CONSARC
CONSERVATION

Section 5 Referral

AMBASSADOR THEATRE DUBLIN

September 2021

for

Millennium Theatre Company

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1.0 INTRODUCTION

1.1 The building known as the Ambassador Cinema forms one part of an important complex of 18th century buildings centred on the Rotunda Hospital. Described in the NIAH as '*a corner-sited attached 2-tiered classical style rotunda theatre built 1764-7, designed by John Ensor. Three-bay single-storey entrance portico to South by James Gandon. Attached via curved ashlar granite arcade to adjacent hospital to the west*'. The rotunda theatre (Ambassador Cinema) is rendered (now cement) with Coade stone bucranium ornamentation added in 1768 by James Gandon.

1.2 At the request of our client, Live Nation, Consarc Conservation have carried out a survey of the Ambassador Theatre to produce a detailed schedule of repairs based on a Schedule of Dilapidations issued by the landlord, the Rotunda Hospital. This schedule of dilapidations, along with a condition survey, specification and photographic record forms the basis of a proposed Section 5 application.

1.3 This document has been prepared by Consarc Conservation, an RIAI Grade 1 Conservation practice. The report has been prepared with regard to the protected status of the building and with reference to the government publication *Architectural Heritage Protection Guidelines for Planning Authorities*. The overall policy is to retain, restore and enhance the integrity and significance of the building within its wider context. Any works to the site should be carried out in accordance with best conservation practice, as defined by the International Council on Monuments and Sites (ICOMOS) in the Venice Charter of 1964 and subsequent charters.

1.4 All proposed works to the external envelope of the building are solely to protect the building and to ensure it does not deteriorate further.

1.5 The survey is illustrated with a set of drawings identifying existing materials and condition and detailing the location and extent of work required.

1.6 A rare and unique feature of the elevations is the use of Coade Stone and thought to be the only extant example in Ireland. The Coade Stone elements have been identified and an approach to repairs presented. Any work to the Coade Stone elements will be carried out under the direction of Stoneware Restoration Ltd (or equal and approved).

1.7 A specification of all materials and metods of application is included in appendix B.

1.8 Where required, the expertise of a conservation structural engineer, will be employed.

1.9 A photographic record is included in appendix C.

2.0 SCOPE OF SURVEY

2.1 This document provides an assessment of the defects to the external elevations (excluding roof) of the main rotunda building, Ambassador Theatre elevation, Ambassador Cinema elevation and arcade adjoint the Rotunda Hospital. It provides a proposed schedule of repair for all elevations and supplementary information on methodology for repair to the historic fabric.

The survey was carried out by Consarc Conservation a Grade 1 RIAI Practice and the persons involved were: John Savage, Joanne Curran, and Una Ni Mhearain. The survey was carried out from the ground, roof, and ladder access to inspect the elements of the decorative frieze and can be subdivided into 4 sections:

- Rotunda Theatre Building – Granite parapet and cornice, decorative frieze with Coade Stone elements (Bucranium, sways, roundels) fixed to a Wicklow Granite 3 or 4 coursed ashlar band; rendered walls (now cement) with ashlar lines, Portland Limestone decorative square panels.
- Ambassador Theatre Front Elevation (South) and Arcade.
- Ambassador Theatre Front Entrance and rendered elevation adjacent to the Gate Theatre.
- Ambassador Theatre Rear Elevation

The marked-up elevations for all elements are included in Appendix A and includes a detailed drawing of the Bucrania frieze.


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DUBLIN
THE AMBASS DOR THEATRE

Figure 1 a, b, c d & e. External Elevations of the Ambassador Cinema

3.0 CONDITION ASSESSMENT & RECOMMENDED REPAIRS

3.1 ROTUNDA THEATRE BUILDING

The building comprises a granite parapet and cornice, decorative frieze below the cornice, rendered walls and decorative stone plaques. The decorative frieze was added to the building in 1768 and consists of Wicklow Granite ashlar band (3-4 courses) directly below the cornice and fixed to this are 'Coade Stone' bucranium (Ox Skulls) and swag detail with roundels in between (see Figure 2 and Detail Drawing D001).

Coade stone takes its name from the family that made this early fired clay example of engineered stone. Coade stone was produced as ashlar, especially with finishes such as vermiculation that were expensive to produce in stone, and as key stones with carved figures over doorways. It made such work more widely affordable. However, to enhance the reputation of the material, the Coade family employed some of the great artists of the day to produce original carvings from which Coade stone reproductions were made. Coade Stone reached a height of popularity when the company producing it was run by Mrs Eleanor Coade.

They moved the business from Dorset into Lambeth in London to supply the building boom in the city and Coade Stone quickly became fashionable in the capital. They had an illustrious list of customers, including George III himself.

Eventually the company passed into the sole ownership of William Groggan, who went bankrupt in 1833. His son, Thomas, tried to resurrect the business but the material did not return to its former popularity. The business eventually passed to one of its employees, Mark Blanchard, who was more successful and continued trading until 1870.

The secret 'recipe' of Coade Stone was lost for many years and was only rediscovered in the 1990s by the British Museum. They said it consisted of ball clay with 5-10% ground flint, 5-10% quartz sand and about 10% soda-lime-silica glass that acted as a vitrifying agent. The mixture is fired at about 1,000°C to produce a vitrified material of exceptional durability. When taking mould, it must be taken into account that the material shrinks by approximately 8-10% during the firing process. There are only a few companies based in the UK that still manufacture Coade stone to the original specification such as Stoneware Restoration Ltd.

3.1.1 Summary of Condition of Rotunda Theatre Building

There are 23 bucranium elements and 25 roundels in Coade Stone. Approximately 6 have been replaced in a previous repair scheme (see Figure 3); the remaining elements are original with some missing elements and deterioration of fixings (see Figure 4). The inspection showed that the original Coade stone elements are fixed with what appears to be non-ferrous (possibly bronze) fixings with very few fixings per element. The Coade stone roundels are fixing with 1 square fixing to the top only (see Figure 4) and where this has corroded the roundel has detached. The swags are also fixed with 1 or 2 fixings only and there is some cracking across the elements. In previous repair schemes cement has been used to seal the joint around the roundels and the swags. It is thought that this in place to stop water ingress behind the swags. This has performed reasonably well, however, cement mortar is also used to seal the bottom of the swags and this may not be the best repair strategy as this could trap water in behind. The bucranium are not sealed with mortar. Some of the Coade stone elements were inspected during the survey and cracked and missing elements noted.

The ashlar granite to the frieze is very soiled and showing granular disintegration and deterioration adjacent to hard cement pointing (see Figures 2 and 3)

Figure 2a. Coade Stone decorative frieze to the rotunda theatre showing Bucranium and roundel.

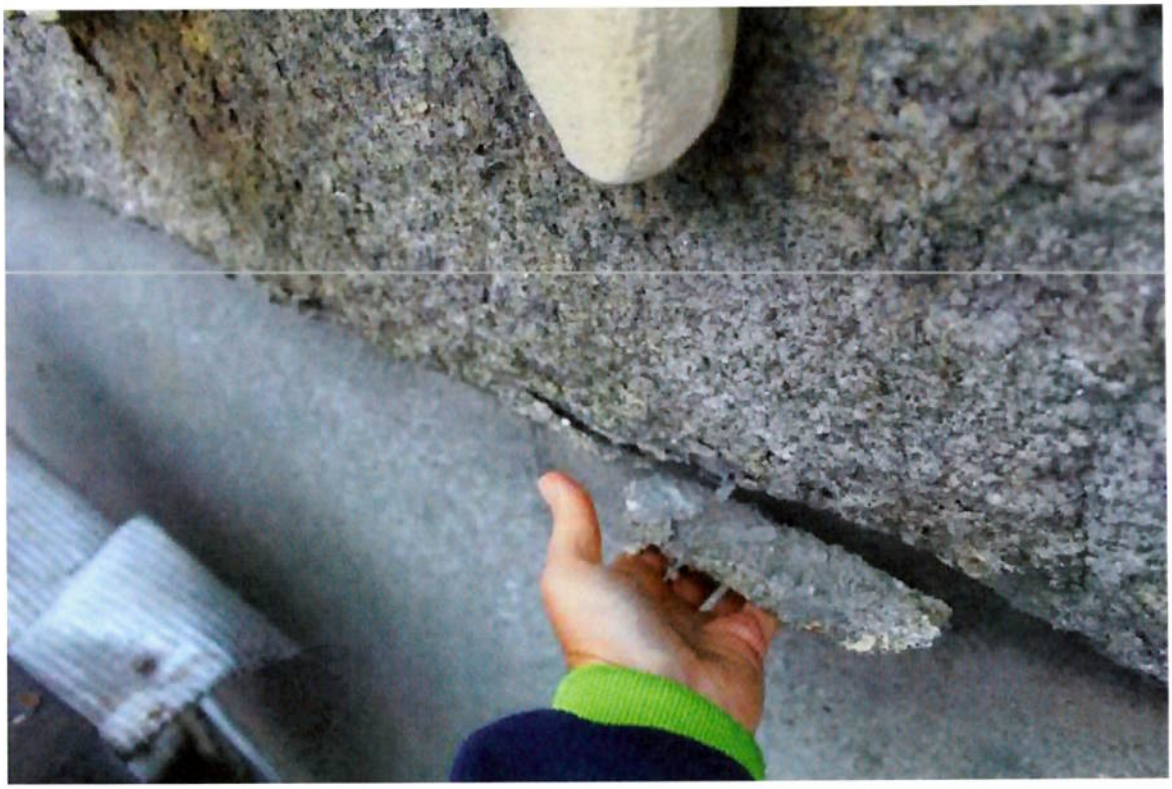


Figure 2b. Detaching sections of the ashlar granite to the frieze.

Figure 3. Replaced 'new' Coade Stone elements from a previous repair scheme. The moulds are still available for the replacement Coade Stone elements required.

3.1.2 Proposed Repairs to the Rotunda Theatre Building

Repairs to Parapet, Upper Cornice and Decorative Frieze (see Drawing D001 which shows the detail of the frieze and the proposed repairs).

Figure 4. Elevation view of the rotunda theatre building. IT is proposed that the missing Coade stone rounder and sections of swags are replaced and the cement render that is cracked and repaired is hacked off and re-rendered.

3.1.3 Recommended Repairs to the Rotunda Theatre Building

Any work to the Coade Stone will be carried out under the direction of Stoneware Restoration Ltd.

Coade Stone:

- Remove loose and damaged Coade Stone Elements and re-fix with stainless steel fixings).
- Replace defective mortar 'fillets' to Coade stone elements and remove from below swags.
- Replace missing elements in Coade Stone to match original (Roundels and Swags).

Granite:

- Replace one section of cornice (Figure 5);
- Minor stone indents.
- Using hand tools only, remove loose and heavy gypsum encrusted surfaces.
- Rake out and repoint joints to the cornice and ashlar band.

Render (Figures 7 & 8):

Break out defective cement render and re-render – several locations.

Fill fine cracks to render with crack repair system.

Decorative Stone Panels (Figures 9 & 10)

Remove loose and detaching sections of Portland limestone around rusting fixings, treat fixings with anti-corrosion paint systems and indent with Portland limestone to match.

Where cracks have opened up, fill with paraloid injection to prevent further ingress.

Figure 5. Deteriorated section of granite cornice to be replaced in Ballyknockan (Wicklow) Granite to match original.

Figure 6. Inner parapet of the rotunda theatre building cracked cement render. Very deteriorated sections area to be repaired.

Figure 7. Defective render to chimney. Pipe to be removed and chimney re-rendered.

Figure 8. Defective cement-based render at roof level. Area to be re-rendered.

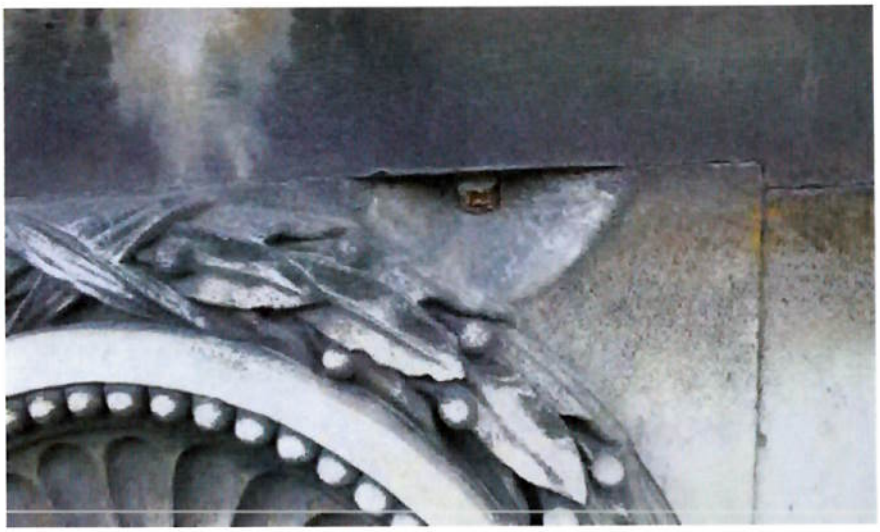


Figure 9 Corrosion of fixings causing stone damage to Portland limestone

Figure 10. Corrosion of fixings causing stone damage to Portland limestone panels.

3.2 AMBASSADOR THEATRE FRONT ELEVATION (SOUTH) AND ARCADE

The front elevation is a granite parapet and cornice with entrance columns. Much is covered by signage and many elements have been rendered over. The exposed granite elements are chipped in places and soiled due to historic pollution and water penetration.

3.2.1 Recommended works to Front Elevation

- Indent repairs to cornice and general indents.
- Replacement of deteriorated render repairs to the columns with stone.
- The elevation is soiled and stained and would benefit from cleaning of the stone surfaces as per our specification, using a biocide followed by a gentle steam clean.

Figure 11. Front Elevation block and first section of the arcade.

3.2.2 Return Elevation of Front Block

The return elevation comprises of granite ashlar blocks, cornice and parapet and a blind arch which is rubble stone that is now rendered (see Figures 11-14). The render to the blind arch is defective and allowing water ingress and the flashing details in not adequate to prevent water ingress. The granite stone is heavily stained and mortar to joints is defective in many areas. Water ingress through the cornice joints is evident. At ground level the arched recessed is heavily soiled and stained indicating water penetration causing rusting of the iron minerals in the granite (probably historic damp ingress).

