SOAS into
Senate House, London
WC1E 7HU

Method Statement for

Removal and Reinstatement of the Entrance Gates

30 October 2014

prepared by

CONSARC CONSERVATION

THE GAS OFFICE | 4 CROMAC QUAY | BELFAST | BT7 2JD
Tel. 028 9082 8400 | mail@consarc-design.co.uk

CONTENTS

APPENDICES

1.0 INTRODUCTION

The original entrance gates and central pier from Malet Street are to be temporarily removed to facilitate site access, repaired off site and then re-erected on completion of the project. Planning Permission and Listed Building Consent was granted for this, covered by a condition that a detailed method statement had to be submitted for approval before work commences. The principles behind this method statement are set out in MACE drawing SOAS-A-DET-GEN-XX-775 REV T2 dated 18/10/2013 (Appendix A).

2.0 DESCRIPTION

The gate screen consists of 5 square metal pillars set on Portland Stone plinths, two pairs of double iron gates and two fixed railing side panels on Portland Stone plinths (see photographs in Appendix B). The central metal pier and the gates are to be removed, the rest remaining in-situ and protected by hoarding from mechanical damage.

The square metal pillars are made up in four façade sections and a top piece screwed (now in some cases bolted) together. The centre panels to the front and back facades have a recessed centre section with an overlapping coin mould detail and a stepped plinth. The top section slightly overlaps the façade section. The pillars are hollow but it is possible there is an internal supporting frame that will only become evident once they are dismantled. The gates are square section iron with vertical upright posts inside an outer frame, diagonal bars to a central roundel and a margin to top and bottom with interspaced vertical bars. The gates are supported on a ground spigot and a 'U' shaped top bracket bolted to the piers. The piers sit on stepped Portland Stone plinths which extend out to the inside face and an outer kerb with semi-circular ends. The two piers either side of the entrance gates (but not the central pier) had original decorative lanterns. These have previously been removed by the University of London for safe keeping, cleaning and maintenance and will be reinstated on completion of the works.

3.0 CONDITION

The gate piers and gates are in a generally satisfactory condition, but as the photographs (Appendix B) show there is some rusting to the metalwork and extensive biological growth to the stone plinths. None of this is threatening to the structure of the gates and piers but will need to be addressed as part of these restoration works. The piers and gates are painted grey at present. The restoration work will uncover if this is the original colour.

4.0 PRE-WORKS TASKS

- A detailed topographical survey has already been carried out and accurately locates the elements, ensuring accurate reinstatement.
- A detailed photographic record is to be made of all elements, including piers, gates, ground spigot, gate catches, plinths and kerbs, with all elements numbered and entered on a detailed spreadsheet.
- The gates, piers and plinth are to be cleaned with steam as specification in Appendix C to remove surface dirt, algae etc and expose all joints and fixings to allow clear identification of all components and any serious defects (e.g. cracks in limestone, fractures in metal panels) which could necessitate careful treatment during dismantling.
- Once clean the individual stones are to be numbered and numbers recorded on the drawings and component spreadsheet.

5.0 DISMANTLING SEQUENCE

A. The gates are to be dismantled in the following order and manner:
   - A 1. Prop the gates in place before dismantling or hold on straps from hoist / forklift;
   - A 2. Loosen and remove the bolts to the 'U' shaped brackets to the top of the gates;
   - A 3. Carefully lift gates out of ground spigots and move to secure storage, packed with corrugated plastic sheet during transport;
   - A 4. Re-attach the 'U' shaped brackets so they do not get lost;
   - A 5. Photograph the ground spigot and top bracket with gates removed.

B. Following this, the piers are to be dismantled in the following order and manner:
   - B 1. Unbolt the top capping by unbolting the 8 holding brackets;
   - B 2. Carefully unbolt the four façade panels by unbolting / unscrewing the fixings;
     Fixing pattern would indicate there is some form of internal upstand that the outer facades are bolted to.
   - B 3. Carefully take the four façade sections and top capping apart and move to secure storage;
   - B 4. Photograph internal support structure and agree dismantling strategy if required. This is likely to be some form of upstand collar bolted to the stonework. It is likely this will be rusting and may need repaired or replaced. Final assessment can only be made once the upstand bracket is exposed;
   - B 5. Carry out paint analysis to determine the original paint colour.

