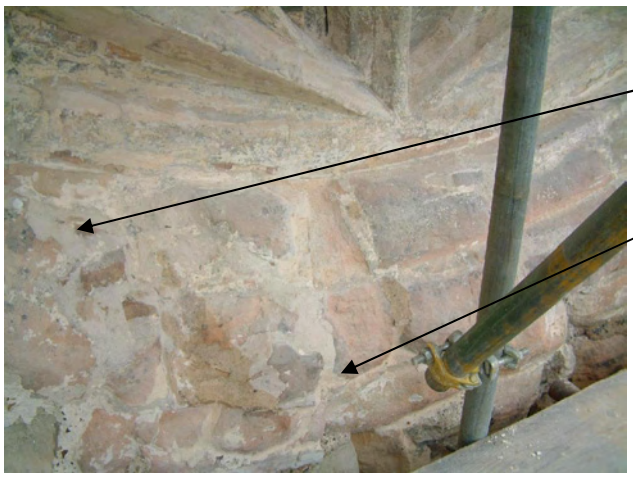
The cracks and fissures in the stone work have been filled with a hydraulic lime grout.



5 Rose window – West elevation

The extensive cement mortar repair in this area was in good condition and was left in situ.

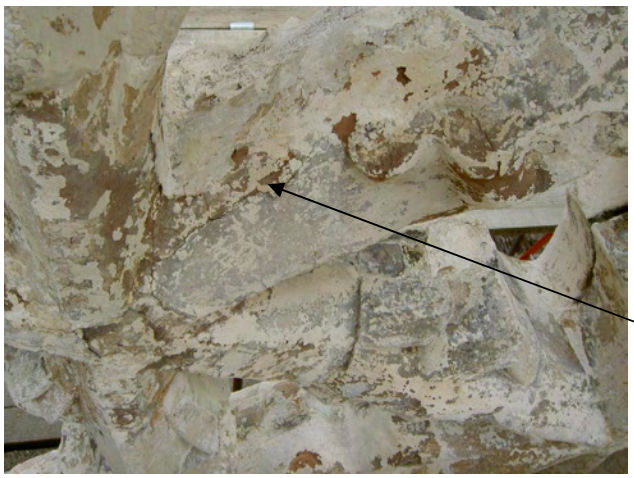
The cracks in this area were filled with a hydraulic lime mortar.



6 Rose window – West elevation

The extensive cement mortar repairs left in situ.

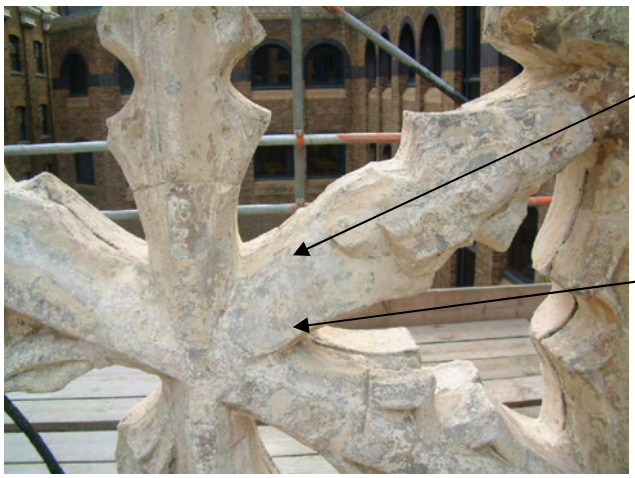
The cracked stone work filled with a hydraulic lime mortar.



7 Rose window – West elevation

The cracks along the edge of the mortar repair could be seen in the lime wash coating before conservation work began although there cause could not be determined.

On inspection the large cement mortar repair within the stone work was found to be stable and so was left in situ. The cracks were filled with hydraulic lime mortar and hydraulic lime grouting.



8 Rose window – West elevation

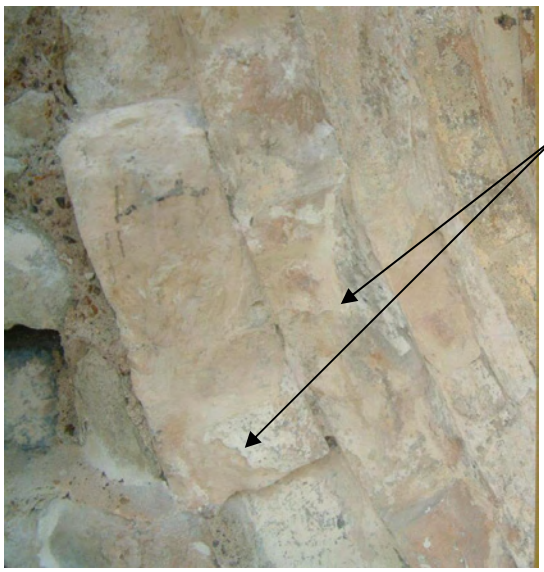
The cracks, water traps and fissures have been filled with a hydraulic lime mortar.

The cement mortar repair was left in situ.



9 Rose window – West elevation

The stone work was deteriorating in areas.



10 Rose window – West elevation

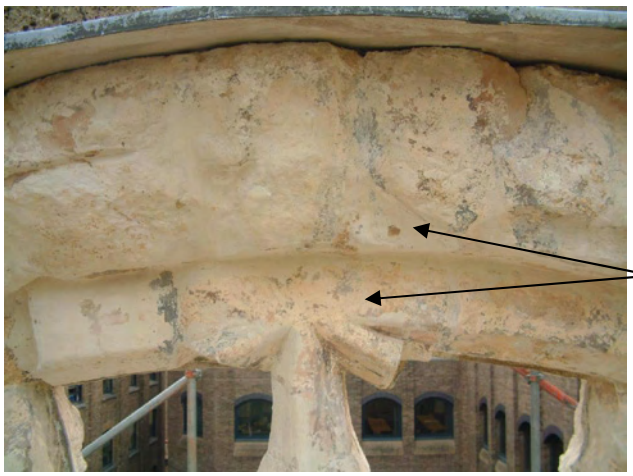
The deteriorating stone work was consolidated with a hydraulic lime mortar to match the stone.



11 Rose window – West elevation

The iron ring in the stone work was prepared before being painted with two coats of black paint.