3.2.3 Recommended Repairs to the Return elevation

- Remove existing render and re-apply
- Removed existing wire mesh flashing detail and fit lead flashing
- Repairs (stone indents) to stone swags
- The return elevation is heavily soiled and stained and would benefit from cleaning of the stone surfaces as per our specification, using a biocide followed by a gentle steam clean.

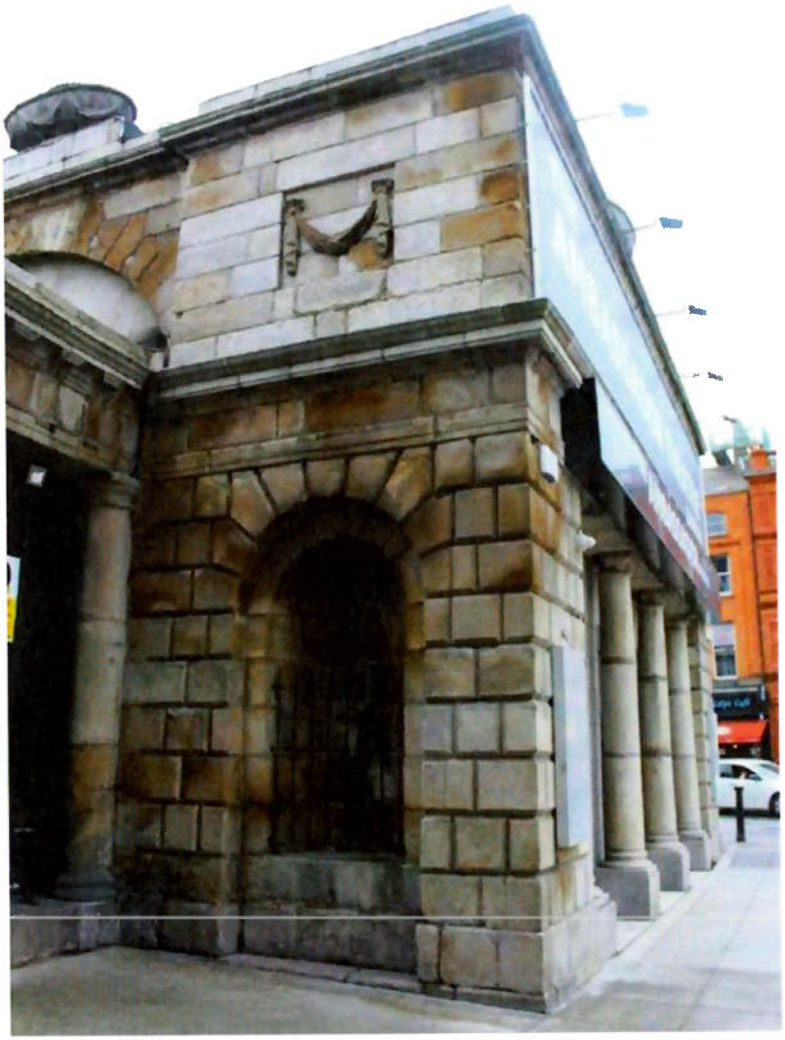


Figure 12. Return wall to front elevation. Proposed works are repointing open joints, replace decaying render swags and gentle cleaning to lighten staining in the niche.

Figure 13. Upper level of the return elevation. Repair to defective lime render required and repointing of joints

Figure 14. Defective (lime) render and flashing allowing water ingress. To be hacked off and re-done in lime render

3.2.4 Arcade linking to the Rotunda Hospital

Main defects recorded include:

- Cracks to the underside of the granite soffit (see Figures 16 & 17) a horizontal crack through the granite soffit is visible to most sections of the arcade. It is not known if these are historic or indicate the presence of rusted elements and this should be investigated further.
- Friable and detaching decorative elements of granite (see Figure 16).
- Failing render repairs to the column bases and capitals (see Figure 18).

A trial of a cleaning technique by the method proposed by Thomann-Hanry was carried out to one section in the past and although it lightened the appearance of staining it has caused damage to the stone (see Figure 15 below). Only a low pressure steam DOFF or similar and approved shall be used.

Figure 15 Arcade link to the Rotunda Hospital with the Rotunda Theatre building behind. Left had side was subject to a cleaning trial by Thomann-Hanry. This has proved to be too severe and we do not recommend using it.

Figure 16 View of upper cornice to the arcade. Shows decaying elements of previous cement repair. Proposed works are to remove loose and spalling mortar with hand tools only

Figure 17 Cracks to the granite soffit. All soffit granite to be inspected by a conservation accredited engineer.

Figure 18. Deteriorating render repairs to column bases. Defective cement-render to be removed and replaced by moulded granite indents to match original.

3.2.5 Recommended Repairs to the Arcade Link

- Carefully remove loose and detaching stone and mortar repair from lower cornice. In some areas the detail is to be re-created with a lime-based mortar.
- Remove deteriorating render to column bases and indent with granite to match original.
- Below the arcade cornice heavily soiled and stained and would benefit from cleaning as per our specification, using a biocide followed by a gentle steam clean

3.3 AMBASSADOR CINEMA FRONT ENTRANCE (EAST ELEVATION) AND RENDERED ELEVATION ADJACENT TO THE GATE THEATRE

3.3.1 Summary of Defects First Section – Granite Elevation

The corner section of stonework shows signs of movement that may be historic but has resulted in the opening up of joints between the granite blocks that is allowing water ingress and these areas should be repointed (Figure 20). There are isolated areas of missing granite that require indenting and the decorative swags are repaired in render and some section are missing (Figure 20).

3.3.2 Summary of Defects Second Section – Rendered Elevation

The render is a reasonable match with the Wicklow Granite as mica has been added (see Figure 23). The inspection showed that there is a horizontal line of cracking and small areas of detaching render below the level of the cornice. There is no evidence of cracking to the rooms inside. The pattern of cracking suggests that this is the result of rusting/movement of structural elements close to the external surface of the elevation and this should be further investigated by hacking off a section to understand the defect more fully (see Figures 22 &23). The survey also showed that there are cracks across the top of the rendered cornice to the East elevation and the cause of this fracturing should be investigated further under the supervision of a conservation accredited structural engineer(Figure 24).

Figure 19 View of East elevation both granite and rendered facades

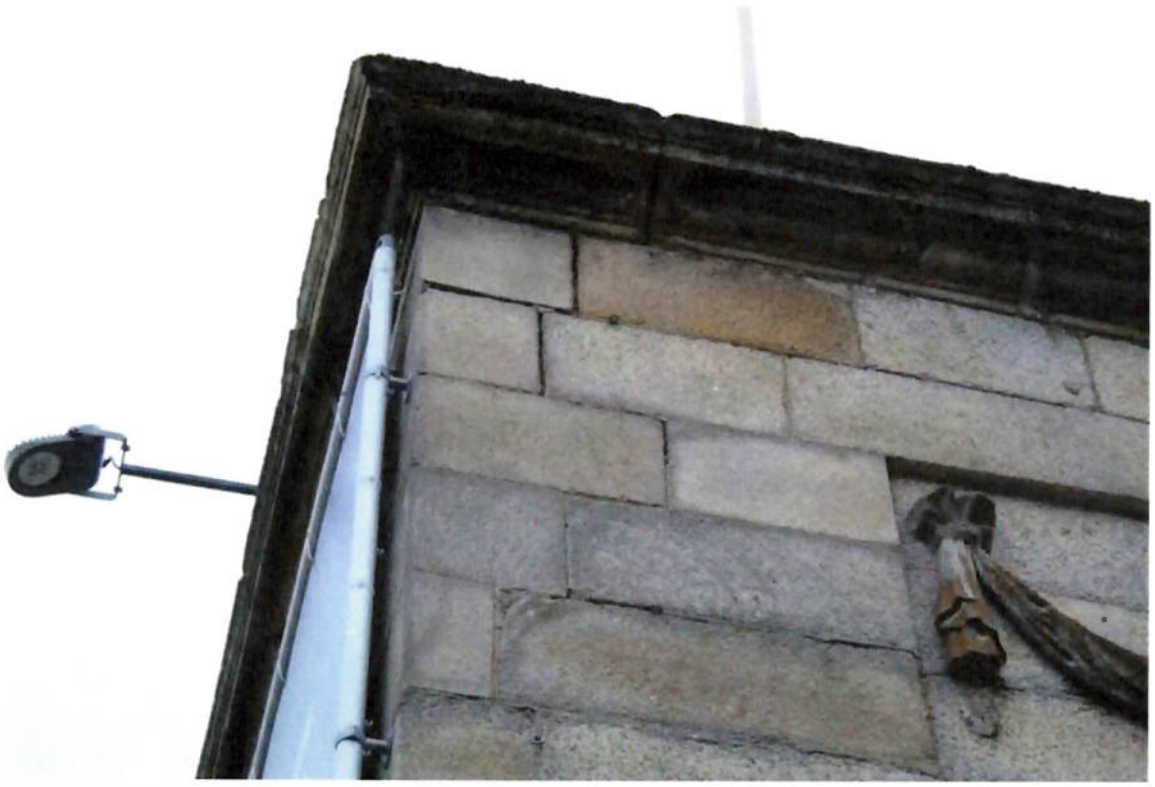


Figure 20 Open joints to the granite stonework to be repointed and missing section of swags to be replaced.

Figure 21 Poor condition of the underside of the granite cornice. Section of soffit granite to be replaced and all joints to be repointed with lime mortar.

Figure 22. Horizontal cracking and detaching render to the East façade. Investigate cause under the supervision of a conservation accredited structural engineer.

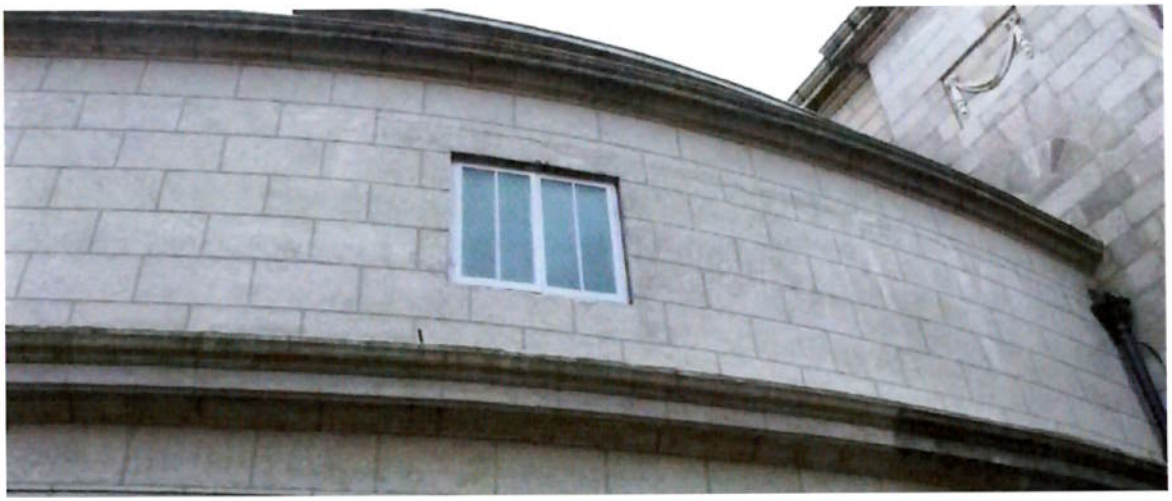


Figure 23. Continuation of the horizontal cracking to the East Elevation

Figure 24. Cracks through the rendered cornice (viewed from the roof).

3.4 AMBASSADOR CINEMA REAR ELEVATION FACING INTO THE INTERNAL ROTUNDA CAR PARK

3.4.1 Summary of Defects First Section – Granite Elevation

This façade is curved with a granite frieze and cornice supported on engaged granite columns. The façade is lined and ruled Roman Cement, with patch repairs. There are a series of round headed windows and two steel doors. The granite is badly stained in areas. Some of the column capitals have been replaced with concrete in the past. The areas of granite should receive a biocide wash, followed by a steam clean. Most of the areas of granite require repointing in lime mortar. There are isolated areas of missing granite that require indenting (Figure 25b). The façade should receive a lime shelter coat to consolidate the façade and improve the overall appearance. The window on the return section was altered in the past and an exposed timber head required repair. The adjacent flagstones should receive a biocide wash, reassessed to see if further repairs are required and then repointed.
The roof is not within the scope of works as it is under separate ownership (The Gate Theatre).

Figure 25 a & b. First bay of the façade has some cleaning samples to the lower sections of the columns, carried out previously, again using the Façade Gomage system, which is inappropriate and too aggressive. The granite at the top left hand side is damaged and requires a stone indent.

Figure 26. Staining evident on the granite frieze.

Figure 27. Altered window has an exposed timber head

Figure 28. Current condition of rendered façade between engaged columns. Part of the sill has been cleaned using the Façade Gommage System, which is inappropriate.

4.0 SUMMARY OF RECOMMENDED REPAIRS

4.1 The Ambassador Theatre is a building of National Importance. The external fabric needs repair to prevent water ingress and to prevent further deterioration. All works specified and are deemed necessary. It is always the intention to carry out as much as necessary and as little as possible.

4.2 This report and accompanying marked up drawings (Appendix A) illustrate the defects and proposed repairs to the Ambassador Theatre buildings. The main defects and proposed remedial works fall into 4 main areas:

- Rotunda Theatre.
- Ambassador Theatre Elevation (Front) and Arcade.
- Ambassador Theatre (East) elevation – both the granite frontage and rendered elevations.
- Ambassador Theatre Rear Elevation – facing into Gate Theatre car park

4.2 The marked-up drawings in Appendix B show the proposed repairs and a detailed drawing (D001) of the decorative Coade Stone Frieze illustrate the recommended works to this level. The types of repair and justification are listed below and a specification for repairs is included in Appendix D.

Works to the decorative Bucrania Frieze:
All work to the Coade Stone elements shall be carried out under the direction of Stoneware Restoration Ltd (or equal and approved).
Stabilisation of the Coade stone elements including re-fixing with stainless steel fixings where required, replacement of missing elements, careful removal of gypsum crusts and friable material with hand tools and repointing of joints to ashlar stone with lime mortar.
These repairs will stabilise the decorative frieze by stabilising the granite substrate and ensuring the Coade stone elements are fixed securely.

Works to the Portland Limestone decorative plaques:
Indent repairs where stone has detached at fixing points.
Clean and treatment of the rusting fixings prior to indenting.
These repairs prevent further deterioration and loss of original stone detail to the Portland Limestone plaques.

Works to Stone Facades:
Stone replacement - Sections of very deteriorated granite cornices and other projecting stonework, column bases etc. are noted for replacement. Other areas and noted for indent repairs.
The replacement will be 'like for like' in type of granite and all dimensions, detail and tooling.

