

SANDSTONES: FORMER DEPARTMENT OF EDUCATION BUILDING
BRIDGE STREET, SYDNEY

STONework FAÇADE RESTORATION (ALL FACADES)
SPECIFICATION



JOB NO 18050
ISSUE D
29 OCTOBER 2019

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1. GENERAL REQUIREMENTS

1.1. GENERAL

1.1.1. GENERAL

All work must be carried out in strict accordance with the details shown on each individual Schedule of Works Specification and Drawings for that particular contract, with the requirements of the General Conditions of Contract and to the satisfaction of the Principal's Representative / Conservation Architect.

All work is to be carried out in accordance with the Drawings, Schedules of Repair Works and this Specification.

1.1.2. REFERENCED DOCUMENTS

CURRENT EDITIONS

General: Use referenced documents, which are editions, with amendments, current one month before the closing date for commencement of work, except where other editions or amendments are required by statutory authorities.

CONTRACTUAL RELATIONSHIPS

Responsibilities and duties of the principal, Principal Contractor and contract administrator are not altered by requirements in referenced documents.

GENERAL STANDARDS

Refer to relevant standards.

1.1.3. INTERPRETATION

GENERAL

- Unless the context otherwise requires, the following definitions apply:
- Supply: "Supply", "furnish" and similar expressions mean, "supply only".
- Provide: "Provide" and similar expressions mean "supply and install".
- Approved: "Approved", "reviewed", "directed", "rejected", "endorsed" and similar expressions mean "approved (reviewed, directed, rejected, endorsed) in writing by the Principal".
- Give notice: "Give notice", "submit", "advise", "inform" and similar expressions mean "give notice (submit, advise, inform) in writing to the Principal".
- Obtain: "Obtain", "seek" and similar expressions mean "obtain (seek) in writing from the Principal".
- Proprietary: "Proprietary" mean identifiable by naming manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.
- Samples: Includes samples, prototypes and sample panels.
- The Principal Contractor – Contractor awarded the contract.
- Principal's Representative: Nominated representative of Owner
- Heritage Architect / Conservation Architect / Heritage Specialist / Structural Engineer appointed by Owner

1.1.4. SITE SAFETY MANAGEMENT PLAN

The Principal Contractor will need to incorporate and take into consideration operational procedures in relation to the building in the "Site Specific Safety Management Plan". The Principal Contractor is to prepare and issue the "Site Specific Safety Management Plan" to the Principal's Representative, and gain acceptance prior to commencement of works on site.

1.1.5. HAZARDOUS MATERIALS

HAZARDOUS MATERIALS

The following hazardous materials have been identified the Education Department Building:

- Asbestos in mortar pointing in joints between sandstone façade units.
- Asbestos in putty to metal window and door frames.
- Lead in paint systems on windows throughout the building.
- Lead sheet on stone ledges and cornices.
- Asbestos beneath lead weatherings
- Silica dust

REQUIREMENT

Contractor to provide a Hazardous Materials Management Plan for acceptance of the Principal for use during the contract. Give notice immediately hazardous materials or conditions are found, including the following:

- Asbestos or material containing asbestos (in additional locations).
- Lead based materials.
- Flammable or explosive liquids or gases.
- Toxic, infective or contaminated materials.
- Radiation or radioactive materials.
- Noxious or explosive chemicals.
- Tanks or other containers used for storage of explosive, toxic, infective or contaminated substances.

1.1.6. WORK HOURS

Works shall not be carried out outside the normal working hours being:

- Monday to Friday, 7:00am to 7:00pm
- Saturday, 7:00am to 5:00pm.
- Or as agreed with City of Sydney Council.

During construction of the works, materials and the work are to be made secure so as any item cannot be removed, damaged or vandalized, etc.

The Principal Contractor shall discuss with the Principal's Representative any item that they feel is unable to be secured at the conclusion of work in a satisfactory manner.

1.1.7. SPECIAL SECURITY ARRANGEMENTS

During the period of the contract, particularly any works to doors and windows, the Principal Contractor has to ensure absolute security is maintained

1.1.8. CLEANING AND CARE OF PROPERTY

The Principal Contractor is responsible for the clean-up of work related to trade waste inside and outside the building.

The Principal Contractor shall employ a professional cleaner to ensure this task is done to the satisfaction of the Principal's Representative.

If the cleaning work is not carried out to the satisfaction of the Principal's Representative and in accordance with his instructions an independent cleaner will be engaged to carry out the work. All costs incurred by this independent cleaner will be deducted from the contract.

1.1.9. NOTICE AND PERMITS

The Principal Contractor shall comply with all such Ordinances, Regulations and By-Laws as shall be binding in relation to the Works and shall give all notices and obtain all permits and pay all fees necessary in connection therewith.

