<u>Health and Safety file. Roman Baths Development</u> <u>Project</u>

Observations and catalogue relating to Conservation work undertaken, fixings used, information for future residual risks and safe systems of work for future moves.





MINERVA STONE CONSERVATION

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1. Introduction

This document sets out background information relating to the movement of architectural and monumental stone fragments located within the Roman Baths, Bath, Somerset. These works were undertaken during the winter of 2009-10.

2. General information.

Fixings cramps and brackets are all manufactured from Grade 316 Stainless steel, this is the standard molybdenum-bearing grade giving better overall corrosion resistant properties than other Grades.

Screws are all of Stainless steel of the same grade.

Rawl-bolts fixed into masonry walls are either Stainless or Zinc plated. Large support brackets are decorated mild steel and fixed with Stainless fixings.

Where resins have been used they have been a reversible type such as; Acryloid B-72 (Paraloid B-72), a durable and non-yellowing acrylic polymer used for consolidating stonework and as an adhesive (50%+) for a variety of substrates. Paraloid B-72 is soluble in acetone, toluene and isopranol. Polyester resin was also used for fixing purposes.

Lifting of stonework

Individual stones, depending on their size, were lifted clear by block and tackle mounted on a portable aluminum gantry (following the removal of all pointing and bedding material). Carefully positioned canvas slings fully supported each stone adequately and ensured that no damage occurred to the arisses of the stones. Softening spacers were located between the stones and the canvas slings. Stones were then individually and carefully placed on wooden pallets.

Transport of Stonework

The stones or parts of a stone were checked to ensure the coding has been correctly applied and recorded and carefully packed as necessary to avoid any damage during transport. Suitable restraints such as ratchet straps were used during transport with a pallet truck or similar.

Re-arrangement of Temple Pediment.



1. Description of work undertaken.

Elements of the "Gorgon Pediment" were adjusted and moved, the angle of the cornice was adjusted. The adjacent Column and Capital was moved and fixed into new wall positions.

Vacuum cleaned and gently cleaned.

2. Fixings used.

Stainless steel flat bar, felt cushion (fixed around the body of the stone) seated on equal angle- iron bracket.

3. Future maintenance/conservation requirements.

Check fixing points and vaccum annually.

4. Potential future risks and considerations.



The Pediment redisplayed.



The base section of the column moved into its new position.



View down Cornice showing fixing method (into pre existing holes cut into the stones)



Newly displayed Capital sitting on wall fixed steel plate and restrained by stainless Steel bar fixed into original fixing slots (the capital received colour matched mortar repairs).



Details of individual objects.

1983.1.384 Stone relief of hound and Diana



1. Description of work undertaken.

Sculpture moved from shelf/storage and fixed into 4seasons façade, the façade was excavated to a depth of 4 inches to ensure a flush frontal plane, Object gently cleaned and old unsightly cement repair removed and conserved.

2. Fixings used.

Bedded onto Lime putty mortar and secured/held with Stainless Steel Bracket fixed into block wall. Gypsum plaster finish.

3. Future maintenance/conservation requirements.

Inspect surrounding plaster for cracks.

4. Potential future risks.

Cutting into blockwork has reduced the distance to the Asbestos-containing cavity to approx 100mm from 200mm.

1981.9a-b Large coffin and lid



1. Description of work undertaken.

Coffin moved from display/storage and fixed into new position in floor mortice. Object cleaned.

2. Fixings used.

Coffin rests on wooden wedges.

3. Future maintenance/conservation requirements.

None apart from yearly vacuum.

4. Potential future risks and considerations.

Use gantry system for safe lifting.

Plinth Based Altars.



1983.1.61 Altar (above Central).

1. Description of work undertaken.

Altar moved from display/storage and fixed into new position on floor plinth. Object cleaned.

2. Fixings used.

Stainless steel pegs fix the 2 sections together.

3. Future maintenance/conservation requirements.

None apart from yearly vacuum.

4. Potential future risks and considerations.

Use gantry system for safe lifting.

1983.1.62 Altar (right hand side)

1. Description of work undertaken.

Altar moved from display/storage and fixed into new position on floor plinth. Object cleaned.

2. Fixings used.

None-solid object.

3. Future maintenance/conservation requirements.

None apart from yearly vacuum.

4. Potential future risks and considerations.

Use gantry system for safe lifting.