Lime-based Mortar Repair:
There are small amounts of lime-based mortar repair proposed to build up original detail to the lower cornice of the Arcade. The use of this repair is proposed for areas where a stone indent would cause damage to the original stonework whereas the lime-based repair re-creates the original detail and conserves the stone block for a further period of time.
The lime-based repair proposed is not detrimental to the original stonework and used in small areas only.

Repointing:
Areas are highlighted for repointing and this is to be lime-based.
The plan is to create a philosophy of repointing with lime-based materials for this building so that this is employed for all works in the future.

Render:

- The render to the Rotunda Theatre is cement-based ashlar lined render that was applied in the past. Render repairs proposed are 'patch' repairs and it is proposed to carry this out in a cement-based repair to match original as there is a risk of differential movement between renders of different compositions and a difficulty to match in colour and texture to match in terms of appearance.

- There is an areas of lime render to a blind arch to the return elevation of the front entrance and this is to be re-rendered in lime-based materials.

- The rendered façade between the Ambassador Cinema Entrance to the Gate Theatre is cement-based with added mica to give match the 'sparkle' appearance of Wicklow Granite, all repairs are to match this render.

- The render to the rear return is Roman Cement with cement repairs. This area will receive a lime shelter coat to improve the appearance while protecting the substrate.

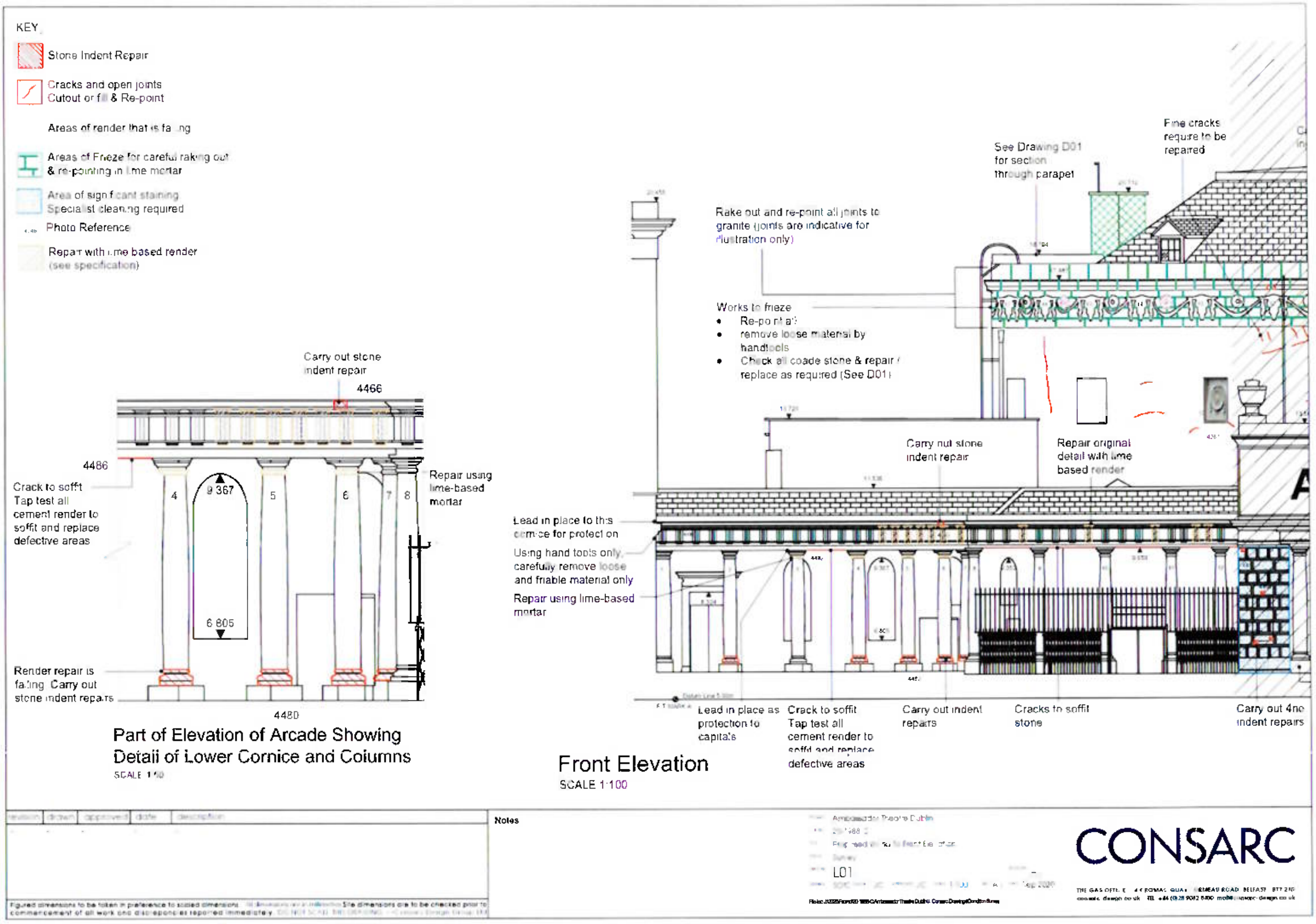
Samples of all types of render shall be provided for approval prior to work commencing.

Cleaning of Facades:
The owner of the building is keen to reduce the amount of soiling on stone and rendered surfaces and to lighten the appearance of rust staining (due to water penetration) on the granite facades. Trials of the 'Façade Gommage System' by Thomann-Hanry were carried out in the past and before Consarc was engaged. This is a dry or minimal water vortex system with aluminium silicate powder (20-50 microns) at 4 bar pressure. The documentation provided by Thomann-Hanry suggests that when this system is used by experienced operators this system can successfully remove soiling and lighten stone surfaces without damage to stone or removal of patinas. However, the cleaning samples carried out, particularly those in the rear elevation, were very harsh and have taken off the surface of the stone. We therefore recommend that this system is **NOT** used. Instead, areas that have vegetation and algae growth will be treated with a biocide. The areas will them be cleaned using a steam cleaning method, DOFF or similar, with a low pressure and maximum temperature of 150 degrees. Refer to specification.

Careful removal by appropriate methods of biological soiling and gypsum crusts can be of benefit to granite facades.

APPENDIX A

MARKED-UP ELEVATIONS


KEY
Stone Indent Repair
Cracks and open joints Cutout or fill & Re-point
Areas of render that is failing
Areas of Frieze for careful raking out & re-pointing in lime mortar
Area of significant staining Specialist cleaning required
Photo Reference
Repair with lime based render (see specification)
Carry out stone indent repair
4466
4486
Crack to soffit Tap test all cement render to soffit and replace defective areas
9 367
6 805
Repair using lime-based mortar
Render repair is failing. Carry out stone indent repairs
4480
Part of Elevation of Arcade Showing Detail of Lower Cornice and Columns
SCALE 1:50
See Drawing D01 for section through parapet
Fine cracks require to be repaired
Rake out and re-point all joints to granite (joints are indicative for illustration only)
Works to frieze
Re-point all
remove loose material by handtools
Check all coade stone & repair / replace as required (See D01)
Carry out stone indent repair
Repair original detail with lime based render
Lead in place to this cornice for protection
Using hand tools only, carefully remove loose and friable material only
Repair using lime-based mortar
Lead in place as protection to capitals
Crack to soffit Tap test all cement render to soffit and replace defective areas
Carry out indent repairs
Cracks to soffit stone
Carry out 4no indent repairs
Front Elevation
SCALE 1:100
Notes
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L01
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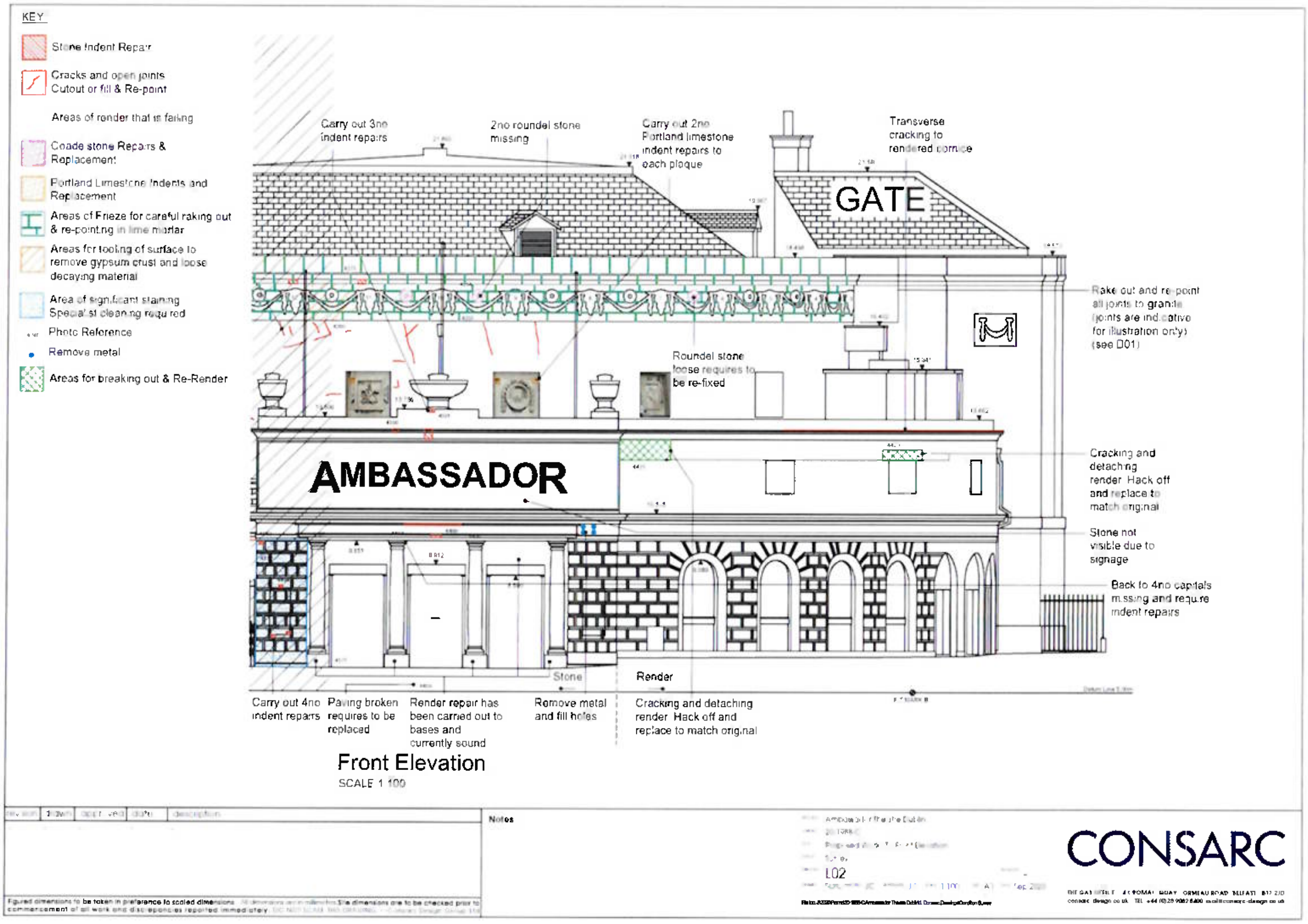
KEY
Stone Indent Repair
Cracks and open joints Cutout or fill & Re-point
Areas of render that is failing
Coade stone Repairs & Replacement
Portland Limestone Indents and Replacement
Areas of Frieze for careful raking out & re-pointing in lime mortar
Areas for tooling of surface to remove gypsum crust and loose decaying material
Area of significant staining Specialist cleaning required
Photo Reference
Remove metal
Areas for breaking out & Re-Render
Carry out 3no indent repairs
2no roundel stone missing
Carry out 2no Portland limestone indent repairs to each plaque
Transverse cracking to rendered cornice
GATE
Rake out and re-point all joints to granite (joints are indicative for illustration only) (see D01)
Roundel stone loose requires to be re-fixed
AMBASSADOR
Cracking and detaching render. Hack off and replace to match original
Stone not visible due to signage
Back to 4no capitals missing and require indent repairs
Stone
Render
Carry out 4no indent repairs
Paving broken requires to be replaced
Render repair has been carried out to bases and currently sound
Remove metal and fill holes
Cracking and detaching render. Hack off and replace to match original
Front Elevation
SCALE 1:100
Notes
L02
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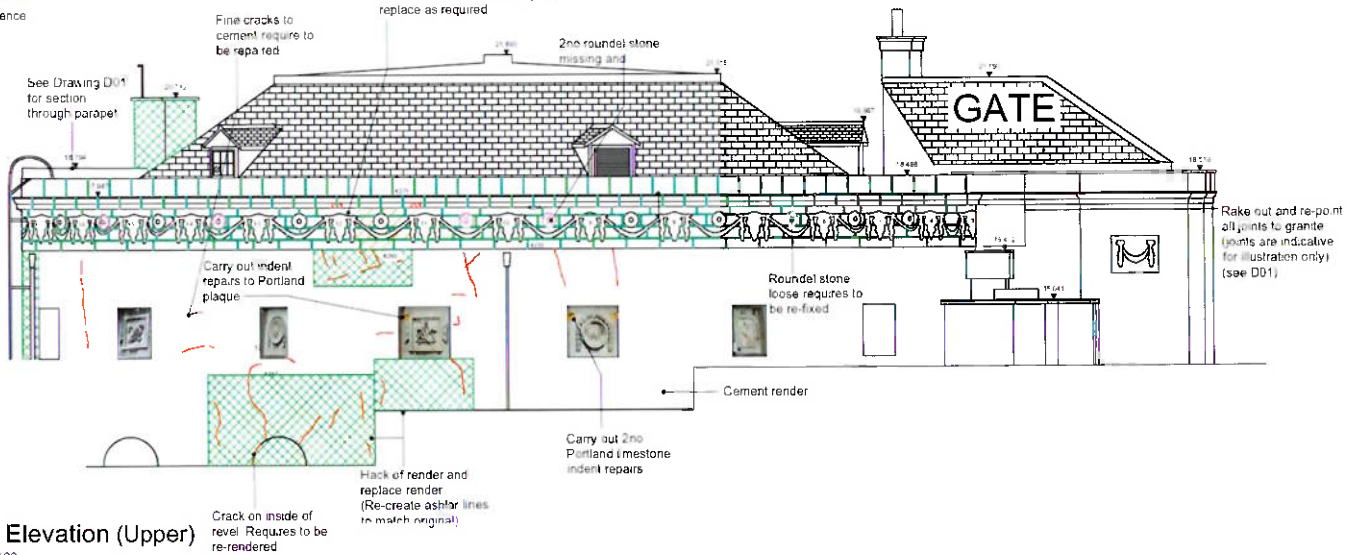
KEY

- Stone Indent Repair
- Cracks and open joints Cutout or f & Re-point
- Areas for breaking out & Re-Render
- Coade stone Repairs & Replacement
- Portland Limestone Indents and Replacement
- Areas of Frieze for careful raking out & re-pointing in lime mortar
- Areas for tooling of surface to remove gypsum crust and loose decaying material
- Photo Reference

Works to frieze
- Re-point all
- remove loose material by handtools
- Check all coade stone & repair / replace as required



Front Elevation (Upper)

SCALE 1:100

revision	drawn	date	description

Figured dimensions to be taken in preference to scaled dimensions. All dimensions are in millimetres. Site dimensions are to be checked prior to commencement of all work and discrepancies reported immediately.