1.1.10. SITE AMENITIES

The Principal Contractor is responsible for providing his own site amenities, lunchroom, storage, toilets etc. Use of existing facilities, area for amenities and storage to be negotiated with Superintendent. Final site compound and amenities area shall be determined in association with the site safety management plan and environmental requirements. In consultation with Superintendent, document the extent of site establishment area include details of environmental measures to be taken, tree protection, hoarding and signage, traffic management plan, etc. and issue drawing of site establishment area showing the proposal including shed locations etc., for approval of Superintendent.

Protect storage and site areas during the works and on completion reinstate all areas and leave in original condition.

1.1.11. NOISE REQUIREMENTS

The site is within a busy central business district and has planned functions around the site during parts of the year. The Principal Contractor shall comply with the following when carrying out work on the building:

- Coordinate work activities with events around site with Superintendent.
- Comply with Development Applications working hours.

1.1.12. SCOPE OF WORK

OUTLINE

The works shall comprise the provision of all materials, labour, transport, tools, plant, applications, payment of fees and everything else necessary for the construction, installation, testing, commissioning, of the works as detailed in this Specification, together with all minor and incidental work not specifically mentioned herein, to the true intent and meaning of this Specification and the accompanying Drawings and Schedules of Works.

SANDSTONES FORMER EDUCATION DEPARTMENT BUILDING

Façade Repair Works:

The work area extends to all elevation, as described in the Specification and on the Drawings and Schedule of Works.

The scope of works includes those items indicated on all Drawings and in the Specification. The works of the Contract include but are not necessarily limited to the following:

General:

- i. Provide all items and works as indicated on the Drawings.
- ii. Keep functioning and keep clean scaffolding during the works. Refer General Requirements
- iii. Provide synthetic stone repair, pinning and injecting to all items identified on the Drawings and as specified. Refer Synthetic Stone Repair
- iv. Remove metal inserts and fixings in stone and provide synthetic stone patch where needed. Refer Synthetic Stone Repair
- v. Provide new stone replacement and indent stone replacement to all items identified on the Drawings, as specified and as per Schedule of Works. Cut out and remove stone for stone indents, inserts and units to be replaced. Refer Stonework
- vi. Desalinate all areas of stonework and all full stones identified on the Drawings and as specified. Refer Stonework.
- vii. Remove or adjust all existing lead weatherings as shown on Drawings. Carefully remove sealant from stone under lead without damaging stonework (leadwork has been adhered to stone using sealant). Provide new lead weatherings and flashings, adjust existing lead weathering and flashings to scoped area as specified and indicated on the Drawings and as per Schedule of Works.
- viii. Remove approx. 80% of pointing in stone joints to the work area under guidance of a qualified stonemason, this material contains asbestos in some areas. Repoint all stonework. Refer Stonework.
- ix. Carefully protect all new stonework. Refer Stonework.
- x. Remove all existing stonework attachment steel ties and cramps uncovered in the process of dismantling the stonework. Refer to masonry fixing details drawing in the contract documents.
- xi. Provide new bird deterrent stainless-steel horizontal wires to areas around south entrance as noted on Drawings.
- xii. Seismic reinforcement of façade elements: Refer to Structural Engineers documents.
- xiii. Remove rust from cast iron rosettes, prime and paint.
- xiv. Restore gold gilding above the door on the trachyte door architrave.
- xv. Provide new floor membrane to all balconies.

1.1.13. DRAWINGS

GENERAL

The Drawings supplied with the Specification are intended to be mutually explanatory and to show the scope of the work required. All work set forth by one, if not by the other, shall be fully executed.

LIST OF DRAWINGS / DOCUMENTS

Drawings accompanying this part of the Specification and forming part of the work are listed below.

**SANDSTONES FORMER EDUCATION DEPARTMENT BUILDING
ARCHITECTURAL A3 DRAWINGS**

SOUTH ELEVATION

A01 SOUTHERN ELEVATION OVERVIEW	1:200 at A3
A02 SOUTH ELEVATION TOP SECTION	1:100 at A3
A03 SOUTH ELEVATION BOTTOM SECTION	1:100 at A3

EAST ELEVATION

A04 EAST ELEVATION OVERVIEW	1:200 at A3
A05 EAST ELEVATION TOP LEFT SECTION	1:100 at A3
A06 EAST ELEVATION TOP RIGHT SECTION	1:100 at A3
A07 EAST ELEVATION BOTTOM LEFT SECTION	1:100 at A3
A08 EAST ELEVATION BOTTOM RIGHT SECTION	1:100 at A3

NORTH ELEVATION

A09 NORTH ELEVATION OVERVIEW	1:200 at A3
A10 NORTH ELEVATION TOP LEFT SECTION	1:100 at A3
A11 NORTH ELEVATION TOP RIGHT SECTION	1:100 at A3
A12 NORTH ELEVATION BOTTOM LEFT SECTION	1:100 at A3
A13 NORTH ELEVATION BOTTOM RIGHT SECTION	1:100 at A3