The loose piece of stone was re-adhered in position with polyester resin adhesive.



12 Rose window – West elevation

The loose lime wash and paint were manually scraped off to provide and stable surface for the application of the new lime wash.

The remains of two different buff coloured paints can be seen.

13 Rose window – West elevation



The small gap between the lead flashing and the wall was filled with lead mastic.



Rose window – West elevation

The stone work after four coats of off-white lime wash had been applied.

Rubble wall – East (around Rose window) and West elevations

Treatment

The wall was cleaned with hot water at low pressure to remove the biological growth.

On the West elevation, bitumen and paint were found on the rubble wall. Tensid paint stripper, Tavec 203 was applied to these areas, before being removed with water at low pressure. A number of coats of paint stripper were applied until the bitumen was no longer being removed. A brown stain from the bitumen was left in some areas.

Dentistry mortar repairs were done on the rubble stones within the walls to fill any cracks and water traps. Hydraulic lime mortars were used to match the stone.
1 part – St. Astier hydraulic lime NHL 3.5
2 parts – silver sand
1 part – Portland stone dust

1 part – St. Astier hydraulic lime NHL 3.5
2 parts – silver sand
1 part – Portland stone dust
¼ part – Slate stone dust

Cracks and holes in dressed stones around the doorways were filled with hydraulic lime mortars to match the stone;
1 part – St. Astier hydraulic lime NHL 3.5
2 parts – silver sand
½ part – Portland stone dust
½ part – Bath stone dust

1 part – St. Astier hydraulic lime NHL 3.5
2 parts – silver sand
1 part – Portland stone dust
¼ part – Slate stone dust

Cracks within the wall mortar were filled with a hydraulic lime mortar. Failed pointed was cut out and re-pointed with the same hydraulic lime mortar;
1 part – St. Astier hydraulic lime NHL 3.5
2 parts – silver sand
1 part – Portland stone dust

On the West elevation where the ground floor ceiling of the warehouse was removed (see drawing D) the cement was cut out to a depth of 10cm. The area was then pointed using a hydraulic lime mortar;
1 part - St. Astier hydraulic lime NHL 3.5
2 parts – Ballast sand
1 part – Leighton Buzzard plastering sand

Four steel ties attaching the warehouse ground floor ceiling to the rubble wall were sawn off flush with the wall.

On the West elevation where the first floor ceiling/roof of the warehouse was removed (see drawings D & E) the fragments of stone salvaged from the demolition were re-adhered using Steinkitt polyester resin adhesive and 6mm threaded stainless steel pins (see drawing D). The joints, cracks and water traps were then filled with a hydraulic lime mortar to match the stone;
1 part – St. Astier hydraulic lime NHL 3.5
2 parts – silver sand
½ part – Portland stone dust
½ part – Bath stone dust

The pointing between the stones was done with a hydraulic lime mortar to match the primary pointing;
1 part – St. Astier hydraulic lime NHL 3.5
2 parts – silver sand
1 part – Leighton Buzzard plastering sand

The plants on the top of the wall were removed and the roots treated with a systemic plant killer.

Both sides of the wall were sprayed with Microtech biocide.



Rubble wall – East elevation

The biological growth on the rubble wall was removed using hot water at a low pressure.



Rubble wall - East elevation

Detail of the type of cracks that were visible in the stones within the rubble wall.



Rubble wall – East elevation

The cracks and water traps in the rubble wall around the Rose window were filled with a hydraulic lime mortar.



Rubble wall – East elevation

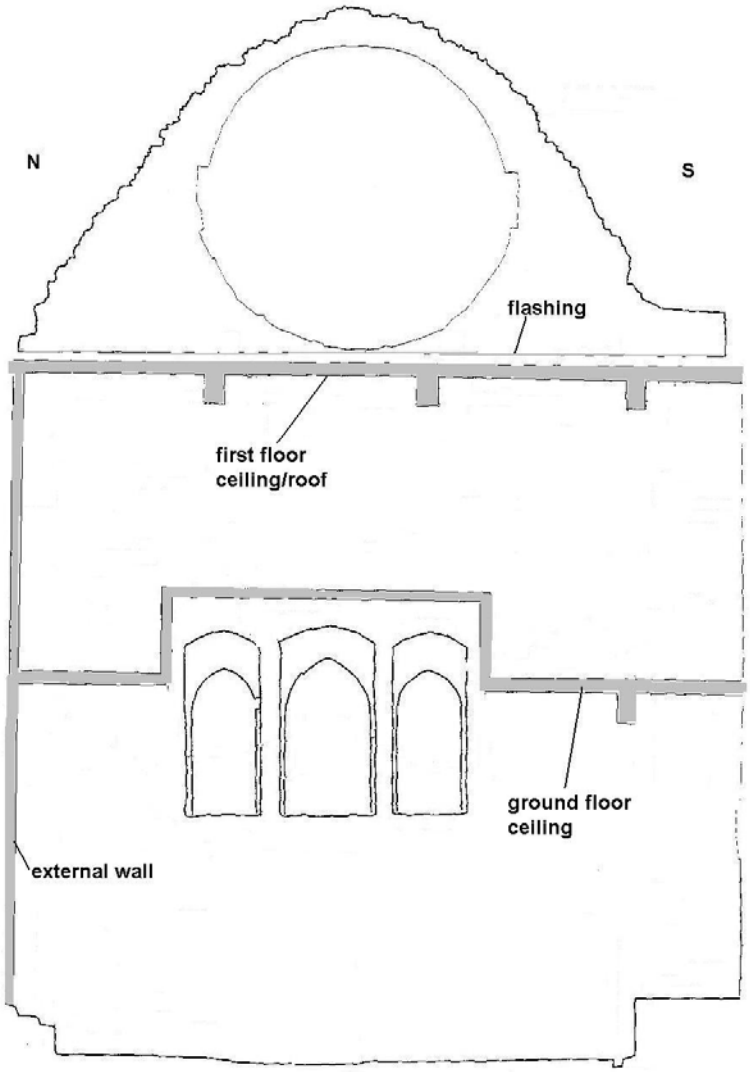
Detail of the cracks in a stone filled with hydraulic lime mortar.