Notes:

Architects | Theatre Dublin

L03

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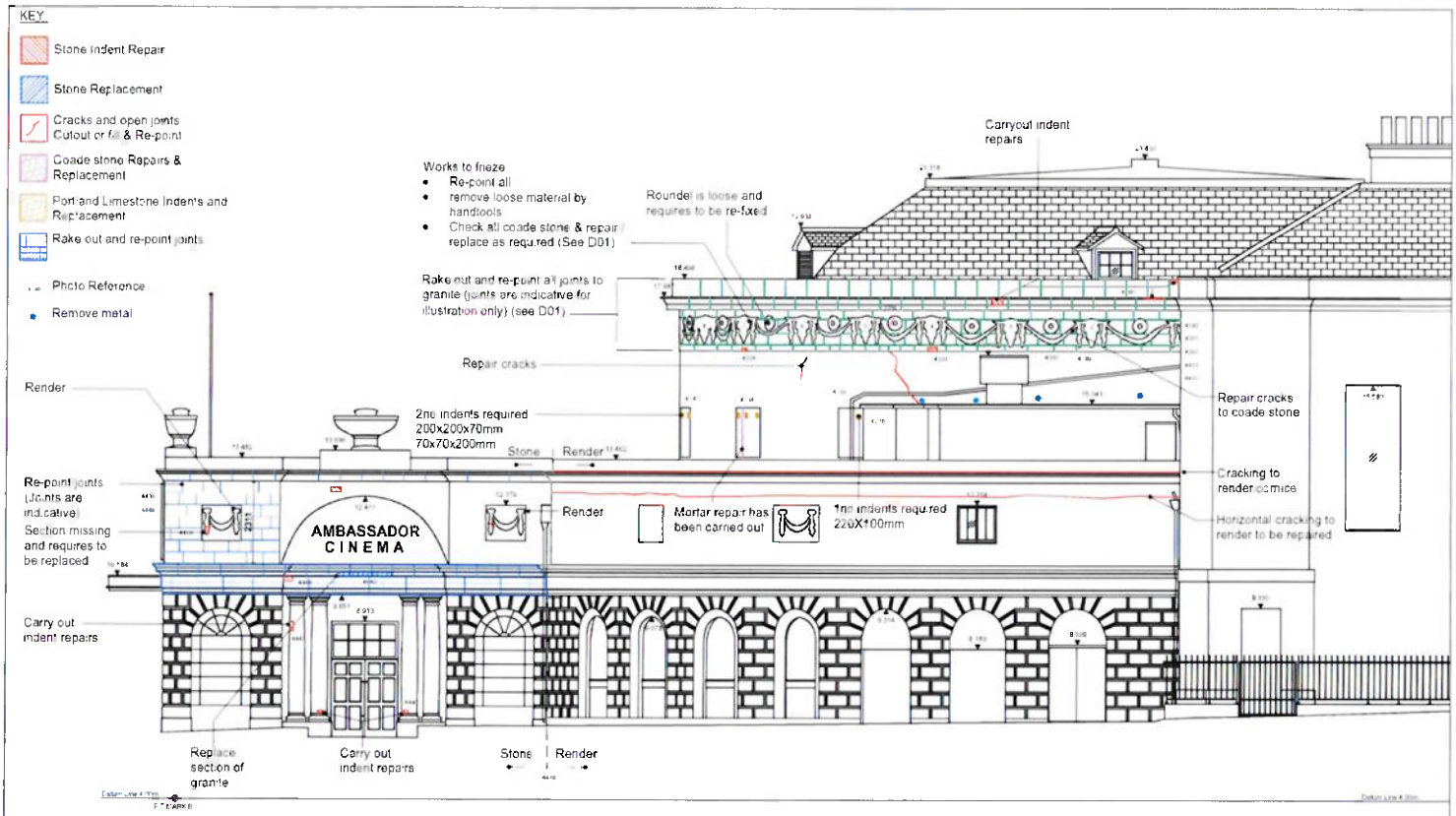

East Side Elevation

SCALE 1 100

Notes

L04

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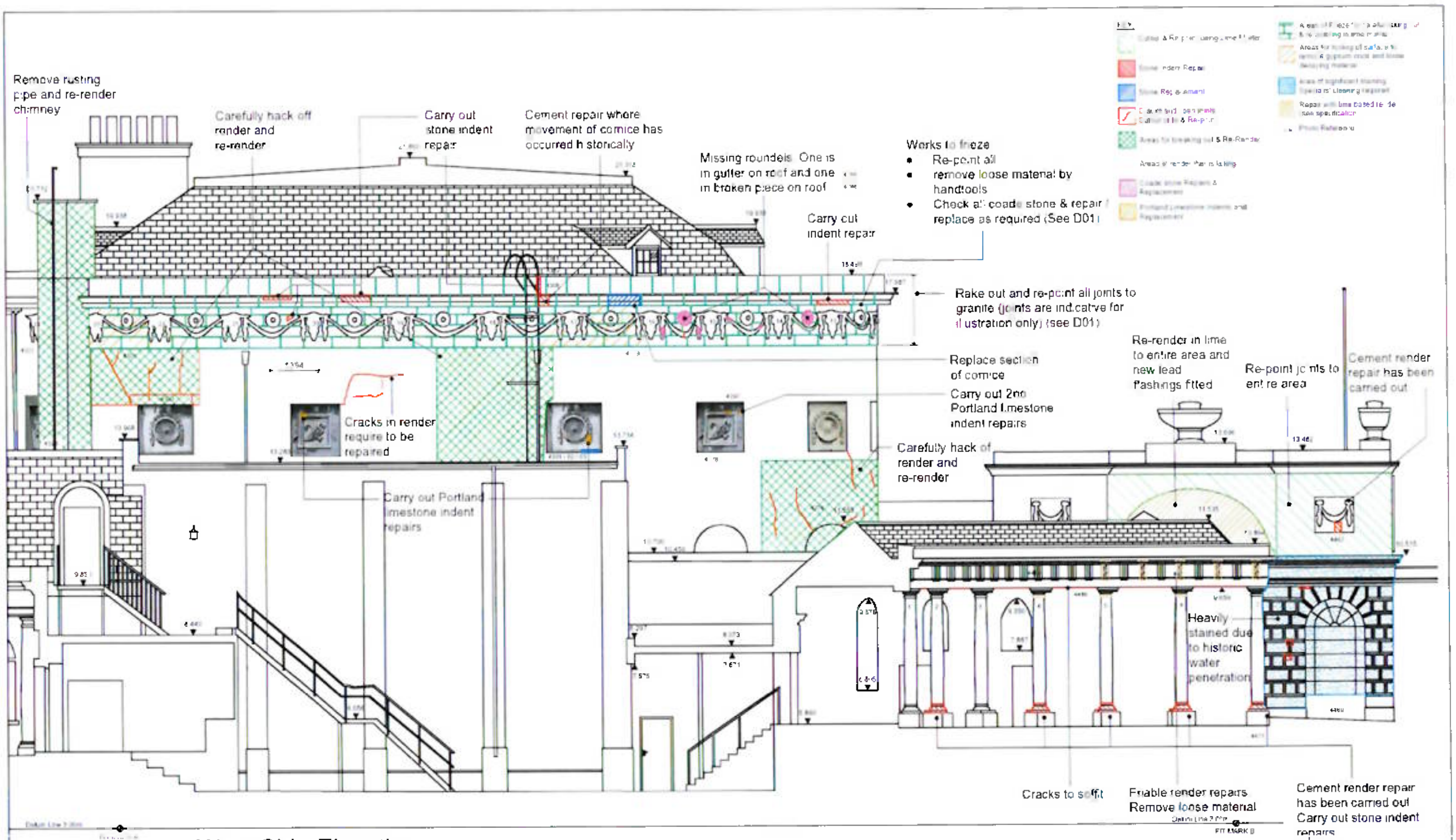

West Side Elevation

SCALE 1 100

revision	drawn	approved	date	description

Notes

Figured dimensions to be taken in preference to scaled dimensions. Site dimensions are to be checked prior to commencement of all work and discrepancies reported immediately.

Ambassador Theatre Dublin

Proposed Works to West Side Elevation

L05

Sep 2020

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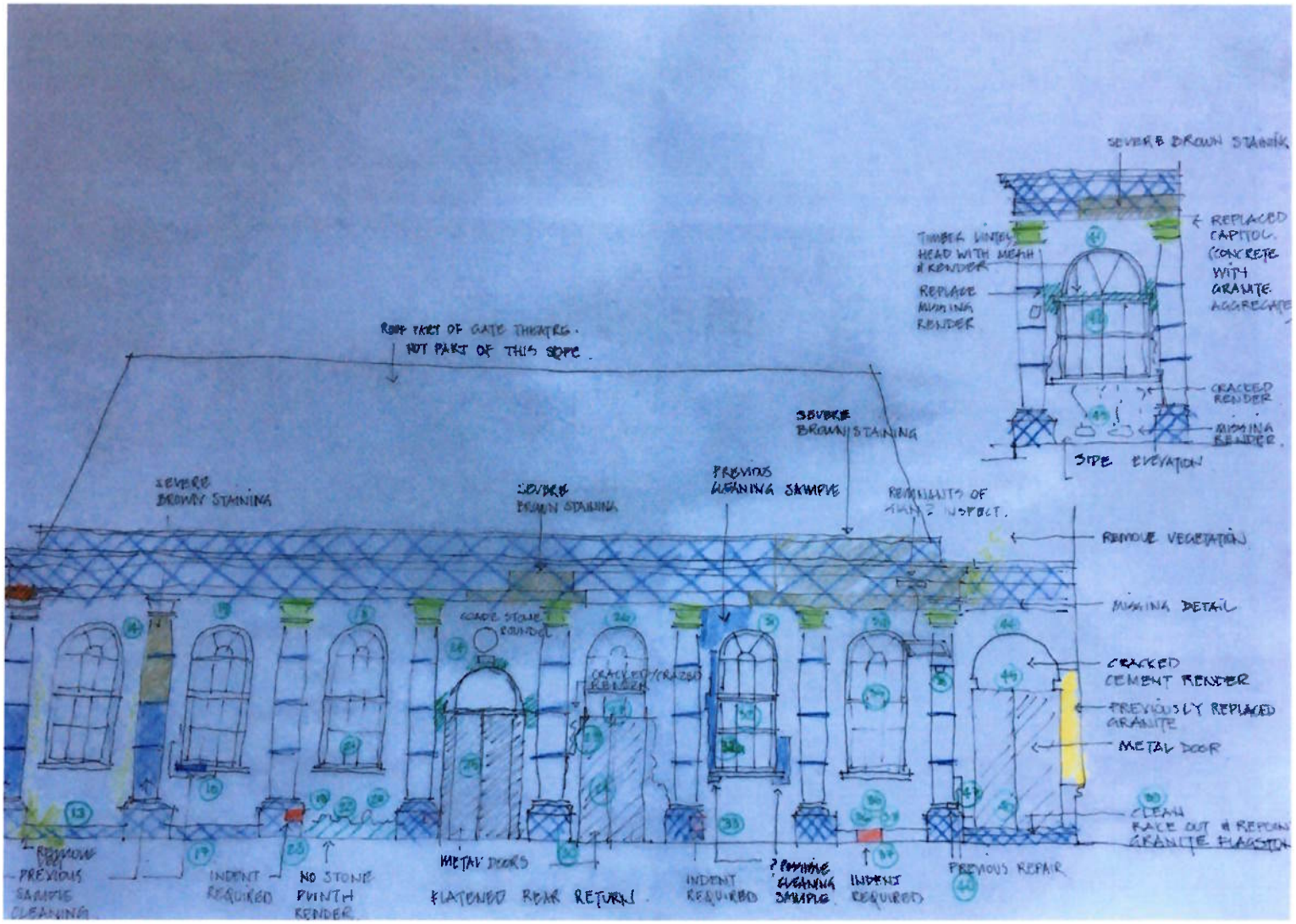
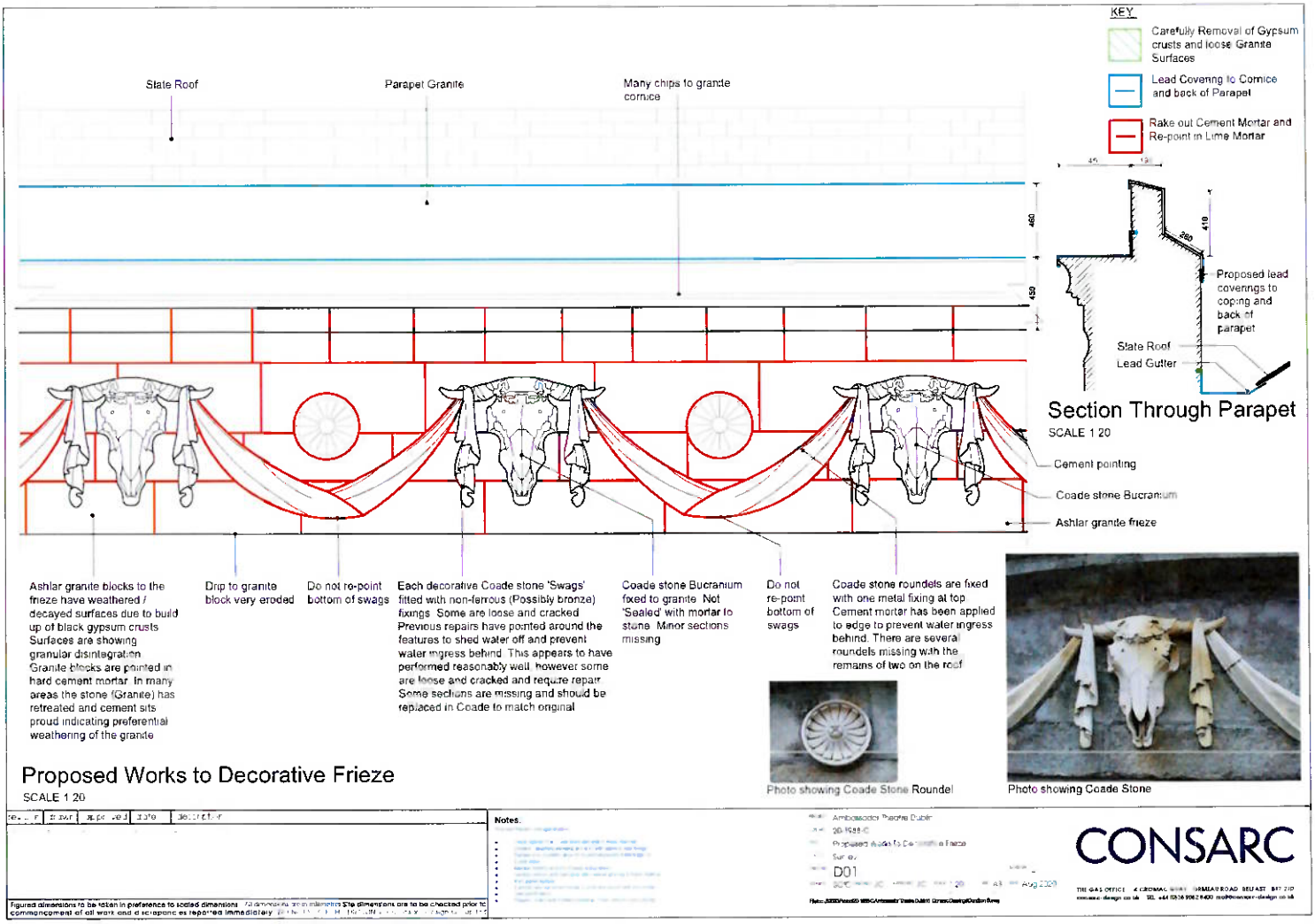