C. Following this the plinth stones can be dismantled and removed, in the following order and manner. It is essential the stones are not damaged in the course of dismantling:
   - C 1. With the use of metal detectors identify locations of any buried iron cramps, which will affect how the stones can be dismantled;
   - C 2. Record all defects requiring new stone indents;
   - C 3. Remove modern traffic signs fixed through kerb edges;
   - C 4. Cut out joints and carefully wedge stones apart. This work must be done by an experienced stonemason using traditional techniques. No angle grinders or other mechanical devises are to be used without specific approval of the Contract Managers;

C 5. Blocks of stone, including the kerb stones, are to be removed to secure storage with all arises and faces wrapped with 'Corex' corrugated plastic to prevent mechanical damage;
C 6. The projecting gate holder catches and any spigot sleeves are to be removed for safe keeping;
C 7. The plinth foundation stones are to be covered over with approximately 50mm stone blinding to bring up the roadway over the top of the foundation level and then the whole base is to be covered with 6mm steel plate to protect the foundations below.

6.0 STORAGE AND TRANSPORT

Metal work items (4 No gates and 1 No. central pier complete with associated fittings) shall be removed offsite to a secure workshop / storage facility for restoration and repairs. Location of facility to be confirmed upon appointment of specialist contractor (SOAS to provide / approve Storage facilities).

Stone items shall be put on to pallets and protected with Corex' corrugated plastic and stored in a suitable location on site where cleaning and repairs can be carried out.

7.0 REPAIRS

The gates and piers are to be grit cleaned back to the bare metal and rusted areas treated and repainted in accordance with the detailed specification in Appendix C.

The stone plinth stones are to be carefully repaired with new stone indents as evaluated during the dismantling sequence, all in accordance with the detailed specification in Appendix C.

Stones are to be treated with an approved biocide to prevent future algae growth in accordance with the specification in Appendix C.

8.0 RE-ERECTION

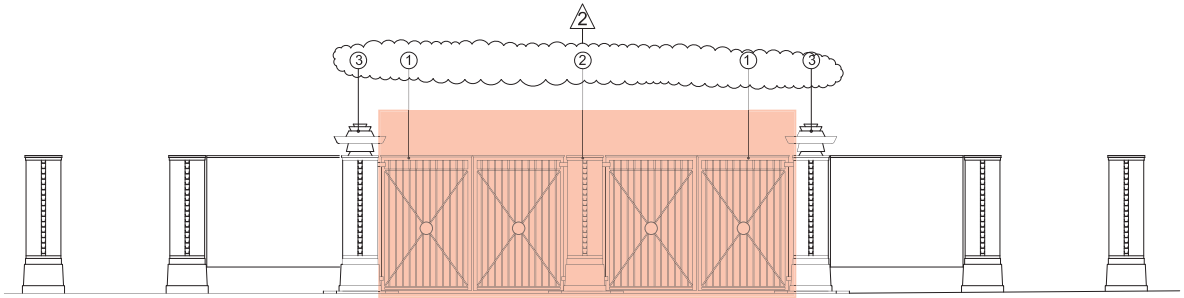
Once building works are complete the gate piers and gates are to be reinstated in the following order:

1. Remove steel plate and stone blindings and uncover foundation, establishing original levels;
2. Re-set the kerb stones and gate keepers;
3. Re-set the plinth stones, using stainless steel cramps and pins;
4. Fit new ./ refurbished upstand collar and any other pier support structure;
5. Re-fit the metal gate facades and top panels using stainless steel bolts and screws;
6. Re-hang the gates and fix top 'U' shaped brackets;
7. Re-fit the refurbished lanterns to the two outer gate posts;
8. Touch up paintwork at fixings etc, and grease gate brackets / spigot.