WEST ELEVATION

A14 WEST ELEVATION OVERVIEW	1:200 at A3
A15 WEST ELEVATION TOP RIGHT SECTION	1:100 at A3
A16 WEST ELEVATION TOP RIGHT SECTION	1:100 at A3
A17 WEST ELEVATION BOTTOM LEFT SECTION	1:100 at A3
A18 WEST ELEVATION BOTTOM RIGHT SECTION	1:100 at A3
A19 SUMPS – LEAD DETAIL	1:10 at A3
A20 BALCONY – LEAD DETAILS	N/A
A21 COURSE A E, P - LEAD DETAILS	N/A

Schedules accompanying and forming part of the work are listed below.

EAST EXTERIOR FAÇADE RESTORATION - SCHEDULE OF PROPOSED REPAIR WORKS
SOUTH EXTERIOR FAÇADE RESTORATION - SCHEDULE OF PROPOSED REPAIR WORKS
WEST EXTERIOR FAÇADE RESTORATION - SCHEDULE OF PROPOSED REPAIR WORKS
NORTH EXTERIOR FAÇADE RESTORATION - SCHEDULE OF PROPOSED REPAIR WORKS

1.1.14. ADDITIONAL WORK

Due to the continued deterioration of the building fabric further work may be uncovered which requires additional repair not covered by the scope of works. Allow to advise Principal and gain approval prior to starting any additional works.

1.1.15. DILAPIDATION RECORD

REQUIREMENT

Record the condition of the works area, adjacent internal rooms and site establishment areas prior to work commencement. The Principal's Representative shall be notified in writing of any defects. Defects not

recorded and notified prior to work commencement shall be deemed to be the Principal Contractor's responsibility and shall be made good at the Principal Contractor's own costs.

JOINT INSPECTION

Before commencement of work on site, arrange a joint inspection with the Conservation Architect and Principal's Representative.

RECORDS

Make written, photographic or digital video records of the condition of the buildings in this contract and adjoining areas, facilities, surfaces, etc., which are in a damaged condition or may be damaged during the Works. Furnish one endorsed copy of each record to the Principal's Representative and keep another set on the Site.

DAMAGE ASSESSMENT

Use the dilapidation record amongst other things as a means of assessing the responsibility for damage and/or making good arising out of the performance or work under the contract. Keep a copy of the record on site and make it available for inspection when required.

1.2. QUALITY

1.2.1. QUALITY ASSURANCE

INSPECTION AND TEST PLANS SCHEDULE

Prepare and use Inspection and Test Plans (ITP) for the following activities. Incorporate the listed Hold and Witness Points, which require attendance by the Principal's Representative and the Conservation Architect.

Principal Contractor (Site Supervisor) must undertake / attend all Hold and Witness point items and maintain the Inspection and Test Plans Schedule during the contract period. The Inspection and Test Plans Schedule must be progressively signed off by the Principal Contractor (Site Supervisor) and the Principal's Representative, as each of the Hold Points and Witness Points are attended and to the satisfaction of the Conservation Architect and the Principal's Representative.

ITEM NO.	ACTIVITY REQUIRING INSPECTION	STAGE OF WORK REQUIRING INSPECTION	HOLD POINT (H) OR WITNESS POINT (W)	ATTENDANCE BY PRINCIPAL CONTRACTOR (C) PRINCIPAL'S REPRESENTATIVE (PR) HERITAGE ARCHITECT (HA) / ENGINEER (E)	SPEC'N SECTION
1	Undertake joint inspection & submit dilapidation record as specified in section 1.1.16	Prior to commencement of work.	H	C, HA, PR	1
2	Any Scaffold alteration request to be issued to Principal's Representative for acceptance	Prior to changing scaffolding.	H	C, PR	1
3	In consultation with Superintendent document the extent of site establishment area includes details of environmental measures to be taken, tree protection, hoarding and signage, traffic management plan, etc and issue drawing of site establishment area showing the proposal including shed locations etc, for approval of Superintendent	Prior to commencement of work	H	C, PR	1
4	All workers carrying out work under this Contract to attend a mandatory heritage induction by the Heritage Architect	Prior to commencement of work.	H	C, HA, E, PR	1
5	Contractor to provide a Hazardous Materials Management Plan for acceptance of the Principal for use during the contract	Prior to commencement of work.	H	C, PR	1
6	Site meeting to clarify scope and heritage intent for asbestos pointing removal	Prior to commencement of work.	H	C, HA, PR	-
7	Asbestos jointing & putty removal method statement for acceptance	Prior to commencement of test sample.	H	C, HA,	-
8	Asbestos jointing removal test sample area for acceptance	Prior to commencement of work.	H	C, HA,	-
9	Issue asbestos removal clearance certificate by specialist contractor for acceptance of Superintendent	Prior to opening up scaffold to next stage of works	H	C, HA, PR	-