SEVERE BROWN STAINING
REPLACED CAPITOL. (CONCRETE WITH GRANITE AGGREGATE
TIMBER LINTEL HEAD WITH MESH & RENDER
REPLACE MISSING RENDER
ROOF PART OF GATE THEATRE. NOT PART OF THIS SCOPE.
SEVERE BROWN STAINING
CRACKED RENDER
MISSING RENDER
SIDE ELEVATION
SEVERE BROWN STAINING
SEVERE BROWN STAINING
PREVIOUS CLEANING SAMPLE
REMNANTS OF
REMOVE VEGETATION
MISSING DETAIL
GRADE STONE ROUNDEL
CRACKED/CRAZED RENDER
CRACKED CEMENT RENDER
PREVIOUSLY REPLACED GRANITE
METAL DOOR
CLEAN RAKE OUT & REPOINT GRANITE FLASHING
REMOVE PREVIOUS SAMPLE CLEANING
INDENT REQUIRED
NO STONE PLINTH RENDER
METAL DOORS
FLATENED REAR RETURN
INDENT REQUIRED
? REMOVE CLEANING SAMPLE
INDENT REQUIRED
PREVIOUS REPAIR


KEY
Carefully Removal of Gypsum crusts and loose Granite Surfaces
Lead Covering to Cornice and back of Parapet
Rake out Cement Mortar and Re-point in Lime Mortar
State Roof
Parapet Granite
Many chips to granite cornice
460
450
410
280
Proposed lead coverings to coping and back of parapet
State Roof
Lead Gutter
Section Through Parapet
SCALE 1 20
Cement pointing
Coade stone Bucranium
Ashlar grande frieze
Ashlar granite blocks to the frieze have weathered / decayed surfaces due to build up of black gypsum crusts Surfaces are showing granular disintegration Granite blocks are pointed in hard cement mortar. In many areas the stone (Granite) has retreated and cement sits proud indicating preferential weathering of the granite
Drip to granite block very eroded
Do not re-point bottom of swags
Each decorative Coade stone 'Swags' fitted with non-ferrous (Possibly bronze) fixings Some are loose and cracked Previous repairs have pointed around the features to shed water off and prevent water ingress behind This appears to have performed reasonably well however some are loose and cracked and require repair Some sections are missing and should be replaced in Coade to match original
Coade stone Bucranium fixed to granite Not 'Sealed' with mortar to stone Minor sections missing
Do not re-point bottom of swags
Coade stone roundels are fixed with one metal fixing at top Cement mortar has been applied to edge to prevent water ingress behind. There are several roundels missing with the remains of two on the roof
Photo showing Coade Stone Roundel
Photo showing Coade Stone
Proposed Works to Decorative Frieze
SCALE 1 20
Notes.
Ambassador Theatre Dublin
Proposed Works to Decorative Frieze
D01
CONSARC

CONSARC

CONSERVATION

APPENDIX B

SPECIFICATION

CONSARC
CONSERVATION

Specification for External Works

AMBASSADOR THEATRE, DUBLIN

SEPTEMBER 2021

CONSARC
CONSERVATION

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9.0 PAINT SYSTEM FOR ALL METALWORK

Consarc ref.		BC20-1988	
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Rev	A-	Author	JC

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1.0 INTRODUCTION

1.1 Ambassador Theatre is a building of national significance. This specification is for the repair works and takes into account the protected status of the building. The overall policy is to retain, restore and enhance the integrity and significance of the building in line with international charters and best practice. 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.

1.2 **KNOWLEDGE, SKILLS & TECHNIQUES**
The conservation works must employ all available knowledge, skills and disciplines. The history of the site has been thoroughly researched and findings fully reported.

1.3 **REPAIR**
The policy is to repair rather than replace. The policy of repair is to use matching traditional materials, details and methods. This applies to work to all fabric (roof, walls and windows), as illustrated on the drawings and outlined in the schedule of works. Where conservation work necessitates the replacement of part or whole of any element of the building fabric, this is to be recorded and surveyed and rebuilt to exactly match historic materials and detailing.

1.4 **MINIMUM INTERVENTION**
In considering the proposed works to the buildings, interventions have been kept to the least possible to ensure the impact upon the building's significance is kept to a minimum.

1.5 **COMPATIBILITY**
The selection of materials is compatible with the interior and exterior of the building. The proposed uses involve minimal impact on the significance and integrity of the building.

1.6 **SENSITIVITY & CAUTIOUS APPROACH**
Only as much work as is necessary, but as little as possible, has been proposed. The aim is to respect, retain or enhance evidence of the building's history and its significance.

1.7 **DIRECTION & SUPERVISION OF WORKS**
The principles established here must be taken on board by the contractor and fully implemented on site through the competent direction of people on site with an appropriate level of knowledge and skill. Consultants and contractors working on site will have expertise in conservation.

2.0 GENERAL

2.1 **PROTECTION, TEMPORARY SUPPORT & COVERINGS**
The Contractor is to provide for all the requisite shoring, needling and strutting to walls, floors and roofs to allow safe and proper execution of the works.
The interior of the building must be fully protected during all works.
The contractor must put in place measures to protect the interior of the building during all roofing works, stonework repairs and window refurbishment/replacement.

2.2 **TAKING 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.

2.3 **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.

2.4 **SETTING ASIDE**
Sound stone, bricks, slates and other original materials must be salvaged, cleaned and retained for setting aside.

2.5 **PROTECTION OF FITTINGS**
All windows, doors, fascias and other fittings shall be carefully set aside and stored, for re-use, and to enable exact replacements to be made.

2.6 **SALVAGED MATERIALS**
All stone, sound bricks, slates, quarry tiles, recovered during demolitions or building works are to be carefully salvaged, cleaned and retained for re-use as directed.

2.7 **REMOVAL OF RUBBISH & STRIPPING OUT**
All loose debris and accumulated rubbish etc, is to be removed from the site.

All defective timber is to be stripped out, removed and taken away, as determined on site by the Architect.

2.8 **RAINWATER**
Divert all rainwater pipes and all waste, soil or vent pipes to proper outfall points during the progress of the works.

2.9 **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 excavations and dangerous structures.

3.0 SITE

3.1 ACCESS

Access to the areas of work will be via a mobile hoist. There may be a requirement for scaffolding to part of the upper elevation, but this will be assessed further when works commence.

3.2 SECURITY

All ladders must, when the site is not being worked, have the first lift ladder removed and placed under lock and key. All loose ladders on the site must be similarly chained and locked or removed from the site.

3.3 FIRE PRECAUTIONS

'Hot Work' is prohibited on the site. Dispensation may be given in certain circumstances.

'Hot Work' is defined as 'All operations involving flame, hot air or arc welding and cutting equipment, brazing and soldering equipment, blowlamps, bitumen boilers and other equipment producing heat or having naked flames'.

Contractors should make themselves aware of the fire instructions and procedures to be followed in the event of a fire.

Contractors are to make themselves aware of the location of the nearest phone. In the event of fire dial 999, ask for the Fire Brigade.

The Contractor must ensure that all fire exits and access points for emergency equipment are kept clear at all times and that combustible materials are not left unused on site or adjacent to any building.
Suitable and sufficient adequately maintained fire extinguishers must be provided by the Contractor for use during building and associated work.

Smoking is not allowed at any time on or within the building.

Burning of rubbish is strictly prohibited. All rubbish must be removed from the site.
Burning off paint using blowlamps or electrical element burners is strictly prohibited.
Flammable materials must not be stored on site without prior arrangements with the Supervising Officer.

All excavations, when unattended, must be securely covered or protected by substantial barriers. The detail of barriers and lighting should be agreed with the Supervising Officer.
Excavations should be inspected by a competent person at the start of each day, and after any fall of rock or earth, or any event likely to have affected their strength or stability.

3.4 NOISE

The Contractor should comply with the Noise at Work Regulations 1989 (Noise at Work Regulations (NI) 1990).
Radios and other audio units will not be permitted.

3.5 ACCIDENTS

In the case of any accident or dangerous occurrence, the Contractor should notify the Supervising Officer and the Principal Contractor if appropriate, without delay.
The responsibility for statutory reporting of accidents and dangerous occurrences to the relevant enforcing to the relevant enforcing authority rests with the Contractor

3.6 **WELFARE FACILITIES & FIRST AID**

Arrangements for the use of hand washing facilities and lavatories must be made by the contractor. All facilities used must be kept clean at all times.

The Contractor is responsible for the provision of first aid cover and equipment for his employees.

3.7 **PLANT, TOOLS & EQUIPMENT**

The Contractor is to provide all labour, materials, plant, tools and transport for the proper execution of the works.

All plant, equipment and vehicles used by the Contractor should be in sound condition and properly maintained. They should be used in accordance with the manufacturer's instructions. Operators should be trained and competent.

All plant and equipment must be of suitable specification and the work, guarded to current safety standards and immobilised and secure when unattended.

3.8 **AREA OF WORK**

The contractor is to confine his activities to the smallest possible area of the site for the execution of the works and storage of materials, unless otherwise defined. Protection measures for the grass and areas of planting must be put into place.

The Contractor must maintain an adequate signposting warning system wherever there is a risk to any person.

No working in excess of normal working hours will be permitted unless specifically requested or by agreement with the client.

3.9 **SITE ACCESS & TIDINESS**

The Contractor must clear away all dust, dirt and other debris as it accrues or on a daily basis. Positioning of a skip, if necessary, must be agreed with the client.

Keep and leave the site clean and tidy at all times and on completion.

4.0 STONEWORK

4.1 **GENERALLY**
Where required stone repair, replacement, re-dressing and repointing are to be carried out to the highest possible standard by qualified and experienced stonemasons (minimum NVQ Level 3 Stone Masonry) and shall conform to BS CP 121.201 1951 and BS 5390: 1976.

4.2 **CUTTING OUT OF DEFECTIVE STONE**
Sections of defective stone or stone repaired with cement render are to be cut out and left or replaced with natural stone. Defective stones shall be cut back to a sound surface; minimum depth 100mm. Cutting out is to be carried out with the utmost care to avoid damage to surrounding stone – USING HAND TOOLS ONLY. Any such damage shall be repaired to the Architect's satisfaction by the Contractor. Removal of defective stonework 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 stone indents are set in. Small indents in the middle of large stones shall have tight butt joints with joints to match surrounding stonework following original coursing lines.

4.3 **REMOVAL OF METAL CRAMPS (IF REQUIRED)**
It is expected that the repair work will include the removal of corroded iron cramps or any other redundant imbedded metal for the larger sections of stone. The exact detail of work will be determined on site. Cut out all old cramps and repair stone with new stainless steel cramps as required.

4.4 **STONE REPLACEMENT**
The stone to be replaced is as noted on the drawings and these are intended as 'Intent only'.

The replacement of each stone or part thereof is to be confirmed on site with the Architect/Clerk of Works, once scaffolding in place and prior to any cutting out or ordering.

4.5 **STONE FINISH**
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 carved 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.

4.6 **NEW STONE -**
New stone to be Ballyknockan Granite
C. McEvoy & Sons Ltd.
The Brook, Ballyknockan,
Blessington, Co. Wicklow or equal and approved by Conservation Architect

Portland Limestone – Whitbed or equal and approved by Conservation Architect
Albion Stone plc
Robert Denholm House,
Bletchingley Road,
Nutfield, Surrey,
RH1 4HW, England
Tel: 01737 771772
Email: **enquiries@albionstone.com**

4.7 **STONE FIXING – LARGE STONES & SECTIONS OF PARAPET CORNICE ONLY**

New stones (or existing coping stones to battlements that are loose) are to be fixed in position using austenitic stainless steel cramps grouted into sinkings in the stonework, or 6mm, 12mm diameter austenitic stainless steel threaded dowels bedded into the stonework with approved resin grout such as Akemi.

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.

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.

The bedding joints between new stones are to be 2 - 3mm to match the original. The bedding mortar will be Lime. No plastic packers or open voids are to be left between joints. It is essential that all voids are back filled with rubble stone and lime mortar prior to fitting of new stone.

Any new work shall be properly tied into existing walls.

4.8 **STONE INDENTS**

9.8.1 Where it is not necessary to replace the entire stone a section of stone should be cut out with new stone pieced in or indented as noted on the drawings. Small indents in the middle of large stones shall have tight butt joints with joints to match surrounding stones following original coursing lines.
All new stone should precisely fit the newly formed cavity.