(1986.4.7 Altar Left hand side). All as detailed for 1983.1.62

Plinth Based Altars



Altar 1986.4.6 (peregrinus) Right-hand side.

1. Description of work undertaken.

Altar moved from display/storage and fixed into new position on floor plinth. Object cleaned.

2. Fixings used.

None

3. Future maintenance/conservation requirements.

None apart from yearly vacuum.

4. Potential future risks and considerations.

Use gantry system for safe lifting.

Altar 1986.4.1 (central) - As detailed above

Altar 1986.42 Left hand side, Again as above.

Wall fixed Relief's



1983.1.68ReliefTrident (Top right).

Description 1. of work undertaken. Relief moved from display and fixed into new wall position. Object Vacuum cleaned. 2. Fixings used. Stainless steel flat bar, felt cushioning. 3.Future maintenance/conserv ation requirements. None apart from yearly vacuum. Potential future 4. risks and considerations. None.

<u>1983.2.6 Relief Mercury (top left)</u> 1. Description of work undertaken.

Relief moved from display and fixed into new wall position. Object Vacuum cleaned.

2. Fixings used.

Stainless steel flat bar, felt cushioning and stainless steel pegs (fixed into preexisting holes fixes the object to its seat.

3. Future maintenance/conservation requirements.

None apart from yearly vaccum.

4. Potential future risks and considerations. None

1983.2.7 Relief of god goddess, genii (Bottom right) As detailed on 1983.2.6

1986.4.5 Aesculapius Block



Description work 1. of undertaken. Relief moved from display and sat on into new position on plinth. Object Vacuum cleaned. 2. Fixings used. None 3. Future maintenance/conservation requirements. None apart from annual vaccum. 4. Potential future risks and considerations. Test for stability every year.

1986.4.3 Novantius Stone



<u>As detailed on</u> <u>1986.4.5</u>

<u>1986.5.1 Calpurnus</u>



1. Description of work undertaken.

Relief moved from display and fixed on into new position on plinth. Object Vacuum cleaned.

2. Fixings used.

Thick "C" section Steel braces fixed with expanding bolts into plinth

3. Future maintenance/conservation requirements.

Check bolts for tightness and annual vaccum clean.

4. Potential future risks and considerations.

1983.2.5 Stone relief of Minerva



1. Description of work undertaken.

Relief moved from display and fixed into new wall position. Object Vacuum cleaned.

2. Fixings used.

Stainless steel flat bar, felt cushion (fixed around the body of the stone) seated on unequal angle- iron bracket.

3. Future maintenance/conservation requirements.

None apart from yearly vaccum.

4. Potential future risks and considerations.

1983.1.56 Sol stone with Nymph and Spring.

1. Description of work undertaken.

Relief moved from storage and sat on into new position on plinth. Object Vacuum cleaned.

2. Fixings used.

The object sits on a 10mm unequal angle plate bolted to the wall and restrained (using existing fixing points/holes) with Stainless flat bar.

3. Future maintenance/conservation requirements.

None apart from annual vaccum (as fixings are now covered with wall finishes).

4. Potential future risks and considerations.

Test for stability every year.

Move seat that sits underneath.







1983.1.57 Sol Pediment flake of decorated relief.

1. Description of work undertaken.

Relief moved from storage and sat on into new position on plinth. Object Vacuum cleaned.

2. Fixings used.

The object sits on a welded 10mm unequal angle plate bolted to the wall and restrained (using existing fixing points/holes) with Stainless flat bar.

3. Future maintenance/conservation requirements.

None apart from annual vaccum (as fixings are now covered with wall finishes).

4. Potential future risks and considerations.

Test for stability every year.

Move seat that sits underneath.



Original restraining slot for top fixing.





Enclosed display area opposite theatrical mask.

All objects newly mounted and displayed.

1986.6.4 Cornelianus Stone

Before conservation.



ORNHAN

1. Description of work undertaken.

Relief moved from storage and sat on into new position on wall. Inappropriate Cementitious repairs removed and ferrous pins removed and replaced with Stainless and a matched lime mortar. Object Vacuum cleaned.

2. Fixings used.

The object sits on a 8mm equal angle plate bolted to the wall and restrained (using existing fixing points/holes) with Stainless flat bar.

3. Future maintenance/conservation requirements.

None apart from annual vaccum (as fixings are now covered with wall finishes).