Rubble wall – East elevation

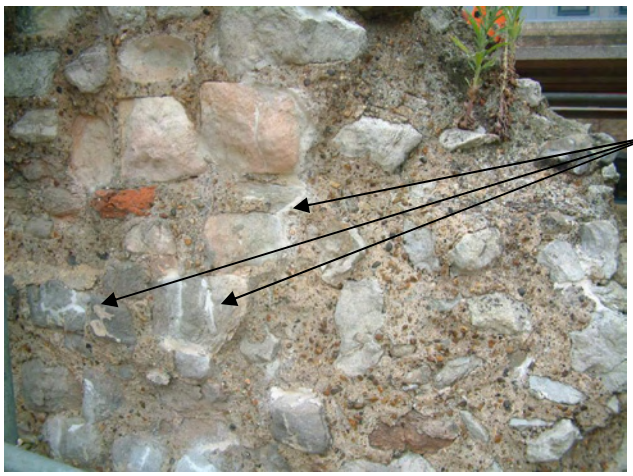
Plant on top of the wall that was removed and its roots treated with systemic plant killer.

Rubble wall – West elevation (drawing D)



Key

The walls, floors and roof of the warehouse, abutting the rubble wall of Winchester Palace. They were removed during the demolition.



Rubble wall – West elevation

Cracks and water traps in both the stone and mortar were filled with a hydraulic lime mortar.



Rubble wall – West elevation

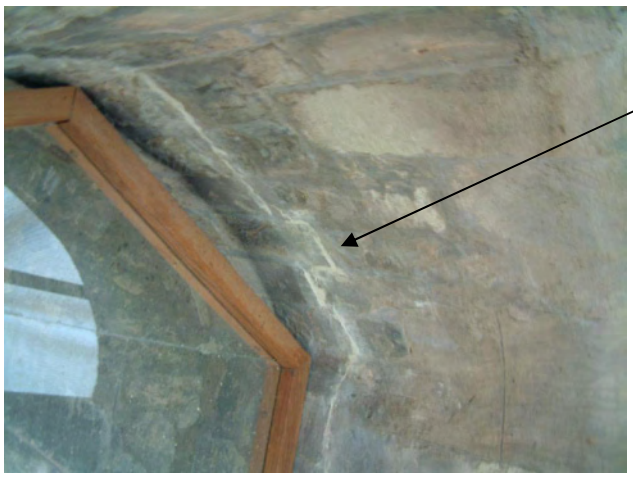
The bitumen on the rubble wall was removed using a number of applications of paint stripper. A brown stain was left in some areas.

The wall underneath the structural supporting pads could not be worked on at all.



Rubble wall – West elevation

All the cracks were cleaned out and filled with a hydraulic lime mortar.



Rubble wall – West elevation

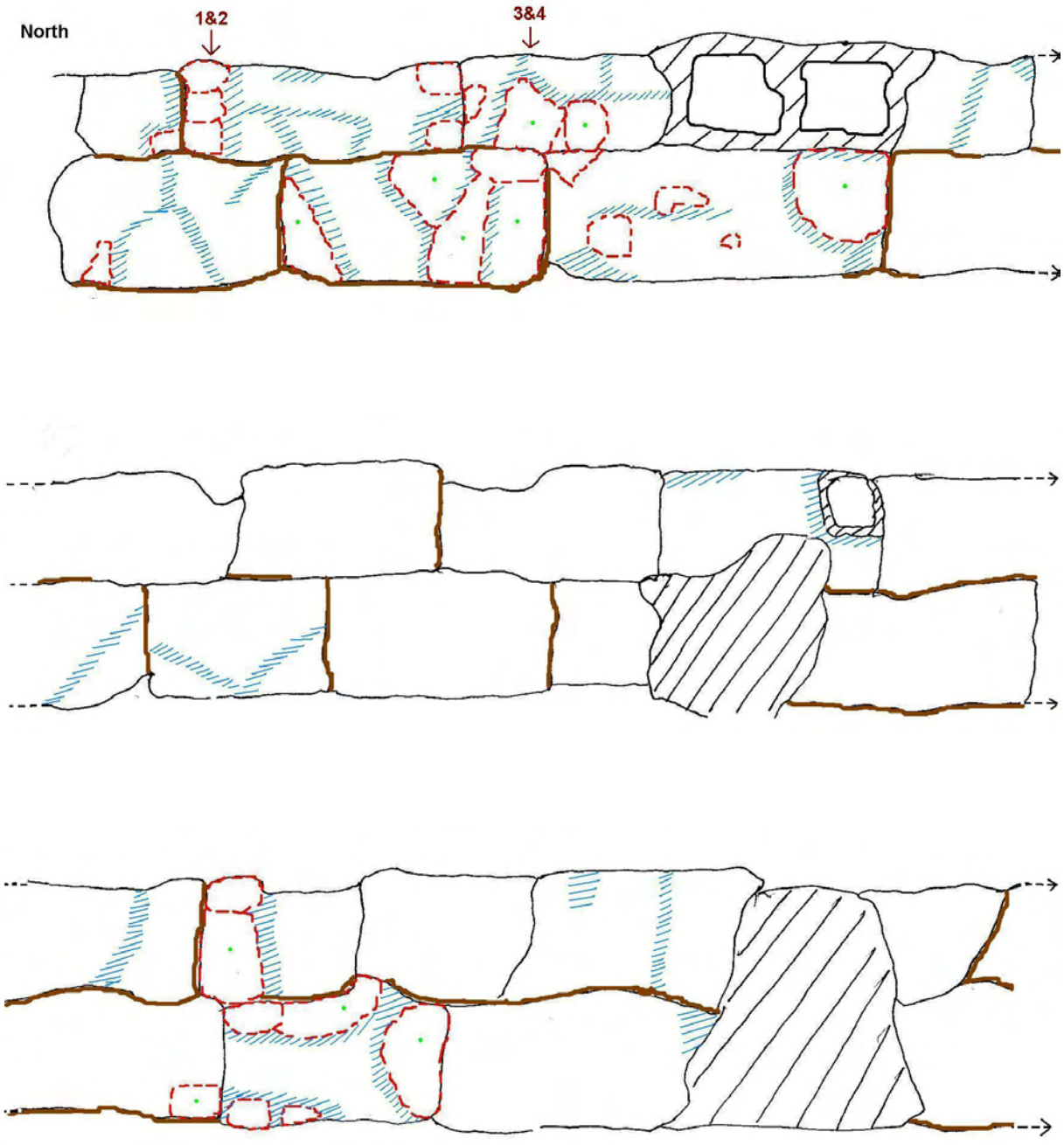
The failed pointing was cut out and re-pointed using a hydraulic lime mortar.