10	Lead paint removal test sample for acceptance	Prior to commencement of work.	H	C, HA, PR	-
11	Clearance certificate for lead paint removal	At completion of paint removal and prior to next stage of works	H	C, HA, PR	-
12	Site meeting to clarify scope and heritage intent for seismic stabilization of balustrade	Prior to commencement of work.	H	PR, C, HA, E	Structural Engineers Documents
13	Structural Engineer's site meeting to clarify pinning of new sandstone indents	Prior to commencement of work.	H	PR, C, HA, E	2
14	Site meeting, to clarify scope and heritage intent for dismantle. (stone dismantle process), etc	Prior to commencement of work.	H	C, PR / HA	2
15	Site meeting to clarify scope and heritage intent for stonework & Synthetic stone repair	Prior to commencement of work.	H	C, HA,	2 and 3
16	Principal contractor to advise PR, HA of any additional defective stones discovered during dismantle process,	Prior to removal from site or re-insertion in facade.	H	PR, HA	2
17	Inspect dismantled materials.	Prior to disposal.	W	C & HA	2
18	Principal contractor to submit names, details of experience & qualifications of masons as specified in section 2	Prior to commencing stonework	H	PR, HA	2
19	Submit stone sample as for section 2. Clause 2.3, for approval	Prior to commencement of work.	H	C, PR	2
20	Inspect replacement stone units & indents on site.	Prior to fixing	H	C, HA	2
21	Inspect sandstone prepared for pointing and repointing.	Prior to commencement of work.	H	C, HA	2
22	Inspection of stonework	In regular intervals during works	W	C, HA	2

23	Submit synthetic stone repair colour control samples for approval	Prior to commencement of work.	H	C, HA	3
24	Submit stainless steel pins samples	Prior to commencement of work.	H	C, HA, E	3
25	Inspection to clarify location and extent of synthetic stone repair work	Prior to commencement of work.	H	C, HA	3
26	Inspection of sub-base prepared for synthetic stone repair and stainless-steel reinforcement in position	Prior to application of synthetic stone mortar mix.	H	C, E	3
27	All synthetic stone repair items not specified or documented shall be submitted for approval by Heritage Architect (in writing)	Prior to commencement of that additional work.	H	C, HA	3
28	Mortar & elastomeric sealant pointing & re-pointing samples for approval	Prior to commencement of work.	H	C, HA	2 and 3
29	Site meeting to clarify scope and heritage intent for lead weatherings	Prior to commencement of work.	H	C, HA	4
30	Sample of adjustment of existing lead on courses E and P	Prior to commencement of work.	H	C, HA	4
31	Inspection of completion of continuous leading-edge copper strips in position	Prior to welting of lead	H	C, HA	4
32	The lead ready for patination oil	Prior oil patination	H	C, HA	4
33	Inspection of leadwork	In regular intervals during works	W	C, HA	4
34	Submit sample of and proposed locations for bird deterrent horizontal wires for approval of Heritage Architect.	Prior to commencement of work.	H	C, HA	4
35	Site meeting to clarify extent of cleaning works	Prior work commencement	H	C, HA	-
36	Inspection of test cleaning sample of stonework	Prior commencement of works	H	C, HA	-

37	Site meeting to clarify scope and heritage intent for gold gilding repair works	Prior commencement of works	H	C, HA	-
COMPLETION OF ALL WORKS (IF PROGRESSIVE REMOVAL OF SCAFFOLD IS NECESSARY, THEN INSPECTION OF COMPLETED WORK SHOULD BE CARRIED OUT PROGRESSIVELY.)		Prior to removal of scaffold.	H	C, HA, E, PR	-

1.2.2. INSPECTION

NOTICE

The Principal Contractor is responsible for all WH&S and quality issues on site and the site supervisor / foreman is to be on site each day. It is a requirement that the Principal Contractor's site supervisor is to inspect work prior to the pre-handover inspection and to aim for nil defects.

Witness Points: The Principal Contractor is to give notice to the Principal's Representative at the stage of work when the Witness point items listed in the Schedule require inspection (one inspection per item).

Hold Points: The Principal Contractor is to give notice to the Principal's Representative at the stage of work when the Hold point items listed in the Schedule require inspection. Do not conceal those parts of the works or proceed without approval (one inspection per item).

Minimum notice for inspections to be made: 5 working days for on-site inspections.

Concealed elements: Give notice so that inspection may be made of elements to be concealed.

1.2.3. SAMPLES

TIMING

Delays: Coordinate submissions of related samples. Do not cause delays by making late submissions or submitting inadequate samples.

General: Submit a sample of each designated item and supporting documentation. Include any ancillary items.