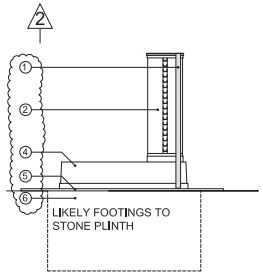
On completion a full photographic and drawing record is to be added to the Operations Manual and Health & Safety File, and handed over to the clients, together with a future maintenance schedule.

Appendix A

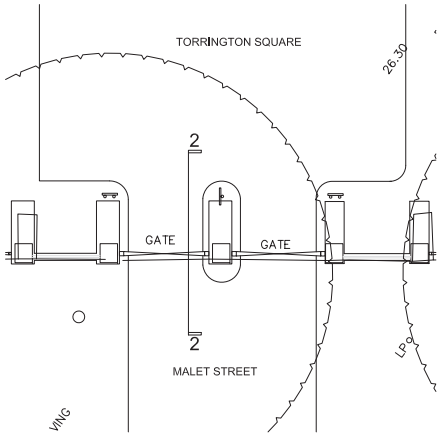
Mace Drawing SOAS-A-DET-GEN-XX-775 REV T2



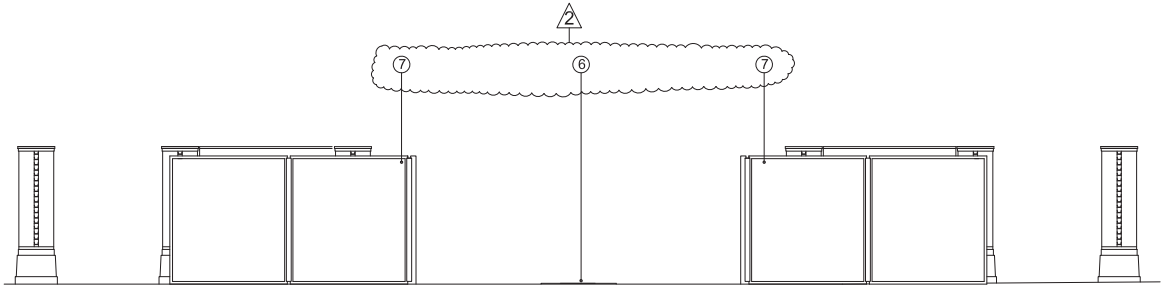
1 EXISTING ELEVATION
1:50



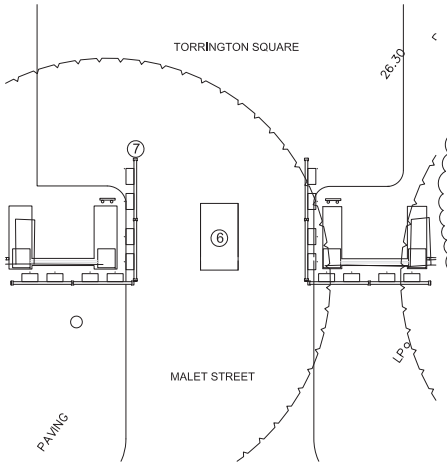
2 EXISTING SECTION
1:50



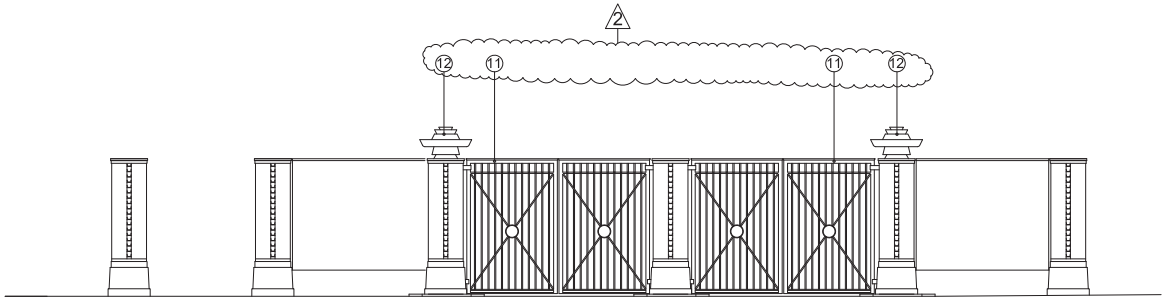
3 EXISTING PLAN
1:100



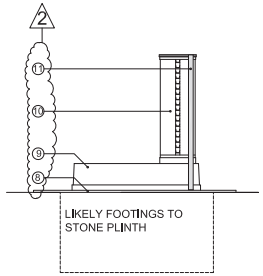
4 ELEVATION DURING THE CONSTRUCTION WORKS BY ENABLING WORKS CONTRACTOR
1:50



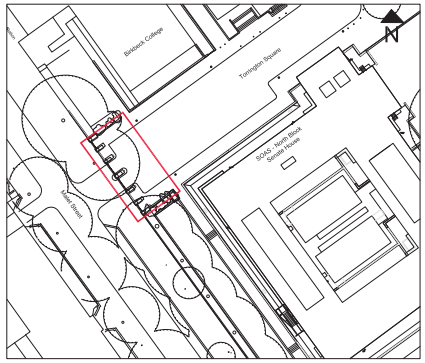
5 PLAN DURING CONSTRUCTION WORK
1:100



6 PROPOSED ELEVATION BY MAIN CONTRACTOR
1:50



7 PROPOSED SECTION
1:50



8 LOCATION PLAN
NTS

Safety first. Second nature.

Safety, Health and Enviroment Information

The significant unusual hazards / risks associated with this type of work are noted as:

CONSTRUCTION		
C1	-	NONE
C1		
OPERATION AND MAINTENANCE		
O1	-	NONE
O1		
DISMANTLING/DEMOLITION		
D1	-	NONE
D1		