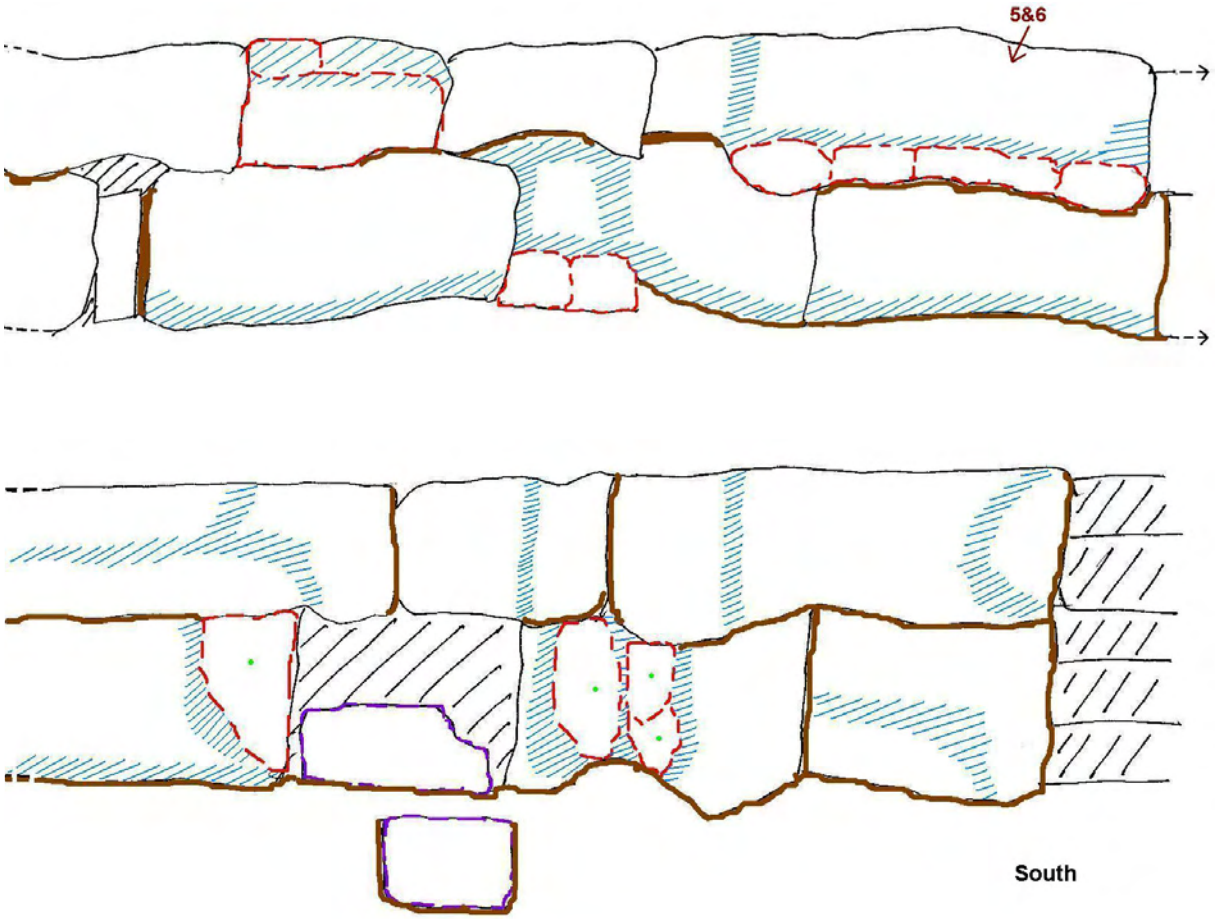
Rubble wall – West elevation

The failed pointing was cut out and re-pointed using a hydraulic lime mortar.

Rubble wall, First floor ceiling/roof – West elevation (drawing E)



Rubble wall, First floor ceiling/roof – West elevation (drawing E)



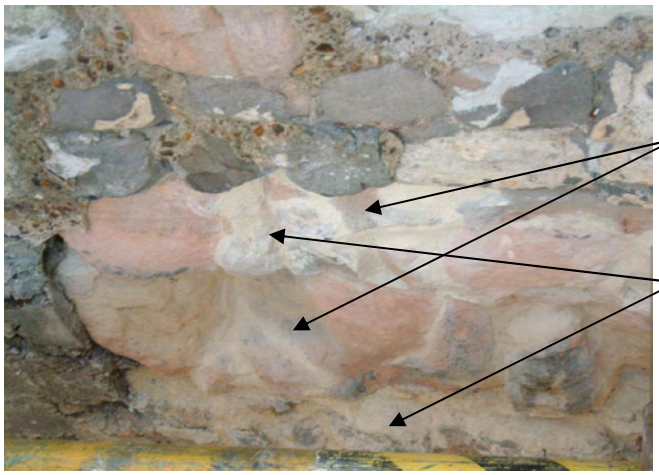
Key

- Stones repaired with polyester resin adhesive
- Stones repaired with hydraulic lime mortar
- Dentistry repairs in hydraulic lime mortar
- Pointing with hydraulic lime mortar
- Stainless steel bar
- 1 — Refers to the similarly numbered photographs relating to the area indicated



1 Rubble wall, First floor ceiling/roof – West elevation

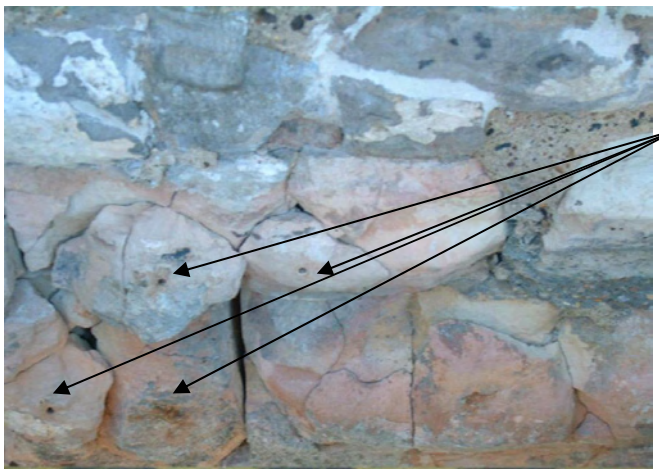
Fragments of stones were re-adhered in place with polyester resin adhesive.