4. Potential future risks and considerations.

Sollemnis marble inscription



1. Description of work undertaken.

Inscription moved from storage and fixed on into new position on wall. 2. Fixings used.

The object sits on a 1.5mm rigid wird bolted to the wall and restrained (using existing fixing points such as cracks).

3. Future maintenance/conservation requirements.

None apart from annual vaccum.

4. Potential future risks and considerations.

1986.5.16 Relief of dog carrying Roe deer



1. Description of work undertaken.

Relief moved from storage and sat on into new position on wall. Object Vacuum cleaned.

2. Fixings used.

The object sits on a 8mm equal angle plate bolted to the wall and restrained (using existing fixing points/holes) with Stainless flat bar.

3. Future maintenance/conservation requirements.

None apart from annual vaccum (as fixings are now covered with wall finishes).

4. Potential future risks and considerations.

Test for stability every year.

Old metal fixings still project from the rear of the relief.

1986.2 Relief of hound chasing Hare



1. Description of work undertaken.

Relief moved from storage and sat on into new position on wall. Object Vacuum cleaned.

2. Fixings used.

The object sits on a 8mm equal angle plate bolted to the wall and restrained (using existing fixing points/holes) with Stainless flat bar.

3. Future maintenance/conservation requirements.

None apart from annual vaccum (as fixings are now covered with wall finishes).

4. Potential future risks and considerations.

1981.654 Headless Lion



1. Description of work undertaken.

Relief moved from storage and sat on into new position on wall. Object Vacuum cleaned.

2. Fixings used.

The object sits unfixed on plinth

3. Future maintenance/conservation requirements.

None apart from annual vaccum

4. Potential future risks and considerations.

1983.1.29 Compton Dando Altar stone.



1. Description of work undertaken.

The Altar stone was moved from original position and sat on into new position on top of wall in Temple Precinct. Recent stone support adjusted to fit new space. Object Vacuum cleaned. 2. Fixings used. The object is self supporting and sits on a pad of putty lime Mortar. 3. Future maintenance/conserva tion requirements. None apart from annual vaccum (as fixings are now covered with wall finishes). 4. Potential future risks and considerations.

1983.3.1 Medusa Cornice



1. Description of work undertaken.

Relief moved from storage and sat on into new position on wall. Object Vacuum cleaned.

2. Fixings used.

The object sits on a 10mm unequal angle plate bolted to the wall and restrained with a pre-fabricated support bracket, permission was granted to drill 2 additional holes to assist with fixing (in the absense of existing fixing points) and consolidation of 2 seperated elements. Mortar repairs were undertaken.

3. Future maintenance/conservation requirements.

Inspect fixings and vaccum annually.

4. Potential future risks and considerations.

Test for stability every year.

Move seat that sits underneath as the condition of historic repairs cannot be assessed.

In new position



Fragments from Temple Pediment 1983.1.16 Temple door fragment.



1983.1.69 Starstone



VM Stone



1. Description of work undertaken to 3 Pediment fragments. Fragments moved from storage and sat on into new position on new brackets and Vacuum cleaned.

2. Fixings used.

The objects sits on a 10mm unequal angle plate bolted to the wall and restrained (using existing fixing points/holes) with Stainless flat bar.

3. Future maintenance/conservation requirements.

Inspect bolts and wall fixings and vaccum annually

4. Potential future risks and considerations.

<u>1986.5.15 Theatrical mask.</u> Before dirt removal



1. Description of work undertaken.

Mask moved from storage and sat on into new position on plinth. Object cleaned with the aid of Ammonium Carbonate Poultice (Acid free paper pulp)

2. Fixings used.

The object sits on a 10mm unequal angle plate bolted to the wall and restrained (using existing fixing points/holes.

3. Future maintenance/conservation requirements.

None apart from annual vaccum (as fixings are now covered with wall finishes).

4. Potential future risks and considerations.



After cleaning.

<u>1986.4.4</u>



1. Description of work undertaken.

Relief moved from storage and sat on into new position on wall. Object Vacuum cleaned.

2. Fixings used.

The object sits unfixed on plinth

3. Future maintenance/conservation requirements.

None apart from annual vaccum

4. Potential future risks and considerations.

1986.5.7 (Antigonus)



1. Description of work undertaken.

Relief moved from display and fixed on into new position on plinth. Object Vacuum cleaned.