NOTE - TO BE READ IN CONJUNCTION WITH RISK REGISTER

SEQUENCE OF REMOVAL AND STORAGE OF ENTRANCE GATES, PLINTH AND STEEL POST.

1. RECORD, CAREFULLY REMOVE AND STORE STEEL GATES AND ALL SECONDARY COMPONENTS IN ACCORDANCE WITH APPROVED METHOD STATEMENT TO BE PREPARED BY SPECIALIST SUBCONTRACTOR.

2. RECORD EACH COLUMN COMPONENT, WHICH IS LIKELY TO INCLUDE CONCEALED COMPONENTS, THEN CAREFULLY REMOVE IN ACCORDANCE WITH AN APPROVED METHOD STATEMENT, TO PREPARED BY SPECIALIST SUBCONTRACTOR.

3. THE LANTERNS HAVE CURRENTLY BEEN REMOVED BY UNIVERSITY OF LONDON FOR CLEANING AND MAINTENANCE AND ARE BEING STORED IN SENATE HOUSE BY THE UNIVERSITY'S PROPERTY AND FACILITIES MANAGEMENT DEPARTMENT.

4. RECORD INDIVIDUAL COMPONENTS, CAREFULLY REMOVE AND STORE STONE PLINTH STONES, NUMBERED FOR EASE OF REINSTATEMENT, ALL IN ACCORDANCE WITH AN APPROVED METHOD STATEMENT, TO PREPARED BY SPECIALIST SUBCONTRACTOR.

5. RECORD INDIVIDUAL COMPONENTS, CAREFULLY REMOVE AND STORE KERB STONE SURROUND, NUMBERED FOR EASE OF REINSTATEMENT, ALL IN ACCORDANCE WITH AN APPROVED METHOD STATEMENT, TO PREPARED BY SPECIALIST SUBCONTRACTOR.