2 Rubble wall, First floor ceiling/roof – West elevation

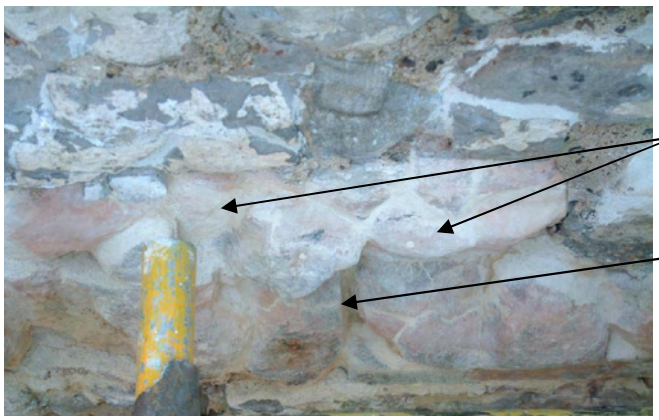
Plastic mortar repairs were done to the stone work to fill cracks and consolidate the blocks.

A different hydraulic lime mortar was used to point between the stones and to cap any horizontal areas within the wall to provide a water run-off.



3 Rubble wall, First floor ceiling/roof – West elevation

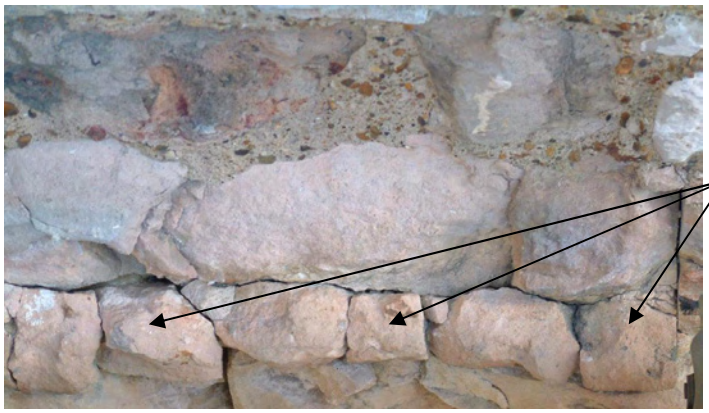
Larger fragments of stone were re-adhered in position with 6mm threaded stainless steel pins and polyester resin adhesive.



4 Rubble wall, First floor ceiling/roof – West elevation

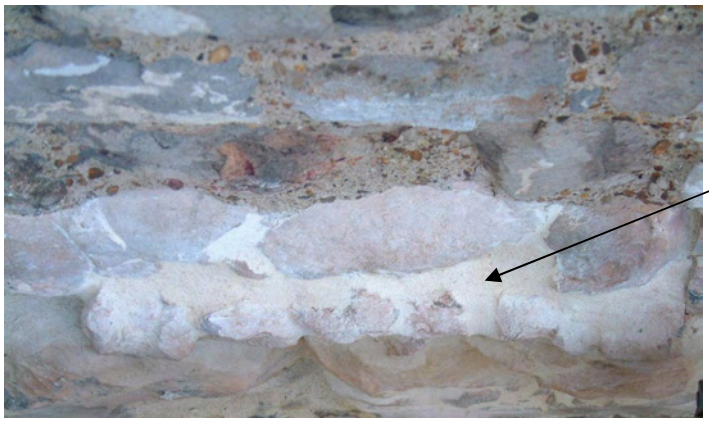
The pin holes, cracks and joints were filled with a hydraulic lime mortar.

The joints between the stones were pointed with a different mortar.



5 Rubble wall, First floor ceiling/roof– West elevation

Fragments of stones were re-adhered in place with polyester resin adhesive.



6 Rubble wall, First floor ceiling/roof– West elevation

Plastic mortar repairs were done to the stone work to fill cracks and consolidate the blocks.



Rubble wall, Ground floor ceiling – West elevation

The remains of the warehouse ceiling were cut off the rubble wall using a hammer and chisel.

The cement mortar where the warehouse had been attached to the rubble wall was cut back to depth of 10cm and re-pointed with a hydraulic lime mortar.

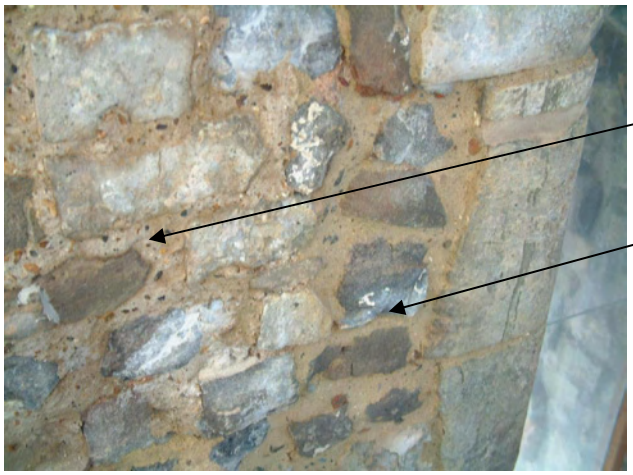


Rubble wall, Ground floor ceiling – West elevation

The steel ties between the warehouse and the rubble wall were cut back flush with the wall.

The remains of the warehouse ceiling were cut off the rubble wall using a hammer and chisel.

The cement mortar where the warehouse had been attached to the rubble wall was cut back to depth of 10cm and re-pointed with a hydraulic lime mortar.