2. Fixings used.

Thick "C" section Steel braces fixed with expanding bolts into plinth and pre existing holes in stone.

3. Future maintenance/conservation requirements.

Check bolts for tightness and annual vaccum clean.

4. Potential future risks and considerations.

1986.5.17 Short tunic relief



1. Description of work undertaken.

Relief moved from storage and sat on into new position on wall. Object Vacuum cleaned.

2. Fixings used.

The object sits on a 8mm equal angle plate bolted to the wall and restrained (using existing fixing points/holes) with Stainless flat bar.

3. Future maintenance/conservation requirements.

None apart from annual vaccum (as fixings are now covered with wall finishes).

4. Potential future risks and considerations.

1986.5.6 Tombstone Cavalryman.



1. Description of work undertaken.

Relief moved from storage and sat on into new position on wall. Object Vacuum cleaned.

2. Fixings used.

The object sits on a 8mm equal angle plate bolted to the wall and restrained (using existing fixing points/holes) with Stainless flat bar.

3. Future maintenance/conservation requirements.

None apart from annual vaccum (as fixings are now covered with wall finishes).

4. Potential future risks and considerations.

1986.5.14 Flavian Ladies Head.



1. Description of work undertaken.

Head moved from storage and sat on into new position on plinth. Object cleaned with the aid of Ammonium Carbonate Poultice (Acid free paper pulp).

2. Fixings used.

The object sits on a 18mm Dowell on plinth.

3. Future maintenance/conservation requirements.

None apart from annual vaccum clean.

4. Potential future risks and considerations.





1983.2.8 Sculpture of Boar.





1. Description of work undertaken.

Boar moved from storage and sat on into new position on plinth. Object cleaned with the aid of Ammonium Carbonate Poultice (Acid free paper pulp)

2. Fixings used.

The object sits on Lime mortar fillet.

3. Future

maintenance/conservation requirements.

None apart from annual vaccum.

4. Potential future risks and considerations.

Test for stability every month.

1986.5.5 Vitellius Mantai.



1. Description of work undertaken.

Relief moved from display and fixed on into new position on plinth. Object Vacuum cleaned.

2. Fixings used.

Thick "C" section Steel braces fixed with expanding bolts into plinth and pre existing holes in stone.

3. Future maintenance/conservation requirements.

Check bolts for tightness and annual vaccum clean.

4. Potential future risks and considerations.



1986.5.2 Julius Vitalis



1. Description of work undertaken.

Relief moved from display and fixed on into new position on plinth. Object Vacuum cleaned.

2. Fixings used.
Thick "C" section
Steel braces fixed
with expanding
bolts into plinth
and pre existing
holes in stone.
3. Future

maintenance/co nservation requirements. Check bolts for tightness and annual vaccum clean.

4. Potential future risks and considerations. Test for stability every year. Bottom

Right hand section is not fixed to support brackets. Priscus stone 1983.1.63 and Merc Magni 1986.5.9



1. Description of work undertaken.

Reliefs moved from storage and sat on into new position on plinth. Object Vacuum cleaned.

2. Fixings used.

Priscus sits unfixed on plinth, Merc Magni has additional Stainless Support bracket fixed to its rear side.

3. Future maintenance/conservation requirements.

None apart from annual vaccum

4. Potential future risks and considerations.

RB14 Bathwick Altar



1. Description of work undertaken.

Relief moved from storage and sat on into new position on wall. Object Vacuum cleaned.

2. Fixings used.

The object sits unfixed on plinth

3. Future maintenance/conservation requirements.

None apart from annual vaccum

4. Potential future risks and considerations.

1986.5.10 Rusonia Aventina.



1. Description of work undertaken.

Relief moved from storage and sat on into new position on wall. Object Vacuum cleaned.

2. Fixings used.

The object sits on a 8mm equal angle plate bolted to the wall and restrained (using existing fixing points/holes) with Stainless flat bar.

3. Future maintenance/conservation requirements.

None apart from annual vaccum (as fixings are now covered with wall finishes).

4. Potential future risks and considerations.

Sea Beasts Mosaic



1. Description of work undertaken.

Mosaic moved from storage and sat on into new position on plinth. Object cleamed with the aid of Ammonium Carbonate Poultice (Acid free paper pulp)

2. Fixings used.

None

3. Future maintenance/conservation requirements.

None apart from annual vaccum

4. Potential future risks and considerations.

Mosaic before Dirt removal.