6. EXISTING FOOTINGS TO BE RETAINED DURING CONSTRUCTION WORKS, CONTRACTOR TO BACKFILL AND FIX STEEL PLATE OVER THE FOUNDATIONS DURING CONSTRUCTION ALL IN ACCORDANCE WITH AN APPROVED METHOD STATEMENT, TO PREPARED BY SPECIALIST SUBCONTRACTOR.

7. PROTECTIVE HOARDING TO BE CONSTRUCTED AROUND REMAINING GATE POSTS AND FENCING TO MATCH SITE HOARDING ALL IN ACCORDANCE WITH AN APPROVED METHOD STATEMENT, TO PREPARED BY SPECIALIST SUBCONTRACTOR.

8. STONE KERB SURROUNDING TO BE FULLY REINSTATED.

9. STONE PLINTH TO BE CLEANED AND RESTORED PRIOR TO REINSTATEMENT BY STONE SPECIALIST.

10. STEEL POST TO BE RESTORED AND PAINTED PRIOR TO REINSTATEMENT.

11. RESTORE AND PAINT STEEL GATES PRIOR TO REINSTATEMENT.

12. LANTERNS ARE TO BE RESTORED BY LIGHT FITTING SPECIALIST PRIOR TO REINSTALLATION.

GENERAL NOTES:

REFER TO ARCHITECTS SURVEY BRIEF AND PHOTOGRAPHIC RECORD OF ENTRANCE GATES.

REFER TO LONGDIN AND BROWING MEASURED 3D CAD SURVEY, DRAWING NUMBER 6859 REV0.

ALL REMOVED AND RETAINED PARTS OF THE ENTRANCE GATES (APART FROM LANTERNS) TO BE STORED IN A SAFE LOCATION AND MANNER ALL IN ACCORDANCE WITH AN APPROVED METHOD STATEMENT, TO PREPARED BY SPECIALIST SUBCONTRACTOR.

NO WORK SHOULD BE UNDERTAKEN BEFORE THE FULL DETAILED RECORD SURVEY HAS BEEN COMPLETED AND A METHOD STATEMENT FOR ALL REMOVAL AND REINSTATEMENT WORKS HAS BEEN SUBMITTED AND APPROVED BY THE CONTRACT ADMINISTRATOR.

REV	DATE	DESCRIPTION	DRAW
T 2	11.11.13	TENDER ADDENDUM NOTES REVISED	LT
T 1	18.10.13	ISSUE FOR TENDER	BP

PROJECT STATUS
TENDER

CLIENT
SOAS University of London

mace
155 Moorgate, London, EC2M 6XB
www.macegroup.com

PROJECT TITLE
SOAS INTO SENATE HOUSE
MALET STREET
LONDON, WC1E 7HU

DRAWING TITLE
ENTRANCE GATE
PROPOSALS

PROJECT NO.	DRAWN BY	BP	DATE 18/10/13
28731	CHK BY	CF	DATE 11/11/13
	APPD BY	-	DATE

DISC.	VIEW TYPE	VIEW CAT.	LEVEL	DWG. NO.
SOAS - A - DET - GEN - XX - 775				

SHEET NO.	SCALE	ORIG. SHEET SIZE	REV.
1 of 1	VARIES	@ A1	T 2

INFORMATION HANDLING CLASSIFICATION
UNRESTRICTED

Appendix B

Photographs

5
MPH


5

Appendix C

Specification

SOAS into
Senate House, London
WC1E 7HU

Specification for

Removal and Reinstatement of the Entrance Gates

22 October 2014

prepared by

CONSARC CONSERVATION

THE GAS OFFICE | 4 CROMAC QUAY | BELFAST | BT7 2JD
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CONTENTS

1.0 INTRODUCTION

Unless otherwise specified it is always the intention to carry out the minimum repair works required and to avoid over repair. Existing elements of the structure are to be retained where at all possible and treated with great care. All material and workmanship must comply with the relevant British Standard or Code of Practice including BS 9000, workmanship on building sites, pts 1 to 15, and BS7913:1998 – The Principles of the conservation of Historic Buildings.