Rubble wall, Ground floor ceiling – West elevation

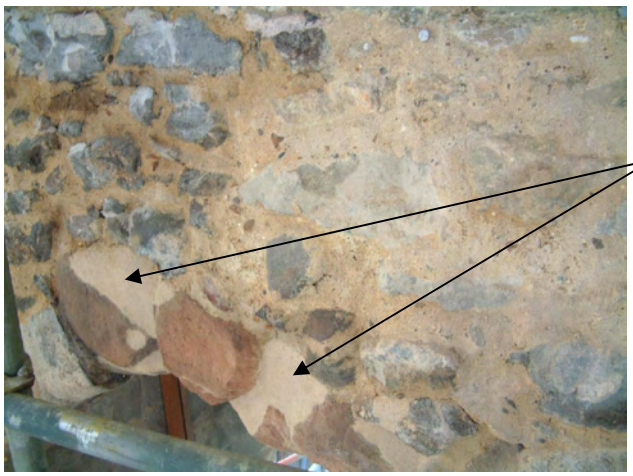
Detail of the main pointing within the rubble wall, after cleaning.

The area previously covered by the warehouse. The wall has been re-pointed with a hydraulic lime mortar.



Rubble wall, Ground floor ceiling – West elevation

The area previously covered by the warehouse. The cement has been cut back and the wall re-pointed with a hydraulic lime mortar.



Rubble wall, Ground floor ceiling – West elevation

Failed plastic cement mortar repairs were removed and replaced with hydraulic lime mortar repairs.



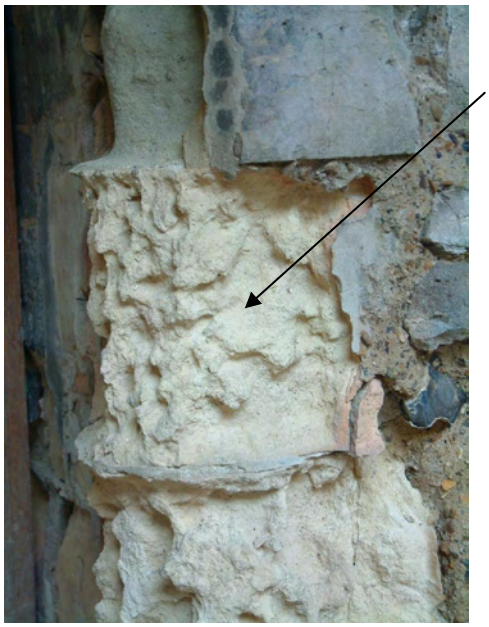
Rubble wall, Ground floor ceiling – West elevation

A loose section of stone was pinned with a 6mm threaded stainless steel pin and polyester resin adhesive. The joint was filled with a hydraulic lime mortar to match the stone.

A failed plastic cement mortar repair was removed and replaced with a hydraulic lime mortar repair.

Introduction

On the East elevation of the Rose window wall the dressed stone work on the doorways at lower level is severely degraded. Not many photographs have been found of the doorways from the previous conservation works so it is difficult to determine the rate at which these stones are deteriorating. At the beginning of the works the type of stone was not known. As part of the works the geologist Robin Sanderson will prepare a report on the stones within the Rose window wall. (see appendix)



1 Winchester Palace – E elevation

The dressed stone up to one metre from the sills were severely degraded.

The weathering back of the stone with pockets of greater deterioration visible in some areas is a specific type of erosion often associated with salt crystallisation, wind erosion or splash back.



2 Winchester Palace – E elevation

The dressed stone up to one metre from the sills were severely degraded.

The deterioration of the dressed stone work in this particular area has a number of possible causes. The relative affects of any of these factors needs to be monitored over a period of time. The immediately observable problems have been mentioned below;



3 Winchester Palace – E elevation

The main and most extensive pointing that has been used to re-point both elevations of the wall was probably done in the 1950s.

It is a very hard pointing and in some areas it can be seen that the pointing is now proud of the stones, the stones having eroded back some distance.

The depth of the pointing would be a large factor in determining its influence on the deterioration of the stones.



4 Winchester Palace – E elevation

It could also be seen that the pointing within the doorway reveals was very hard and proud of the eroded stone.

The depth of the pointing in this area would also need to be determined.



5 Winchester Palace – E elevation

The lead and wood 'string course' attached to the wall below the Rose window, protecting the off-set in the rubble wall.

The lead seemed to be shedding its water run-off further down the wall directly onto the rubble wall above the doorway.



6 Winchester Palace – E elevation

The section of green algae was running horizontally across the wall above the doorways.
The rest of the rubble wall was dirty but not covered with green algae.



7 Winchester Palace – E elevation

The two spouts on the lead covering to the lower Rose window were throwing their water run-off onto the lead 'string course'.

Once the 'string course' was removed it was found that the water run-off from the spouts dripped onto the off-set in the rubble wall and the area of wall just below it. Therefore the lead spouts were not shortened.



8 Winchester Palace – E elevation

The sills had been built up with stone tiles. This differs from what they would formerly have been and what is on the E elevation which is stones similar to the rubble wall.

The rainwater splash-back from these sills would be increasing the deterioration of these stones.



9 Winchester Palace – E elevation

The Rose window wall and especially the East elevation is enclosed by high buildings, affecting the air movement around the wall.

The scaffolding while it is erected will also be influencing the air movement around the wall and continuing investigations into the way the stone work is deteriorating will need to be done with the scaffolding dismantled.

Remedial and investigative works

As part of a number of the ongoing investigations into the causes of this particular deterioration some remedial and investigative work has been done on the East elevation wall.



10 Winchester Palace – E elevation

The lead and wood 'string course' underneath the Rose window was removed.



11 Winchester Palace – E elevation

The stone slips used to support the wood were removed.



12 Winchester Palace – E elevation

1.5 metres of lead flashing cut to fit the top of the stone off-set was fixed with screws underneath the lead spouts.

The lead was bedded and packed with a hydraulic lime mortar;
1 part–St. Astier hydraulic lime NHL 3.5
3 parts-coarse sharp sand



13 Winchester Palace – E elevation

The off-set stone was covered with a hydraulic lime mortar flaunching built up at an angle to provide a water run-off.
The mortar used was;
1 part–St. Astier hydraulic lime NHL 3.5
3 parts-coarse sharp sand

The cracks and fissures in the stones in the area above the doorways were filled with a hydraulic lime mortar;
1 part – St. Astier hydraulic lime NHL 3.5
3 parts – Leighton Buzzard plastering sand
½ part – Slate stone dust



14 Winchester Palace – E elevation

A 1m² area of pointing was removed around the bottom of one of the doorways to determine the depth and extent of the hard pointing but not to remove any stones. The pointing was cut out manually using chisels and drills.