IDENTIFICATION

Identify the project, subcontractor or supplier, manufacturer, applicable product, model number and options, as appropriate and include pertinent contract document references. Include service connection requirements and product certification. Identify non-compliances with project requirements, and characteristics that may be detrimental to successful performance of the completed work.

APPROVAL

General: Do not commence work affected by samples until the samples have been approved. Submit further samples as necessary.

RETENTION

Keep approved samples in good condition on site, until practical completion.

INCORPORATION

Incorporate in the works samples that have been approved for incorporation. Do not incorporate other samples.

CRITERIA

Match approved samples throughout the works.

1.3. HERITAGE CLAUSES

1.3.1. HERITAGE SIGNIFICANCE

Former Education Department Building is listed on **City of Sydney Council's LEP as having State heritage significance**. It is of major heritage significance and is an excellent example of its type and construction. Works to the building should involve minimum changes to, and be performed without causing any damage to, the existing fabric or surroundings. Built is responsible for gaining all approvals relating to the works.

1.3.2. HERITAGE APPROACH TO REPAIRS

THE WORK IS TO BE DONE WITH THE OBJECTIVE OF LEAVING INTACT AS MUCH AS PRACTICALLY POSSIBLE OF THE EXISTING BUILDING FABRIC. WHERE ITEMS ARE TO BE REPLACED, THEY ARE TO MATCH THOSE OF THE EXISTING UNLESS SPECIFIED OTHERWISE. ALL ITEMS REPAIRED OR REPLACED ARE TO MATCH THE ORIGINAL OR EARLY ITEMS (UNLESS APPROVED BY CONSERVATION ARCHITECT) IN SIZE, PROFILE AND MATERIAL.

SHOULD ANY DOUBT EXIST OVER SPECIFIC ITEMS REGARDING THIS APPROACH, THE CONSERVATION ARCHITECT SHOULD BE CONTACTED.

1.3.3. PROTECTION

Provide and maintain all necessary protection against the ongoing work to avoid damage to the building, contents or surrounding footpaths. Allow to make good any damage caused during the works on completion at no additional cost.

1.3.4. ORDER OF WORK

The identification and removal of all hazardous materials is to occur first. For external repairs organise the order of work to take place from the top down.

1.3.5. INSPECTION OF THE SITE

Inspect the site and ascertain all factors affecting execution of the works.

1.3.6. APPROVED SUB- CONTRACTORS

All trades involved in the repair works must be carried out by sub- Contractors and personnel experienced and skilled in the type of work specified.

1.3.7. STOCKPILE OF SALVAGED MATERIALS

All material specified or directed to be salvaged during the dismantle work shall be carefully stored in a secure area protected from the weather as appropriate to the items concerned. All items must be inspected for hazardous materials (such as asbestos mortar) and decontaminated prior to leaving site. Exact extent and location of this compound is to be confirmed prior to commencement of the works.

1.3.8. CONTROL OF ORGANIC GROWTH

Any organic growth present on walls of the buildings (e.g. annuals, weeds, figs etc.) are to be treated with a proprietary biocide based on a quaternary ammonium compound and incorporating tributyl tin oxide or other proven long-lasting biocide. Apply the biocide by brushing to saturate the affected areas without causing splashing or spray drift onto other area. Operators are to be provided with suitable protective clothing. Do not spray in the immediate vicinity of unprotected people. This work should be carried out early in the contract to allow sufficient time for the plants to die and dry out before carefully removing with minimum damage to the masonry.

1.3.9. ACCESS FOR WORK AND THE USE OF SCAFFOLDING

REQUIREMENT

The Principal has provided scaffolding to access the works.

PROTECTION

All work shall be performed without causing any damage to the existing fabric. Make good any such damage to match existing at no cost to the client. Provide all necessary protection of building surfaces from damage resulting from the provision, use and removal of all scaffolding and hoists etc.

Isolate points of contact or potential contact with the façade. Tubes shall be wrapped in carpet or spaced with non-staining plastic coated timber blocks.

Do not attach scaffold directly to stonework or brickwork without approval. Use ties through semi-open windows breaking no glass and seal the openings against dust and weather. Tie in using well-padded tube kept clear of any joinery, architraves etc. bearing against timber pads onto the plaster. Fit temporary plywood weather protection panels over the open window area. Cut neat holes in panel to take scaffold tube and provide an approved weather seal.

Where scaffold cannot be secured without attachment to stonework, provide and insert stainless steel chemical scaffold anchors into stonework, all attachments to be approved by heritage architect and located in agreed concealed locations. Anchors are to be capped off on completion of works with brass screw in caps, for use in future works.

Provide sole plates to scaffolding legs so as to cause no damage to the original paving and membranes.

MATERIALS

Scaffolding components shall be free of rust and cleaned free of mortar, concrete and debris from other jobs.