5.0 COADE STONE

5.1 All Coade Stone elements of the Bucrania Frieze are to be inspected prior to work commencing to check the stability of fixings for each piece.

5.2 Coade Stone consists of ball clay with 5-10% ground flint, 5-10% quartz sand and about 10% soda-lime-silica glass that acted as a vitrifying agent. The mixture is fired at about 1,000°C to produce a vitrified material of exceptional durability. **This recipe is to be replicated accurately to manufacture missing elements.**

5.3 The client is in possession of moulds for the Coade Stone elements and these are to be used to reproduce the missing elements. When taking mould, it must be taken into account that the material shrinks by approximately 8-10% during the firing process.

6.0 MORTARS AND RENDERS

6.1 INTRODUCTION

There are 3 types of render repair:

- Removal and re-application of the lime render to the blind arch of the return elevation is to be carried out in lime mortar.
- Patch render to the old cement render of the Rotunda Theatre below the decorative frieze.
- Patch repairs to the rendered elevation between the Ambassasor Cinema entrance and the Gate Theatre.

The works are to be carried out by companies with experience and expertise and a proven track record in the application of lime render and render to historic buildings.

6.2 HYDRAULIC LIME MORTAR

Hydraulic Lime mortar (NHL 3.5) is to be used for building and repointing stonework.
Hydraulic Lime should not be confused with hydrated lime, which is not an acceptable alternative.

Hydraulic Lime mortar shall be from one of the following sources: -

St Astier Hydraulic Lime

or

Otterbein Naturally Hydraulic Lime or equal and approved by conservation architect.

Bedding mortar for stonework should be with Naturally Hydraulic Lime (NHL) mortar: NHL 3.5 with the mix proportions: 1 Lime : 2.5 Sand

6.3 DELIVERY AND SITE STORAGE OF 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 line 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.

6.4 SAND

Sand should be clean, sharp and washed and comply with BS 1200 and BS882.
Sand should be obtained from an approved source and well graded down from 4mm to 0.075mm particle size with no one sieve retaining more than 35% of the total mass of the aggregate.

A coarse grit (4-10mm) can be added if large particle size is needed for work to wide joints of the Aggregate grading is dependent on the width of the joints to the stonework and this is to be approved by 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 colours.
Sand samples should be approved by the Architect.

6.5 **GAUGING**

Hydraulic lime for pointing mortar can be 'gauged' with additives for colour and/or to improve hydraulicity. Sample panels of gauged mortars are to be carried out at the beginning of the project.

6.6 **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 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.

6.7 **GENERAL NOTES ON MIXING OF LIME MORTAR**

A drum mixer can be used and will provide adequate mixing. Water must be clean and free from organic matter - tap water is recommended. Depending on the consistency of the mix, approximately 4-5 litres of water are required for each 25kg bag of dry material. Following trials on site to establish workability and colour, record water addition and maintain throughout the mixing period. Measure dosage of water per 25kg bag.

6.8 **DRUM MIXER**

Switch the mixer on and dampen down the inside of the drum before emptying the contents of the bag, as this will help to reduce the amount of airborne dust. Once the inside of the drum is coated with a film of water, switch the mixer off and empty the contents of the Hydraulic Lime Mortar 25 kg bag into the drum. Add a proportion of the water (approximately 50%) to the dry mix and switch the mixer on. Allow the water to thoroughly disperse through the mix before more water is added.

Note: The lime, which is in a powdered form absorbs water. It will momentarily hold more water than it can cope with; this is then released which can result in a saturated or sloppy mix. Through controlling the amount of water that is added, allowing it to thoroughly disperse and keeping the mix slightly lean, the chances of the mortar becoming sloppy and unworkable are greatly reduced.
Continue to add water in this way, allowing all of the water to combine before adding more.
When the mix is slightly lean of the required consistency (or once you have added 90% of the water) leave
The mortar to turn over in the drum for 5-10 minutes.
Before the mixing period has expired, add the remaining 10% or enough water to get the mix to the desired consistency.

To check that the lime is of the right consistency, put a small quantity of lime onto the back of a trowel and tap it gently (allowing the mortar to evenly spread across the face of the trowel). Then, holding the trowel steady turn it upside down – the mortar should remain stuck to the trowel and not fall off.

6.9 **IMPROVING THE PROPERTIES OF THE MIX AND RE -WORKING**

The workability of Hydraulic Lime Mortars can be improved by allowing the mortar to stand after the initial mixing period and then re -working the mix just prior to when the mortar is required. Once the mortar has been thoroughly mixed to the desired consistency, empty the contents into a mortar tub or barrow and cover with a damp hessian or polythene sheet. This will help to control the evaporation of water from the mix.

The mortar can be left like this for up to a period of time (contractor to follow manufacturer's guidance) in normal weather conditions.

6.10 **REPOINTING OF JOINTS** (for stonework)

Raking out to joints shall be by hand and all work with power tools is to be specifically approved by the Architect before work commences.

Joints are to be flushed out with clean water and left damp before pointing.
For narrow joints between quoin stones etc., pointing is to be inserted and tightly pressed home into the joints between two layers of butter paper withdrawn as the joints are filled, and neatly finished, slightly recessed from the face due to erosion of arris.
Where very wide joints occur, a 2-4mm aggregate may be introduced to the pointing mix to prevent cracking on these wide joints. As a general rule, the largest size aggregate should be approximately one third the width of the joint.
Joints in new or repointed stonework are to be finished with a brushed finish without covering the edges of individual stones. A sample area of at least 2.0 m^2 is to be prepared for the approval of the Architect before work proceeds.

Pointing of joints can be carried out using the hydraulic lime mortar specified above.

Stonework – finish to be flush and brushed with a hard churn brush to exposed the aggregate.

6.11 **CONDITIONS FOR REPOINTING, TENDING AND PROTECTION OF LIME MORTAR ONCE PLACED OR APPLIED**

Protection of mortar is extremely important to ensure the proper curing. The length of time for protection depends on the weather conditions at the time of working. The stonemason should be prepared to have a dual layer protection layer of polythene (not touching the mortar) and multiple layers (at least 3) of hessian or thick woollen blankets (against the mortar) in place for **at least 3 months (and up to 6 months)** and make provision to tend the mortar every week while protection is still in place and for 2-3 visits thereafter as required during this period.

Do not use lime mortar 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.

Late autumn, early spring & winter working

Freeze Thaw Action: If there is a danger of freezing of fresh or uncured mortar, close covering with Hessian or polythene sheeting and if necessary additional heating should be provided. Polythene should not come in contact with fresh render.

Note: Cold or strong winds with low air temperature will produce wind chill effects that will significantly reduce the surface temperature of fresh mortar.
During daylight hours, if warming winter sun occurs, covers should be lifted off to allow heat to be absorbed and then replaced in late afternoon.

Summer working

Strong and direct sun can cause rapid drying and shrinkage. This effect could be exacerbated in the presence of warm wind. It is also recommended that, in warm weather and active drying conditions, the render is cured with light water mist 2 or 3 times a day to slow down any potential drying effect.

6.12 **LIME RENDER**

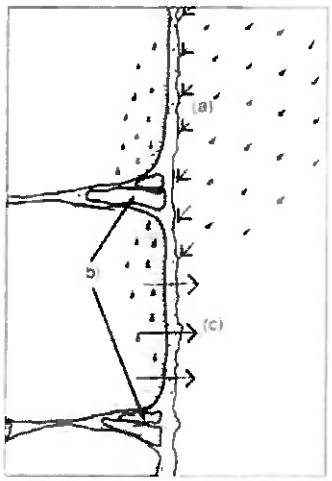
The survey indicated defective lime and cement render to the West (Terrace) elevation – especially at low level and the elevations of all the chimneys on the roof. Defective render is to be carefully removed and hydraulic lime render to be re-applied.

Generally

External lime coatings should normally be applied in relatively thin layers and should be regarded only as the final protective coating. Where deep hollows in the wall face require filling out, this should be done by packing out the mortar with small pieces of stone or other material as described below. The coating itself should not be 'dubbed-out' in large masses in the way that a modern cement 'dubbing-out coat' is conventionally applied, since this would result in

uneven thicknesses of the material, which would compromise carbonation and curing and would be subject to shrinkage cracking.

Detailed consideration of the nature of the masonry and the building character and context will be required for each individual case, to determine the extent of preparation that is appropriate prior to applying the thrown or float applied finishing coats.



Pinning stones in joints to create an even surface for lime harling

Preparation of External Walls

Any hollow or decayed render should be removed, and any loose pointing should be raked out and replaced prior to application.

Brush the wall to remove loose material but do not rake out pointing to provide a key. Do <u>not</u> use wire mesh or metal lath to form a key or plastering beads on corners.

Wet walls thoroughly with a backpack sprayer. More porous substrates will require more water. Allow water to soak into the wall and then spray again. When render is applied the wall should be damp but without water glistening on the surface.

Use a three coat build-up of lime render in the following sequence:

A scud coat (1:2) lime to binder using NHL 3.5. (3-5 mm thick)

A scratch coat (1:2.5) lime to binder using NHL 3.5.
To be applied the following day or when the previous coat has firmed up sufficiently to resist indentation with a thumb. (9-12mm thick)

Finish coat. (1:3) lime to binder using NHL 2.
Surface finish to be a thrown coat with aggregate to match the original harling (6-10mm thick)

Apply coats in thin layers.

Lime render must be applied/thrown using as much pressure as possible to force the render into the surface to form a close contact between render and backing. The application technique is to be approved by the architect.

Create a key for subsequent coats.

Always ensure that the previous coat is damp before applying the next one.

Work must be protected to prevent rapid drying. Hydraulic lime render must be kept slightly damp but also allowing air to circulate. Therefore, if using polythene, there should be a gap between the sheeting and the wall.

6.13 Cement-based Render

There are TWO types of cement render to be repaired:

- Rotunda Theatre – cement based render typical of turn of century
- Rendered Façade between Cinema and Gate Theatre – cement based render with added mica.

Both have ASHLAR LINES which must be replicated.

Sample of both renders to be prepared and agreed with architect (1m2).

Generally,

Preparation of External Walls

- For stone and brick any hollow or decayed render should be hacked off and any loose pointing should be raked out and replaced prior to rendering.

- Brush the wall to remove loose material but do not rake out pointing to provide a key. Do not use wire mesh or metal lath to form a key.

- Fill voids and deeply recessed joints so that they are level with the surrounding background. Treat junctions between different surfaces in accordance with the recommendations of BS 5262.

- Wet walls thoroughly with a backpack sprayer. More porous substrates will require more water. Allow water to soak into the wall and then spray again. When render is applied the wall should be damp but without water glistening on the surface.

- For external work at least two coats shall be used. The first undercoat should not be stronger than the substrate material and each succeeding coat should not be strong that the coat before it.

Cement Use ordinary Portland cement to BS 12 or sulphate resisting cement to BS 4027.

Sand Use sharp washed natural sand free from silt, clay and dust or excessive amounts of limestone. The sand should be graded to comply with BS 1199: 1976 table 1, Grade A or BS882: 1983 Table 5, Grade M.

Lime BS EN 459-1: 2000 (UK) and IS 8: 1973 (Ireland).
Admixtures BS EN 934-2: 2001.

1st Coat Use 1 cement : 1/2 lime : 4 to 41/2 sand by volume. Measurements should be made using a gauging box. Mix to produce a workable mix.
Thickness shall not exceed 10mm.
2nd Coat 1 cement :1 lime : 6 sand by volume. The second coat should be applied after the 1st coat has set. Thickness 6-8 mm
Finish Coat 1 cement : 2 lime : 8 to 9 sand by volume. Thickness shall not exceed 3-5 mm. Lightly finish with a wooden float. Avoid over-working. Allow to set.

7.0 CLEANING OF FAÇADES

7.1 INTRODUCTION

This specification is to achieve a 'gentle clean' that removes harmful biological growth and some pollution build up on the granite facade.

This is to be Thomann-Hanry Façade 'Gommage' System of low pressure system using 20-50 microns aluminium silicate powder ay 4 bar pressure using a 6mm nozzle (or equal and approved).

All works to be carried out by qualified by personnel and as per the manufacturer's instructions.

Samples of cleaning of stonework to be carried out by specialist contractors.
Sample panels must be approved by Architect/Clerk of Works before works commence.

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.

7.4 WORKMANSHIP

Prior to commencement of the stone 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. $2m^2$) to be selected by the Architect.

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

Any large open joints in the stonework are to be protected from water ingress during cleaning operations.

All window and door openings to be protected from water and chemical ingress.

7.5 PROTECTION OF THE BUILDING DURING CLEANING WORKS

Prior to any cleaning operations the Contractor shall allow for adequate protection to surrounding surfaces, and in particular:

Allow for removal of powder residue with adequate protection, including sand backs etc., to prevent slurry/dust damaging hard surface areas.

Allow for the protection of all gullies and drains so as to allow for the passage non-polluted water but prevent entry of stone / brick slurry, poultice residue, chemical run-off or like into drain system.

The public and other site workers to be protected from overspray etc. at all times.

8.0 REPAIR MORTAR (LIME-BASED) FOR STONE REPAIR

8.1 Where the repair is too small for an indent, a specially formulated mortar based repair may be used as specified by the Architect.

These repairs are restricted to areas of less than 50mm x 50mm x 25mm deep and only where there would be an undesirable loss of original stone if a stone indent was to be used or to provide a weathering to shed water. The likely areas of use are for minor repairs to carved stone details to prevent future water ingress and deterioration. In general stone indents are to be carried out for areas larger or deeper than 50mm x 50mm x 25mm.

This is to be a formulation based on Natural Hydraulic Lime and aggregates for the repair of stone detail that is shaped to match existing. The repair mortar must have high vapour permeability, low modulus of elasticity, excellent bond characteristics and achieve early freeze thaw resistance. The repair mortar must match the original stone

The repair mortar must be applied at minimum thickness of 5mm. (Not including projecting work)

Shaping and forming of details, corners to be carried out with the edge of a trowel or steel float and carved details with small tools as the work proceeds or using chisels once the material is fully hardened.
Fine polished finishes are to be achieved either by troweling after initial set has begun or by fine carborundum paper after the material is sufficiently hard.

The repair mortar to be a lime-based mortar repair to be approved by conservation architect

8.2 **REPAIR GROUTS**
If required as instructed by Architect, repair grouts are to be Hydraulic Lime based grouts such as Telling Unilit or other approved, may be used for gravity or pressure grouting of voided areas.