Work to Four Seasons Temple Façade.



1. Description of work undertaken.

Various stones moved from other positions on façade and fixed onto blockwork wall and made good.

2. Fixings used.

The objects sit on 10mm unequal angle plate bolted to the wall and restrained (using existing fixing points/holes).

3. Future maintenance/conservation requirements.

None apart from annual vaccum (as fixings are now covered with wall finishes).

4. Potential future risks and considerations.

Movement of Tholos Stones. The Roman Baths, Bath, Somerset.

Method Statement Andrew Ziminski







1. Description of work undertaken.

Tholos stones moved from storage and sat on into new position on raised platform.)

2. Fixings used.

No fixings are used , apart from the square prop.

3. Future maintenance/conservation requirements.

None apart from annual vaccum. Ensure that the overhang is equal on both sides of the support frame (about 30mm).

4. Potential future risks and considerations.

Test for stability every year.

Method Statement for Tholos stone Movement Works Roman Baths, Bath, Somerset.

Introduction

This Method Statement sets out the works required to move the Tholos stone architectural fragments located within the Roman Baths, Bath, Somerset.

Detailed Inspections

Before commencement of any physical works on the monument the contractor shall carry out a detailed inspection of the stones and the new platform on which they will be fixed.

Records of Stonework

All items shall be fully recorded by photograph and potential conservation repairs to the stones noted.

Protections.

The floor areas, glass panels etc are to be protected with ply boarding prior to the commencement of works.

Removal and repositioning of Stonework.

An access tower will required to allow personnel access to the elevated display structure.

Individual Tholos stones, once moved out of storage with a pallet truck, shall be lifted clear of the deck by block and tackle (mounted on a portable aluminum gantry) on carefully positioned canvas slings to fully support each stone adequately and to ensure that no damage occurs to the arisses of the stones. This may require the insertion of softening spacers between the stones and the canvas slings.

Once lifted over its new position the stones will then slowly and carefully lowered onto the framework. If further movement is required when the stones are placed then this will be with small wooden rollers.

The stones will have temporary ratchet strap supports (if deemed necessary) while further discussions will be required to ascertain the nature of additional supportive fixings.

Andrew Ziminski

13/05/10

<u>The Roman Baths, Bath, Somerset.</u> <u>Method Statement, relating to the movement of 8 stones</u> from the Circular bath to the Stall St stone store.

Method Statement for Stone Movement Works Roman Baths, Bath, Somerset.

Introduction

This Method Statement sets out the works required to move stone architectural fragments located adjacent to the circular bath in the Roman Baths, Bath, Somerset.

Detailed Inspections

Before commencement of any physical works on the monument the contractor shall carry out a detailed inspection of the stones and any assess in situ protections that will be required.

Records of Stonework

All items shall be fully recorded by photograph and any potential conservation repairs to the stones that may be required will be noted.

Protections.

The floor areas, glass panels etc are to be protected with ply boarding prior to the commencement of works.

Removal and repositioning of Stonework.

<u>Night 1</u>

The stones shall be lifted clear of the floor by block and tackle (mounted on a portable aluminum gantry) on carefully positioned canvas slings to fully support each stone adequately and to ensure that no damage occurs to the arisses of the stones. This may require the insertion of softening spacers between the stones and the canvas slings. When all stones have been lifted they will be then moved by pallet truck to their temporary storage position under the elevated walkway by the Sacred spring. All 8 stones will be moved and stored in one operation over one evenings work.

<u>Night2</u>

Once suitable ramps have been constructed for the 3 flights of steps that will need to be negotiated the individual stones, once moved out of their temporary position with a pallet truck, and secured by ratchet strap, to our special stone moving trolley. The trolley will be slowly lowered by block and tackle attached to a low scaffold arrangement (metal/ historic fabric interfaces will be cushioned). Then they will be moved to their new position in the Stall St store.

Route

Passing the great Bath the stones will be lifted one at a time to the walkway, adjacent to the Tholos display, on the first floor by the passenger lift (max capacity 400kgs). Moving down the corridor to the stairs at the West end of the Temple Precinct and then a down and up operation to the Stall St tunnel/ store.

Andrew Ziminski

13/05/10