1.3.10. MANDATORY HERITAGE WORK INDUCTION

Principal Contractor is to ensure that all workers carrying out work under this Contract have attended a mandatory heritage induction by the Heritage Architect before commencing work on site.

2. STONEMASONRY

2.1. GENERAL

2.1.1. SCOPE

EXTENT OF WORK

The works include but are not necessarily limited to the following:

The stonemasonry referred to in this section includes, but is not necessarily limited to, the following items and related subsections;

- Sandstone Supply – Subsection 2.2. Replacement to be a self-colouring Sydney Yellow-block sandstone i.e. 200 George Street
- Stone Processing – Subsection 2.3.
- Clean sandstone of whole façade.
- Replace / indent deteriorated stone units;
- Pin and inject damaged stones with synthetic stone;
- Make safe / chisel back rock faced plinth;
- Treat new and remaining sandstone with biocide “Boracol100” or equal as specified.
- Desalinate all areas of stonemasonry and all full stones where identified on the Drawings and as specified.
- Stonemasonry – Subsection 2.4. Cutting out and removal of stone for stone indents, inserts and units to be replaced;
- Remove inserts from all existing stonemasonry. Remove ties and cramps;
- Pointing and Re-pointing preparation – Subsection 2.7. Remove all pointing in stone joints to the work area under guidance of a qualified stonemason, this material contains asbestos. Removal of asbestos contaminated product to be undertaken by suitably qualified and licensed asbestos removal Contractor in accordance with this Specification and all statutory requirements. Proposed method of removal (without damage to stonemasonry) in the form of a detailed method statement to be approved prior to commencement of work. Test sample area to be undertaken and upon approval used as the standard for the project.
- 80% re-point all sandstone as noted in Schedule of Works

Re-point Mix: all stone mortar joints using following:

- Hydraulic Lime NHL 3.5
- Sydney Sand
- River sand

Mix to be approx. 3 sand: 1 Hydraulic Lime NHL 3.5. Colour to be match existing as close as possible. Hence allow to trial 6 samples using natural sands base around.

- Fill horizontal joints of course U and in trachyte above entrance with elastomeric sealant;

All work indicated and listed on Drawings and as indicated in the Scope of Works and Schedules.

2.1.2. CROSS REFERENCES

GENERAL

Refer to the *General Requirements* section.

RELATED SECTIONS

Refer to the following sections:

- General Requirements
- Lead Weatherings
- Architectural Drawings
- Schedules of Works

2.1.3. STANDARD

GENERAL

Standard: AS3700: Masonry in Buildings, (known as the SAA Masonry Code).

Masonry units: Stonework to match existing original.

2.1.4. QUALITY

INSPECTION

Requirements: Co-ordinate with the Principal's Representative so that all work may be inspected in stages as hereinafter specified in the relevant Specification subsections and indicated on the inspection test plan Schedule.

Refer to Inspection Test Plan (ITP) in Section 1 for Hold and Witness point activities.

NOTICE

The Principal Contractor shall be responsible for all OH&S and quality issues on site. Principal Contractor's site supervisor / foreman shall be on site each working day. Principal Contractor's site supervisor shall inspect work prior to pre-handover inspections, and to aim for nil defects.

Witness points: The Principal Contractor shall give notice to the Principal's Representative at the stage of work when the Witness Point items listed in the Schedule require inspection.

Hold points: The Principal Contractor shall give notice to the Principal's Representative at the stage of work when the Hold point items listed in the Schedule require inspection. Do not conceal those parts of the works or proceed without approval.

Minimum notice for inspections to be made: 5 working days for on-site inspections.

Concealed elements: Give notice so that inspection may be made of elements to be concealed.

SAMPLES

Requirements: Provide samples as specified for each of the requirements of the Stonework Subsections. Refer to each Subsection.

APPROVED PRINCIPAL CONTRACTOR AND SUB CONTRACTOR

Requirement: All work shall be carried out only by approved Principal Contractors and/or approved personnel experienced in the type of work specified.

ASSOCIATED DRAWINGS

Requirement: Check dimensions on site before proceeding with the work.

The associated Drawings are to be read with the Specification and Schedules. The associated Drawings are diagrammatic only. Obtain measurements and other information necessary to carry out the work specified. Where the work includes alterations to existing work, verify the dimensions of the existing work before proceeding, and notify discrepancies as required by the Contract. The Principal Contractor shall be responsible for the accuracy of the stone set out and shall make good any inaccuracy at his own cost, to the satisfaction of the Principal's representative.

SHOP DRAWINGS

Requirements: Where work is specified to have shop Drawings. Submit them to the Principal's representative prior to the commencement of the works all in compliance with the requirements of the contract.

HERITAGE WORK REQUIREMENTS

Requirements: The Principal Contractor and sub- Contractor shall be familiar with current conservation philosophy of the ICOMOS Burra Charter and the NSW Heritage Act.