Contractors will be held responsible for informing their sub-contractors of the requirements and standards.

The Contractor must identify to the Client a person in charge. Working times and site restrictions regarding noise, vibration, dust and other disturbances are all to be agreed in advance with the hotel management, prior to commencement of work.

2.0 STONEWORK

2.1 GENERALLY

The work shall conform to BS CP 121.201 1951 and BS 5390: 1976.

2.1 NATURAL STONE

New natural stone for repairs to the plinth blocks shall be Portland Stone

All stone types must be approved by the Architect prior to work starting on site.
Samples of the stone types are to be procured and presented to the Architect for approval prior to ordering.

The finish of the stone is to match the tooling and texture of the original. A sample to be presented to the Architect for approval prior to installation.

The Contractor is solely responsible for the detailed measurement of the stones to be replaced. The Contractor will prepare detailed, scaled drawings of new stones to a programme that allows smooth execution of the work within the overall contract. The Contractor to provide the Architect with as built drawings showing the repairs that have been carried out on site as an accurate record.

3.0 HYDRAULIC LIME, LIME PUTTY, SAND, MORTARS & RENDERS

3.1 HYDRAULIC LIME AND LIME PUTTY

Hydraulic Lime mortar (NHL 3.5) is to be used for bedding and jointing mortar.

Hydraulic Lime should not be confused with hydrated lime, which is <u>not</u> an acceptable alternative.

Hydraulic Lime mortar and Lime Putty shall be from an approved source, such as

St Astier Products
Distributed by:
The Lime Centre
Morestead
Winchester
Hants. T: 01962713636

For STONEWORK Mix proportions of hydraulic lime (NHL)

Mortar: NHL 3.5 is

1 Lime : 2.5 Sand

CHARCOAL

Mortar is to be gauged with charcoal to achieve the colour match required.
The exact proportions are to be agreed on site.

Charcoal is to be:
Commercial Charcoal Powder (Willow) available in 400g bags

Delivery and Site Storage of Hydraulic Lime

Hydraulic lime shall be delivered to the site in the manufacturer's sealed bags. Bagged lime shall be kept stored in dry weatherproof and reasonable airtight sheds, the floors of which shall be kept raised above the ground and shall be kept well ventilated.
Hydraulic lime shall be used in the order received and each delivery shall be kept separately.
Lime which has been stored on site for more than six weeks shall not be used and bags containing hard lumps or cakes shall be rejected and shall be removed from the works.

3.2 SAND

Sand should be clean, sharp and washed and comply with BS 1200. Sand should be obtained from an approved source and well graded down from 2.36mm to 0.15mm particle size in the following proportions:

	2.35mm	10%
	1.18mm	14%
	0.60mm	26%
	0.30mm	22%
	0.15mm	18%
less than	0.15mm	10%

Aggregate grading is dependent on the width of the joints to the stonework and brickwork and this is to be approved by the Architect/Clerk of Works. Where very wide joints occur, a 2-4mm aggregate may be introduced to the pointing mix to prevent cracking on these wide joints.

Sand colour is to be selected to give a mortar mix for pointing to match stone and brick colours. Sand samples should be approved by the Architect.

3.3 MORTAR PREPARATION

Mortar Preparation (for Hydraulic Lime Mortar)

- All mortar preparation methods and materials should be approved on site by the Architect
- All materials (sand and lime) should be stored appropriately on site. Sand and lime should be kept dry at all times.
- Mixing should be carried out in an approved Mortar Mill to ensure correct mixing and reaction of ingredients.
- Always ensure accurate proportions of ingredients and always measure NHL lime **by weight - DO NOT RELY ON VOLUME PROPORTIONS. (BULK DENISTY INFORMATION IS PROVIDED BY MANUFACTURER).**
- Water content to be kept as low as possible.
- No plasticizers are to be added. The use of any mortar additives (e.g. air entrainers) such as USC or USD should be approved by the Architect on site.
- Mortar must be used within two hours and then left to set. It may be advantageous to brush the surface later the same day to expose the grit.
- Do not use if temperatures are below 5°C.
- Be prepared to protect from frost, excessive sunlight and drying winds for up to 7 days.
- Protection of mortar is extremely important to ensure the proper curing.