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

9.0 PAINT SYSTEM FOR ALL METALWORK (Gates and Railings)

9.1 **PRIMING**
Prime all bare metal with 2 coats of Dulux Trade Metalshield Zinc Phosphate Primer (or equal and approved) applied to give a minimum wet film thickness of 115 microns giving a minimum dry film thickness of 50 microns.

9.2 **BASE COAT**
Apply one coat of a Micaceous Iron Oxide (MIO) coating

9.3 **FINISHING SYSTEM**
2 coats of Dulux Trade Metalshield Gloss (or equal and approved) each applied to give a minimum wet film thickness of 80 microns per coat, giving a minimum dry film thickness of 40 microns per coat.
The top coat to the elements to be applied after they have been reinstalled.

ALTERNATIVELY,
Oil based single pack system comprising of a prime coat (to hand prepared rusted steel) of Rustoleoum 769 damp proof red primer followed by a topcoat Rustoleum 7500 Alkythane top coat (2 coat system) range. Supplied by Andrews Coatings or equal and approved.

9.4 **RELEVANT CODE OF PRACTICE**
Care and attention must be employed when using the systems and the relevant British Code of Practice must also be complied with. BS 6150: 2006 Code of Practice for Painting of Buildings (or as amended) and BS EN ISO 12944: 1998 Paints and Varnishes - Corrosion Protection of Steel Structures by Protective Paint Systems (or as amended).

9.5 **CONDITIONS SUITABLE/UNSUITABLE FOR PAINTING**
Most coatings are dependent on the evaporation of the solvent or thinner at the initial drying stage. High or Low Temperature and/or High Humidity will affect coating application and can permanently affect the coatings performance. It is therefore recommended that application is not carried out when the temperature falls below 5 degrees Celsius (Solvent borne) or 8 degrees Celsius (Water borne) or when the relative humidity exceeds 80%. Consideration must also be taken regarding the temperature of the surface to which the coating is to be applied. Refer to BS 6150: 2006 Code of Practice for Painting of Buildings (or as amended) for further guidance.

9.6 **WORKMANSHIP - GENERALLY**
No priming coats shall be applied until all surfaces have been inspected and the preparatory work has been approved by the Architect. All coats of new paint shall be thoroughly dry before application of any subsequent coat.

All work shall be thoroughly rubbed down between each coat and stopped or faced up as necessary. For timber where access is difficult after fixing shall be painted before placing. No paint, varnish or wood preservative shall be applied to external work during foggy, frosty or inclement weather, nor to any surface on which there is moisture.

Work shall not proceed in a dusty atmosphere and the contractor must clean up all paint splashes from walls and glass and clean away as the work proceeds. All coats of new paint shall be thoroughly dry before the application of any subsequent coat. All work shall be thoroughly rubbed down between each coat and stopped or faced up as necessary.

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APPENDIX C

PHOTOGRAPHIC RECORD

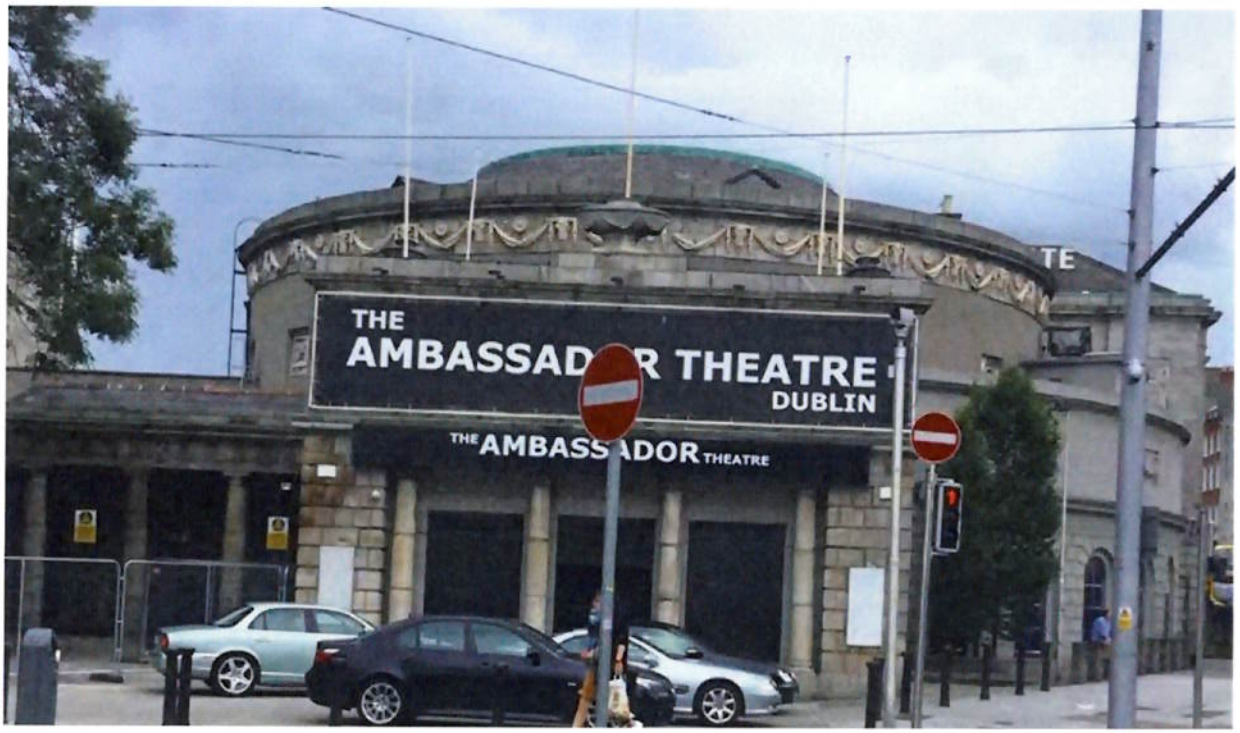

Figure 1. External Elevation of the Ambassador Cinema.

Figure 2. External Elevation of the Ambassador Cinema.

Figure 3. External Elevation of the Ambassador Cinema.

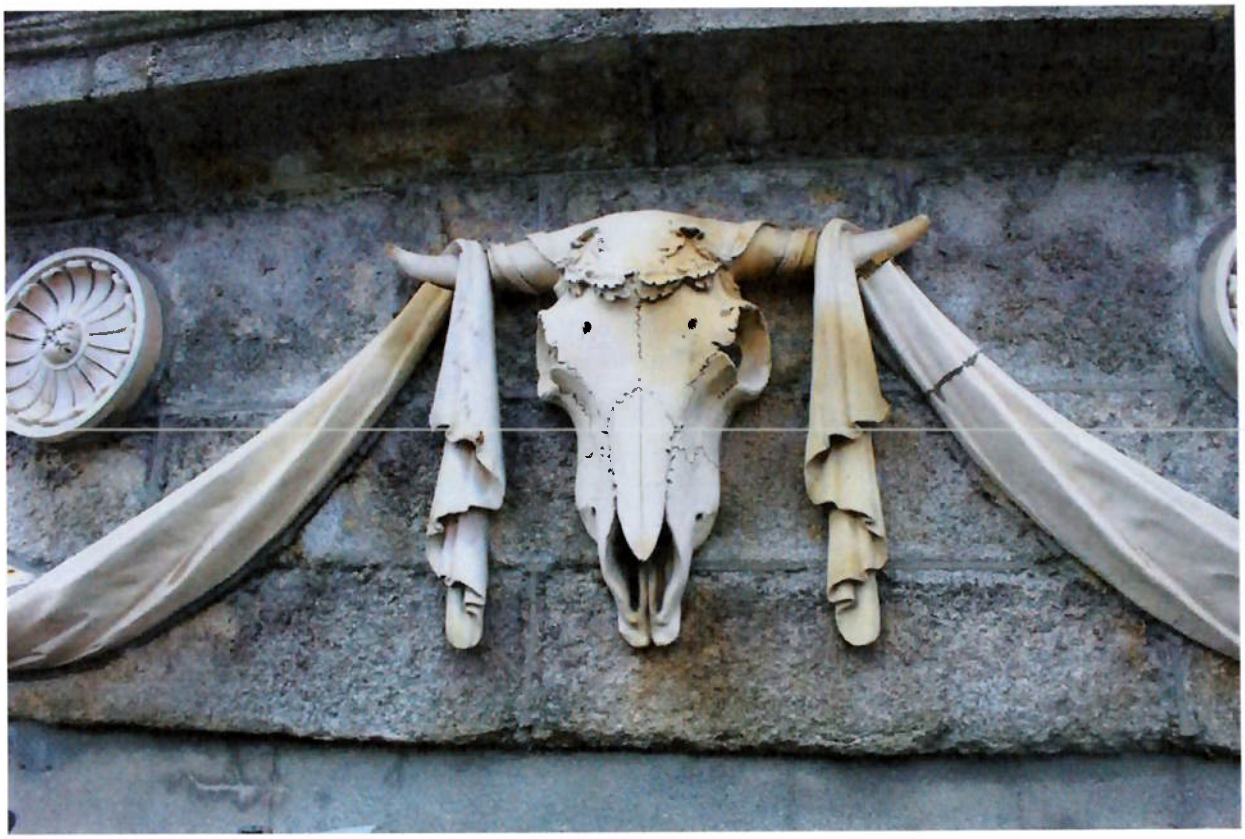

Figure 4. Coade Stone decorative frieze to the rotunda theatre.

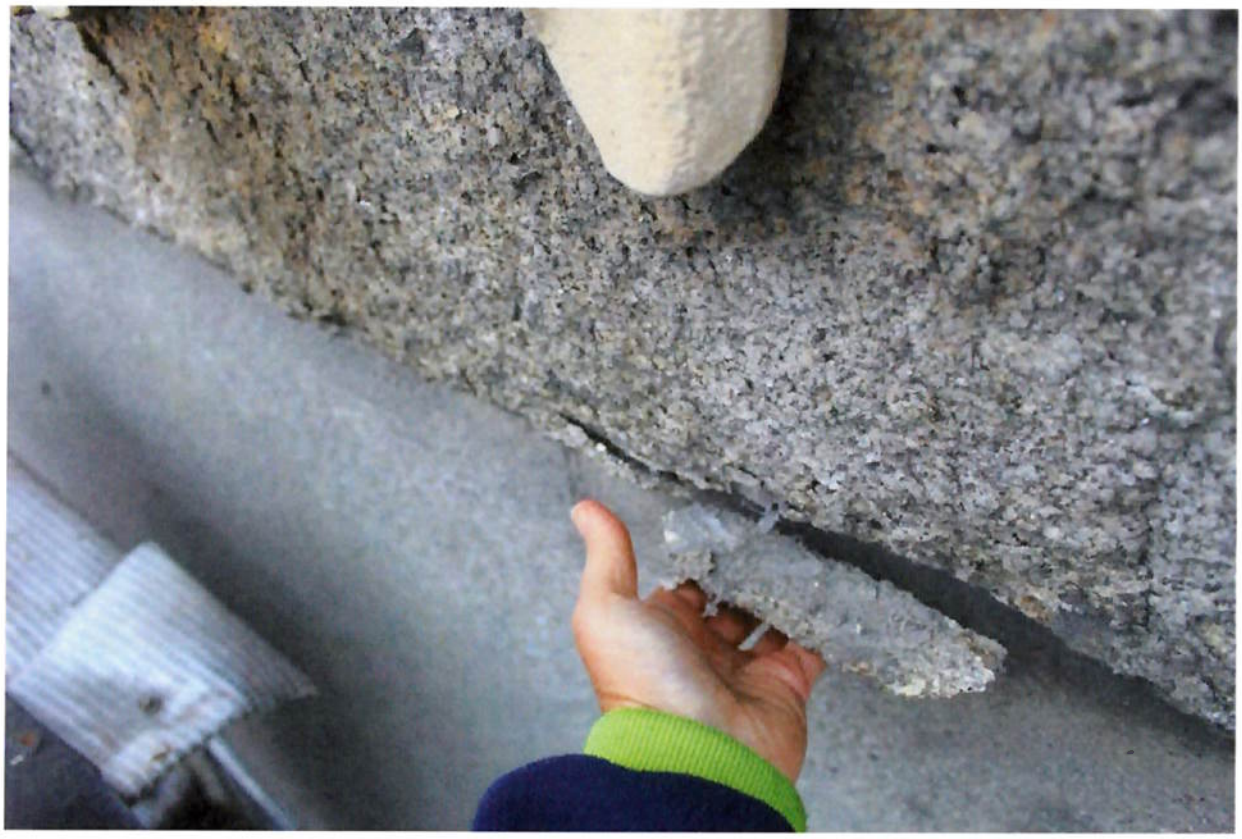

Figure 5. Detaching sections of the ashlar granite to the frieze.

Figure 6. Replaced 'new' Coade Stone elements.

Figure 7. Elevation view of the rotunda theatre building.

Figure 8. Deteriorated section of granite cornice.

Figure 9. Inner parapet of the rotunda theatre building.

Figure 10. Defective render to chimney.

Figure 11. Defective render at roof level.