The project will be carried out in consultation with the Local Council Heritage Adviser, the NSW Heritage Office and access to the site of accredited representatives of these bodies is to be provided by the Principal Contractor.

PRINCIPAL CONTRACTORS SITE AREA AND SITE RESTRICTIONS

Requirements: Program all work to avoid nuisance and disruption to the surrounding buildings' occupants and the public against noise, dust, dirt, water and other nuisances.

PROTECTION GENERALLY

Requirements: Maintain all supplied hoardings and protection against ongoing work to exclude damage to the building.

Protect from all ongoing work all stonework and carved stonework, all adjacent roof area and other building features.

WORK PROGRAM

Requirements: The Principal Contractor shall submit the intended work program containing sequence and staging of the works upon starting project.

The program is to be based on a six-day working week Monday to Saturday inclusive.

LOCAL COUNCIL APPROVALS

Requirements: The Client has liaised with City of Sydney Council, has obtained and paid for all scaffold, crane and traffic permits and all other statutory obligations required by Council and all other relevant agencies. If scaffolding needs amending due to façade works, contact the Superintendent to obtain guidance.

2.2. STONE SUPPLY

2.2.1. SCOPE

REQUIREMENTS

Tenderers are to base their tender costs for stone supply on the following:

- All sandstone for the project to be purchased by the Contractor.
- Replacement stone is to be a self-colouring “Sydney Yellowblock’ sandstone equal to:
200 George Street Yellow Block Sandstone, available from Gosford Quarries.
Charlie Sarkis, Senior National Sales Executive Gosford Quarries:
50 Whiting Street, Artarmon NSW 2064 Tel.: (02) 8585 8282
Email: Charlie@gosfordquarries.com.au

Pymont ‘Harris Street’ Yellow Block Sandstone available from Bundanoon Sandstone,
Troy Stratti Bundanoon Sandstone Quarry Road, Bundanoon NSW 2578
Tel: (02) 4883 6179 Email: info@bundanoonsandstone.com.au

Note: only these two types of ‘Yellowblock’ stones are acceptable on this important heritage building.

2.2.2. STOCKPILED STONE SUPPLY

- Before commencing stoneworks, assess stockpile, inspect, test and set aside selected stone sufficient to supply the whole of the works.
- Ensure that stone is stored so that it is protected from the weather, damage, staining or soiling. Stone is to be stored clear of the ground on its natural bed and on evenly spaced supports which do not locally or generally overstress it. It should be stored in conditions that allow seasoning without damage, staining, contamination or marking.

2.2.3. STONE TESTING

- Quarry blocks proposed for supply to the works shall be sampled, tested and certified by an approved NATA accredited testing laboratory in accordance with the following test Schedule:
- The properties of all sandstone supplied shall equal or exceed these test requirements. The Contractor shall provide all test certificates to the Superintendent for approval.

Test	Acceptance Criterion	Test Method
Water absorption	Max 5% by weight	ASTM C97
Apparent porosity	Max 8% by volume	ASTM C97
Bulk density	(min. mean value) 2300 kg/m ³	ASTM C97
Modulus of rupture - Dry - Saturated - Saturated/dry ratio	(min. mean value) 6.5 MPa 3.0 MPa Min. 0.4	ASTM C99
Compressive strength - Dry - Saturated - Saturated/dry ratio	(min. mean value) 40 MPa 20 MPa Min. 0.5	ASTM C170

Sodium sulphate soundness	Max. 1% weight loss	AS4456.10,
Petrography	Equivalent to Petrographic Analysis of 200 George Street sandstone samples for Geotechnical Centre, NSW Dept. of Finance and Services, by Dr Brenda J Franklin BSc (Hons)(Syd), MSc, PhD (NSW), FAIG, FGS Aust.	

Frequency

- Tests are to be carried out at a frequency of one sample per 10m³ gross volume of stone proposed to be supplied to the project or one sample per four quarry blocks proposed to be supplied to the project whichever is the lesser. Perform 5 tests per sample for each test (5 tests each where both dry and saturated tests are required).
- Petrography to be carried out at a frequency of one assessment per sample as defined above.

2.2.4. STONWORK CONSULTANTS

For the purpose of this agreement, the Heritage Architect / stonework consultant shall advise Superintendent in the selection, inspection and approval or rejection of stone.

2.2.5. SAMPLES

Stone Contactor is to submit a sample which represents the texture and colour range of the stone proposed for this project. Stone to be supplied shall match the sample.

2.2.6. INSPECTION

The Principal Contractor is to permit access to the stone proposed to be supplied at any time during the course of the contract to the Principal's Representative.

Only stone which meets the requirements outlined below in this Specification is acceptable as being eligible for this Contract.