3.4 POINTING

Repointing Stonework

Hydraulic Lime mortar (NHL 3.5) and prepared following the guidelines above may also be used for re-pointing other areas of stonework.

Joints should be raked out to a depth at least 30mm in narrow joints (4mm or less), and to a depth of 40mm in wider joints. Raking out is to be carried out by hand. The use of a mechanical disc for cutting out can only be used on approval by the Architect.

Joints are to be flushed out with clean water and left damp before pointing.

3.5 REPAIR ADHESIVES

Proprietary resin store adhesives such as Technical Glue, Akemi or equivalent and approved may be used for the insertion of small intents of new stone within larger stone with tight butt joints. Colour of adhesive is to match stone or mixed with ground stone dust.

3.6 DAMP PROOF COURSES

A Damp proof course such as 'Hyload' or other approved polythene sheeting, weighing 1 kg per sq.m., to BS 743 and 6515., shall be placed below the plinth stones. Lapped at least 100mm at joints and neatly pointed where exposed.

4.0 CLEANING OF STONEWORK

4.1 STEAM CLEANING

This is to be carried out by a specialist with a proven track record of cleaning decorative stonework.

Steam Cleaning
All masonry cleaning operations shall comply with BS 6270 Part 1 1982 and all subsequent amendments.

Equipment used:
A tow bar mounted steam cleaning machine with fan tail spray nozzle. The equipment should be set in a way that the pressure regulator is restricted to a maximum of 350-370 P.S.I., the water temperature has to be 160ºC (which is steam), the water flow rate has to be 3 litres per minute. This will be checked by the Architect or Clerk of Works prior to commencing works. The equipment is to be strictly used in accordance with the manufacturer's instruction and operators are to be fully trained in its use before commencing works or alternatively the Doff ® System may be used.

In all cleaning methods the Contractor will be responsible for strict compliance with all Health and Safety regulations including the Health and Safety at Work Act, Noise at Work Regulations and The Control of Substances Hazardous to Health Regulations (COSHH) 1989. This includes proper disposal of all hazardous substances including lead or other toxic paints cleaned off the building, and all substances used in the cleaning processes. The safety of operatives and other construction operatives is the Contractor's responsibility and appropriate personal protective equipment and clothing and other protection or screening must be used.

Prior to commencement of the cleaning methods, the Contractor shall carry out a series of trial tests for the cleaning method specified below, before final decisions are made by the Architect as to the extent and exact specification of each method.

Test areas (approx. 2m2) to be selected by the Architect.

No other methods such as high grit blasting or high pressure water lancet sprays are to be used without the express approval of the Architect.

4.2 APPLICATION OF BIOCIDE

All areas of stone are to be treated with Trisol 23 (2 COATS).

The product referred to in this section is Trisol 23, manufactured by:

Triton Chemical Manufacturing Co Ltd
Unit 5 Lyndean Industial estate
129 Fleixstone road
Abbywood
London
SEZ 9SG
T: (0)20 8310 3929

a. This is the final operation, to be carried out when the stonework is in dry condition and in accordance with manufacturers' instructions.

b. Product is to be applied at a rate of 1 litre per 5sq m at low pressure, from a knapsack sprayer, starting at the top of a wall area moving the nozzle horizontally so that several inches of run-down occurs.

c. Biocide will be left on and not washed off.

5.0 WORKMANSHIP

5.1 All stonework shall be uniform, true and level.

No section of stone greater than 1.0m is to be taken out without detailed method statement on propping and retention of surrounding stone.

Stone shall be properly stacked on level and hard standing and protected from inclement weather.

No stone shall be carried out when the temperature is at or below 3°C. Anti-freeze additives will not be permitted. All stonework shall be protected at night from frost for 3-7 days after laying.