The hard pointing was found to extend up to a depth of 11cm into the wall. In some areas primary mortar was found. (see photo no. 16)

In this area the stones had been re-bedded in hard cement mortar and to remove that mortar would have required the removal of the stones. Without removing the stones as much mortar as possible was cut out and the remaining hard mortar left in situ. (see photo no. 17)



15 Winchester Palace – E elevation

A 1m² area of pointing was removed around the bottom of one of the doorways. The pointing was cut out manually using chisels and drills.

The pointing in the door reveal was found to extend beyond 11cm into the wall. The pointing was not removed beyond this depth as to do so would have damaged the stone work. (see photo no. 18)



16 Winchester Palace – E elevation

Detail of soft whitish primary mortar in rubble wall revealed behind hard mortar.



17 Winchester Palace – E elevation

Detail of hard mortar used to re-bed stones in some areas. This hard mortar behind the rubble stones was not removed.



18 Winchester Palace – E elevation

Detail of hard mortar at a greater depth than 11cm in the doorway reveal. This hard mortar was not removed.



19 Winchester Palace – E elevation

The 1m² area was re-pointed using a soft mortar;
1 part – St. Astier hydraulic lime NHL 2
3 parts – coarse sharp sand

The new mortar pointing was covered for weather protection with sack cloth and wood boards.



20 Winchester Palace – E elevation

The 1m² area was re-pointed using a soft mortar;
1 part – St. Astier hydraulic lime NHL 2
3 parts – coarse sharp sand

This trial area would need to be monitored over a period of time to evaluate the effect of the removal of hard pointing and replacement with soft hydraulic lime pointing on the deterioration of the stone work.



21 Winchester Palace – E elevation

A 30cm² area in the middle of the rubble wall was chosen as a sample area in which to remove the hard pointing.

This was done to determine the depth and extent of the hard pointing but not to remove any stones. The pointing was cut out manually using chisels and drills.



22 Winchester Palace – E elevation

Detail of sample area in rubble where the pointing was to be cut out.



23 Winchester Palace – E elevation

The pointing was cut out up to a depth of 11cm.

In part of the sample area the hard pointing was only a few centimetres deep and there was some primary mortar left between the stones.

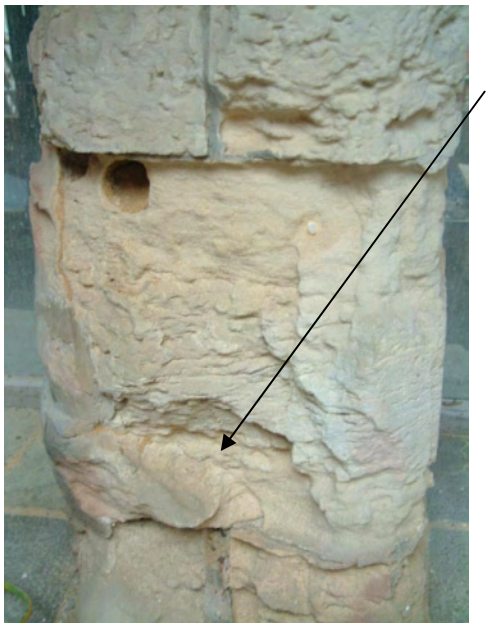
In another part of the sample area the hard pointing was 11cm deep and there was no primary mortar left, leaving a hole around the rubble stones.

From this sample area of pointing removal it has to be assumed that a good part of the hard pointing in the rubble wall is going to extend well into the wall.



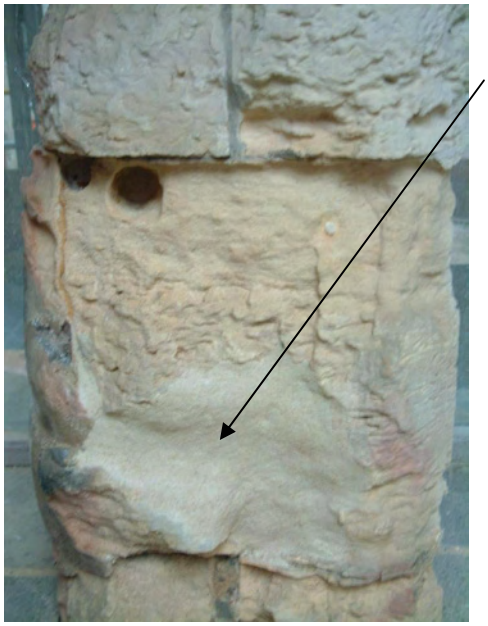
24 Winchester Palace – E elevation

The 30cm² area was re-pointed using a soft mortar;
1 part – St. Astier hydraulic lime NHL 2
3 parts – coarse sharp sand



25 Winchester Palace – E elevation

A sacrificial mortar capping was built up over part of one of the degraded dressed stone in the doorway.
The soft mortar used was;
1 part – St. Astier hydraulic lime NHL 2
2 parts – silver sand
½ part – Portland stone dust
½ part – Bath stone dust



26 Winchester Palace – E elevation

A sacrificial mortar capping was built up over part of one of the degraded dressed stone in the doorway.
The soft mortar used was;
1 part – St. Astier hydraulic lime NHL 2
2 parts – silver sand
½ part – Portland stone dust
½ part – Bath stone dust

The new mortar repair was covered for weather protection with sack cloth and wood boards.

This trial area would need to be monitored over a period of time to evaluate whether the mortar cap is deteriorating in preference to the stone through salt crystallization.

In 2008 a program of conservation works was undertaken on both elevations of the Rose window and the West elevation wall. Within these works it was identified that there was a serious deterioration problem with the dressed stones on the doorways of the East elevation. The exact causes and rate of this decay were not known. Therefore some remedial and trial works were carried out to help determine what the future conservation works on the doorways might entail.