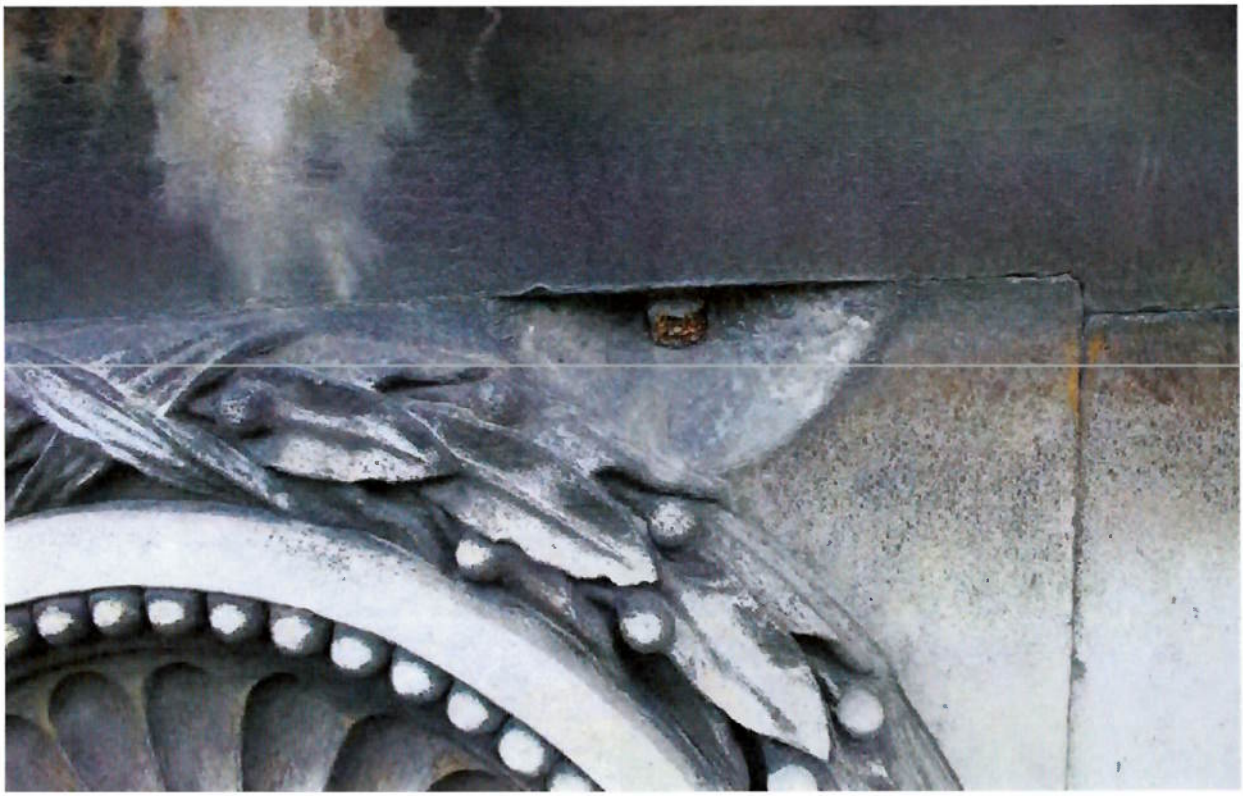

Figure 12. Corrosion of fixings causing stone damage.

Figure 13. Corrosion of fixings causing stone damage to Portland limestone panels.

Figure 14. Front Elevation.

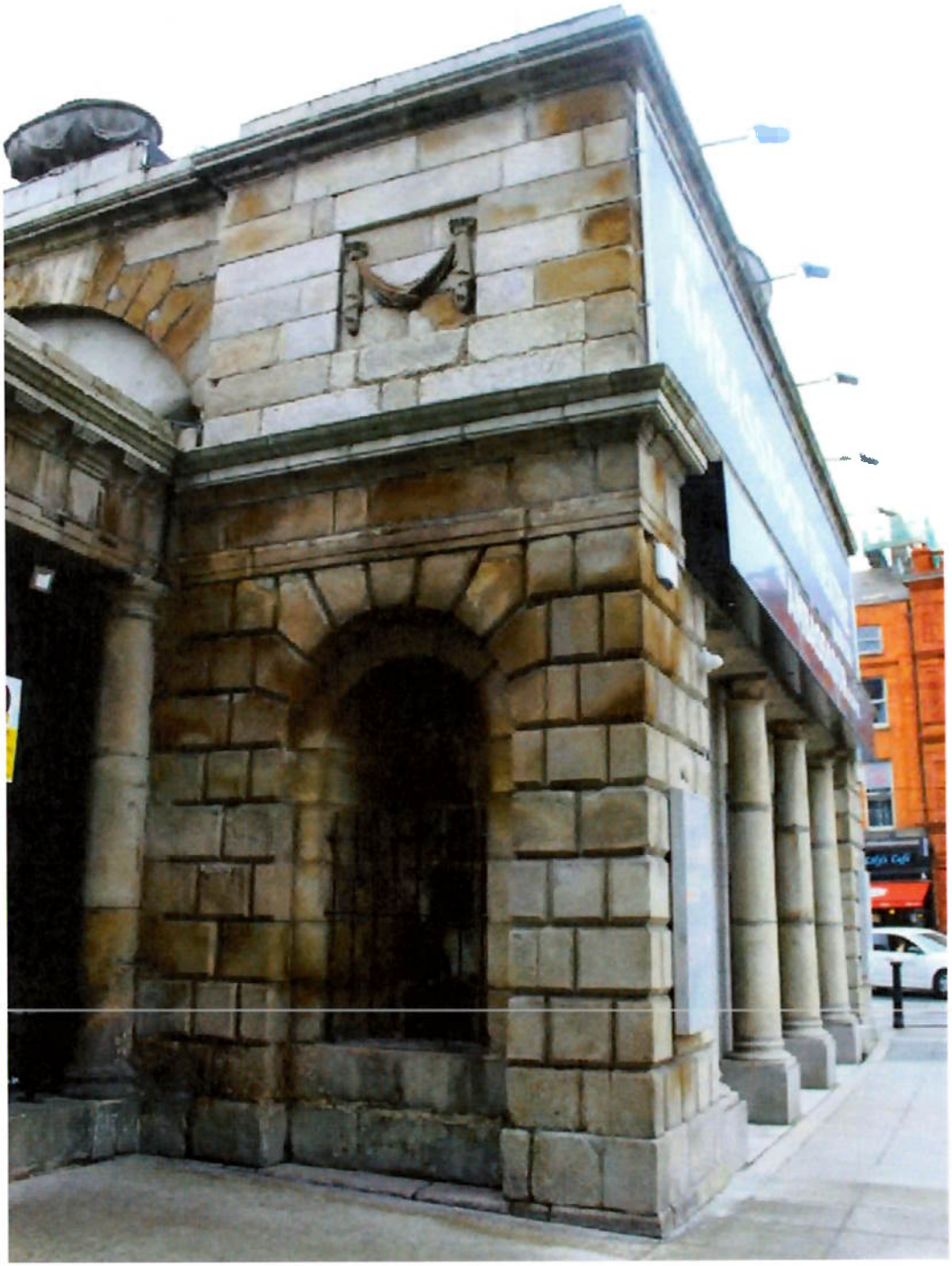

Figure 15. Return wall to front elevation.

Figure 16. Upper level of the return elevation.

Figure 17. Defective render and flashing allowing water ingress.

Figure 18. Arcade link to the Rotunda Hospital with the Rotunda Theatre building behind. Left had side was subject to a cleaning trial by Thomann Hannery. This method is too severe and there is evidence of loss of fabric, which in turn will accelerate further deterioration of the granite.

Figure 19. View of upper cornice to the arcade.

Figure 20. Cracks to the granite soffit that may be historic.

Figure 21. Deteriorating render repairs to column bases.

Figure 22. View of East elevation both granite and rendered facades.

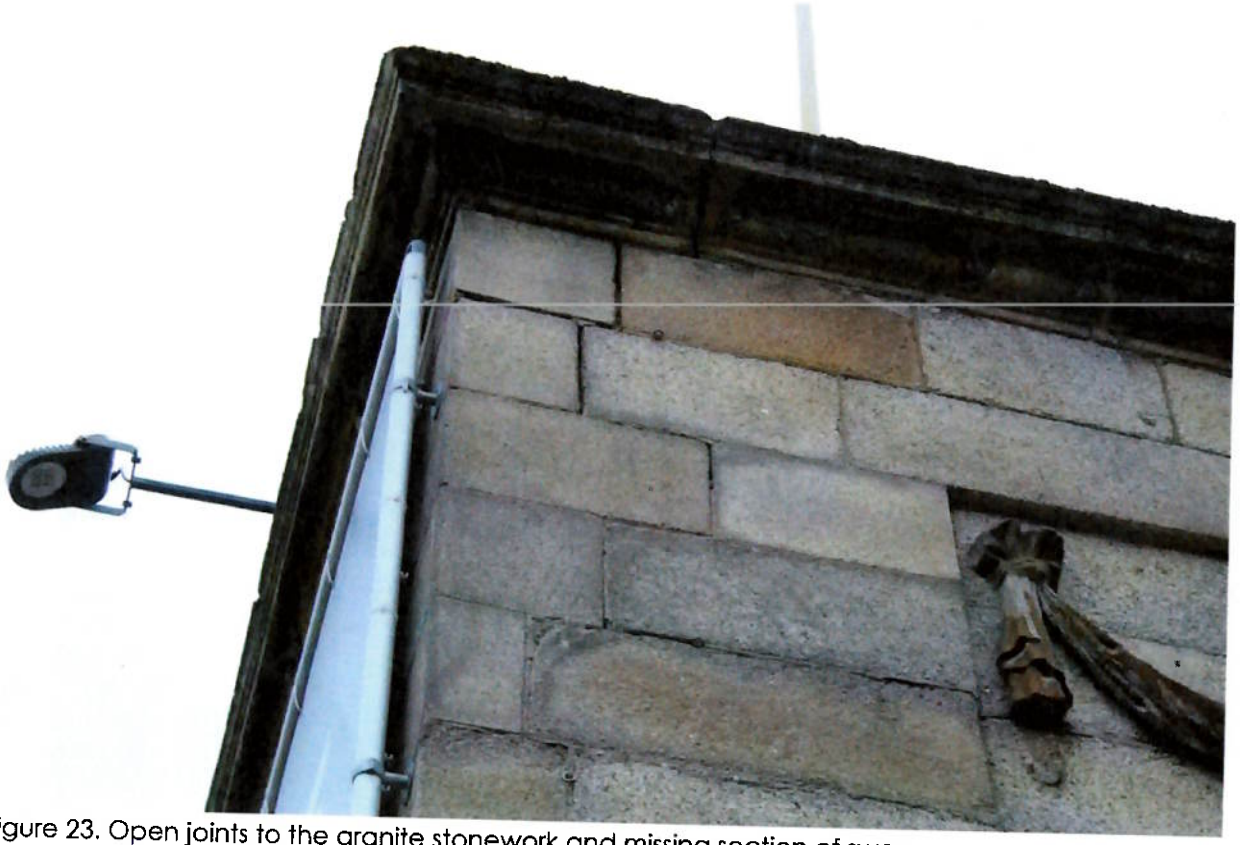

Figure 23. Open joints to the granite stonework and missing section of swags.

Figure 24. Poor condition of the underside of the granite cornice.

Figure 25. Horizontal cracking and detaching render to the East façade.

Figure 26. Continuation of the horizontal cracking to the East Elevation.

Figure 27. Cracks through the rendered cornice (viewed from the roof).

Figure 28. Rear elevation facing into courtyard

Figure 29. The roof is under separate ownership. Evidence of cleaning trial by Thomann Hannery samples on two columns on left hand side. Like the front elevation, this has proved to be too severe and a gentle steam clean will be used instead

Figure 30. Corner showing inserted window with exposed damaged timber lintel

Figure 31. Stone indent required

Figure 32. Staining to granite

Figure 33. Shelter coat proposed to the rendered facade

Figure 34.

Figure 35. Replace cement with new graft

Figure 36. Further evidence of staining

Figure 37. Note, concrete replacement capitals

Figure 38. Detail, patch repair to facade

Figure 39. Typical damage to column bases

Figure 40. Last bay. Extensive algae growth and staining on the granite frieze and cornice

Figure 41. Replace cement with new graft

Figure 42. Flagstones to be cleaned and repointed

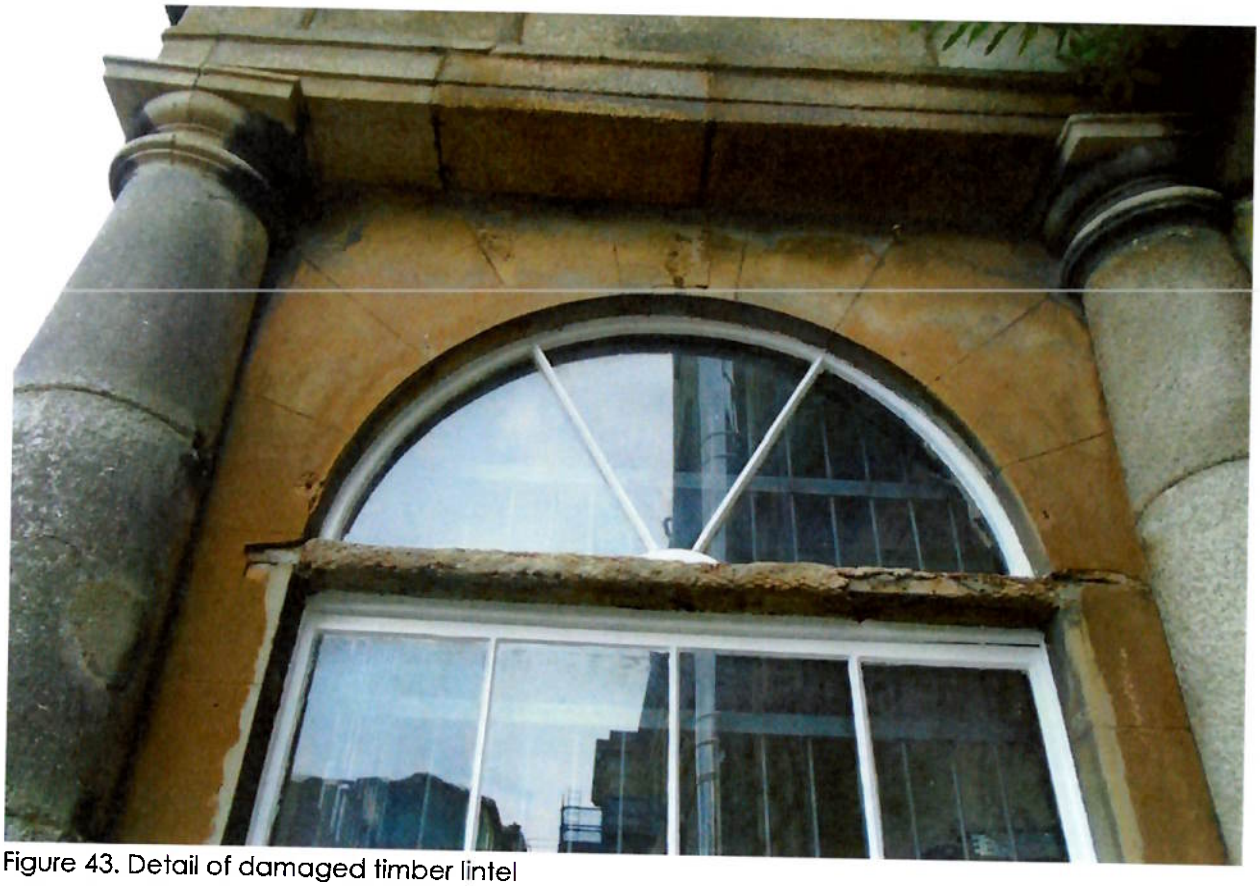

Figure 43. Detail of damaged timber lintel