Stone shall be built to fully match existing in relation to the colour, sizing of stones/bricks, coursing, thickness of joints and pointing. A sample area of not less that 1.0m2 shall be built for the approval of the Architect before work proceeds.

Removal of stones shall be by hand and all work with power tools is to be specifically approved by the Architect before work commences. The cavity formed is to be fully cleaned of all dust, mortar and debris before new stones are set in. Small indents in the middle of large stones shall have tight butt joints with joints to match surrounding stones following original coursing lines.

The Contractor is responsible for the stability of the stonework and brickwork at all times and for all temporary propping, struts and supports to prevent movement or damage to the surrounding stone.

New stones shall be fixed in position using austenitic stainless steel cramps grouted into sinkings in the stonework, or 6mm, 12mm diameter austenitic stainless steel dowels bedded into the stonework with approved resin grout such as Akemi.

New stones shall be set on a mortar bed, pointed in from the face and grouted up afterwards to fill any voids. The exact positions, designs and details of the fixings are to be designed by the Contractor to ensure adequate support of all stonework, in accordance with BS CP 121. Fixings are to be by Ancon Clarke or other approved.

Stainless steel is to be grade 18/10/12 Type 316 High proof steel.

Bi-metal contact between stainless steel fixings and mild steel elements is to be avoided by the use on non conductive gaskets and nylon washers.

6.0 METALWORK

6.1 CLEANING AND PREPARATION

Gates and piers to be cleaned to bare metal. This should be done by grit cleaning in accordance with BS7079 Part 1 Grade SC2. Air pressure to be regulated between 60 to 150 psi, depending on trails and as agreed with the Architect.

Some repairs will be required and these are to be agreed once the gates and piers have been removed to the workshop.

6.2 PAINTING OF METALWORK

Rust Oleum 9169 epoxy rust primer (1 ct) followed by a topcoat from the 7500 Alkythane top coat (2 coat system) (available from Andrews Coatings LTD or equal and approved) following the manufacturer's instructions
These products are available from:

CORROLESS Corrosion Control
Kelvin Way
West Bromwich
West Midlands B70 7JZ
United Kingdom
Tel: +44 (0)121 524 2235
E-mail: contact@corroless.com

Preparation:
Remove loose rust and scale using a wire brush.
Oil grease, chemical and salt contamination must be removed. Apply Corroless RUSTKILLER brush following manufacturer's instructions
Apply Top Coat such as Corroless RF16 or equal and approved (colour to be selected by the Architect).
Apply one coat of Rustoleum 569/580 fast drying metal primer. Once cured, apply a top coat of Rustoleum F500 corrosion resistant top coat.

Rustoleum is available from
Andrews Coatings Ltd, Tel: 0044 01902 712286.

7.0 PROTECTION AND REMOVAL OF RUBBISH

7.1 PULLING DOWN

Pulling down, taking out and taking away shall be carefully performed and every precaution shall be taken to ensure the safety of the works.

7.2 MAKING GOOD

The contractor shall make good all work disturbed in the course of the Contract. Making good is to be executed with materials and workmanship, which match in every respect the surrounding works, and shall be properly bonded thereto.

7.3 LAYING THE DUST

The Contractor shall allow for laying the dust as far as possible during the course of the works by watering with a hose or other means.

7.4 PROTECTION OF FITTINGS

All fittings to be retained including brackets, gate holders and other fittings shall be carefully set aside and stored or protected in-situ, for re-use, and to enable exact replacements to be made.

7.5 REMOVAL OF RUBBISH AND STRIPPING OUT

All loose debris and accumulated rubbish etc, is to be removed from the site.
All defective stone- and brickwork shall be removed and carted away, as determined on site by the Architect.

7.6 WARNING SIGNS

The Contractor shall fence or otherwise protect the works, install lights and erect warning signs as may be necessary to safeguard the public or site personnel from open dangerous structures.