This report will cover both the ongoing maintenance of the conservation work carried out in 2008 and ongoing monitoring of the remedial and trial work to help develop a possible future conservation program on the East elevation doorways of the Rose window wall.

Maintenance Inspection

A visual inspection of both sides of the Rose window wall should be carried out at 12, 24 and 36 months. The top of the wall and the Rose window itself will need to be inspected using high level access.

The specific areas that need to be inspected are listed and identified on the drawing below;

1 The lime wash on the Rose window. A program of re-lime washing needs to be established. Usually every 3-5 years depending on the weathering of the lime wash on the stone work of the Rose window.

2 The mortar flaunching on the stone off-set below the Rose window on the East elevation. If necessary allowances should be made for repairs with the same material or a more durable one depending on its weathering.

3 The lead flashing within the mortar flaunching below the lead spouts of the Rose window on the East elevation.

Remedial and Trial works Inspection

The works carried out in 2008 will need to be inspected at 12, 24 and 36 months and any effects on the wall and stone work noted with a view to developing a future program of conservation works around the East elevation doorways, to be carried out within 5 years.

To assist with the monitoring of the rate of decay of the dressed stones within the doorways on the East elevation consideration should be given to having a set of high quality photographs taken of the stone work for reference. Digital photographs have been taken.

The specific areas that need to be inspected are listed and identified on the drawing below;

4 The effect of the removal of the wood and lead 'string course' from below the Rose window on the East elevation needs to be monitored. The return of green algae to the wall especially above the doorways would be a good indication of a specific area of constant damp.

5 The trial area of soft pointing around the doorway should be monitored to determine whether the water and salts are preferentially moving through the mortar rather than the stones.
Is this affecting the decay of the stone work?
Is the soft mortar in need of repair itself?

Consider the removal of as much hard pointing as possible around the doorways and it's replacement with a soft mortar pointing.

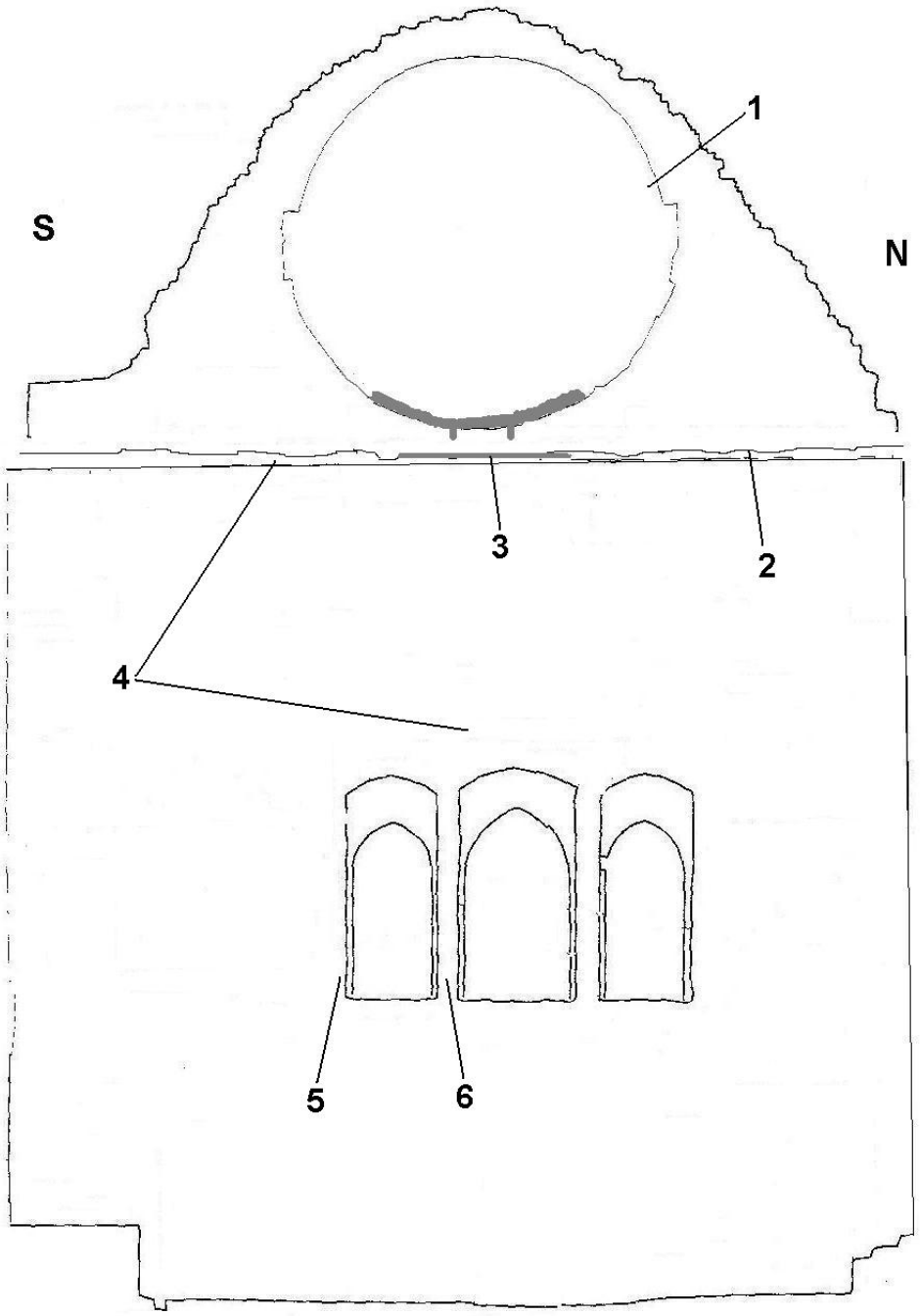
6 The area of trial soft mortar capping on the dressed stone should be inspected to determine whether the salts are crystallizing within the mortar, preferentially eroding the mortar instead of the stone. Is this providing any protection to the stone work?

Consider applying soft mortar capping to other decayed areas of stone work.

Further Considerations

Since the conservation works in 2008 the West elevation of the Rose window wall has been enclosed back in a building. Previously the West elevation, below the Rose window was inside a disused warehouse, now the wall will be inside a well used building. This change in environmental conditions for the wall should be considered as part of the maintenance inspection.

Rose window wall, East elevation



Key

Lead work