2.2.7. STONE SELECTION

PHYSICAL PROPERTY ASSESSMENT

Causes for rejection of stone relating to physical property assessment include:

- Any stone which cannot be identified as coming from the nominated stockpile or quarry area.
- Stone will be rejected where any observable inclusions, defects or surface treatment known to affect the appearance, structural performance and or durability of the stone occur.

Causes for rejection of stone include:

- Any stone with excessive colour variation. Some colour variation is acceptable.
- Any stone which is excessively colour banded. Some colour banding is acceptable.
- Any stone with blotchy or linear rust-coloured iron stains.
- Any stone which changes colour unpredictably.

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- e) Any stone with tea leaf detrimental to its appearance.
 - f) Any stone with heavy iron inclusions or kidney, detrimental to its appearance.
 - g) Any stone which has been stained, bleached, or treated with colouring agents or chemical oxidising agents.
 - h) Any stone showing signs of major petrographic variation indicative of possible structural weakness. Examples include mineralogical change (i.e. presence of mica or shale beds) and physical change (i.e. visible porosity and/or distinct grain size variation).
 - i) Any stone displaying black line.
 - j) Any stone with clay or shale inclusions.
 - k) Any stone with soft or hard sand balls.
 - l) Any stone with heavy concentrations of quartz pebble.
 - m) Any stone with open or healed joints.
 - n) Any stone with stress release or seismic induced fractures.
 - o) Any stone with any visible planes of weakness.
 - p) Any stone to which acid has been applied in any concentration at any time.

2.2.8. QUALITY CONTROL

VISUAL INSPECTION

Before processing all slabs may be visually inspected by the Principal's Representative. Those which do not conform to the above Specifications will be rejected. An equal volume is to be replaced by the Principal Contractor.

If, during the processing, some unacceptable inclusion or defect is discovered within the mass, the relevant volume is to be replaced without cost to the Principal by the Principal Contractor.

2.2.9. DELIVERY

It will be the responsibility of the Principal Contractor to ensure the delivery of material acceptable within the terms of this Specification.

2.3. STONE PROCESSING

2.3.1. GENERAL

Stone Processing Requirement: This subsection of the Specification includes;

- Site inspection and documentation;
- Working new stone by machine profiling and banker masonry;
- Provision of finishes to new stone units to match existing stone finishes;
- Protection of new stone replacement units for fixing on site.

2.3.2. BANKER MASON

Requirement: All processing work shall be supervised by an experienced banker mason or equal and all processing work shall be carried out by Banker Masons or equal experienced personnel in profile cutting etc.

The term “Banker Mason” shall mean a Mason who is skilled in cutting intricate forms of stonework such as mouldings, decoration, complex finishes and the like.

Identification: Before commencing stonework submit the names and details of the qualifications of the Banker Masons proposed to be used on the Work.

Level of Experience: The Contractor’s nominated Project Manager shall have at least 15 years’ relevant experience in managing heritage stonemasonry works. The Contractor’s Project Manager is to oversee all works and provide expertise and direction as required. In addition, all works are to be overseen by a Principal Stonemason with not less than 15 years’ experience in heritage stonemasonry conservation.

Works are to be performed only by skilled and qualified stonemasons, employed by a firm with at least 15 years’ experience in conservation and restoration works on heritage sandstone buildings, specifically including those constructed of Sydney ‘Yellowblock’ sandstone.

Banker Mason: All stone processing works shall be supervised by a qualified Banker Mason with a minimum of 10 years’ experience in stone profile cutting and carving. All processing works shall be carried out by Banker Masons, or equivalent personnel, experienced in stone profile cutting and carving.

Before commencing stonework submit the name, qualifications and experience of the proposed stone processing supervising Banker Mason to the Superintendent for approval.

2.3.3. BANKER MASONS SITE VISIT

Requirement: At the commencement of the Contract, the Principal Contractor shall allow for all Banker Masons employed on the project to visit the building site so that they may be acquainted with the work at first hand, and be acquainted with the following items;

- The history of the building;
- The techniques used by the original masons and techniques to be used on this project.;
- The working of the stone and how the tools were used to achieve the variety of finishes on the building and the tools to be used on this project.

The aim being to achieve harmonious finishes to match those existing or to be replaced.

2.3.4. INSPECTIONS

Requirement: The proposed work shall be jointly inspected in detail by the Principal Contractors' Nominated Representative and the Principal’s Representative or Heritage Architect, to confirm the work on each stone, and in each location.

Requirement: The Principal Contractor shall coordinate with the Principal’s Representative so that stonework may be inspected in the following stages. Give sufficient notice so that the following may be inspected;

- i. All stones to be replaced or indented prior to cutting out and/or dismantling, to confirm the works. (Hold point)
- ii. Items to be built-in located in their correct positions including stainless steel -reinforcements and where nominated or where during works instructed by Heritage Architect items such as flashings, bolts, cramps, brackets, structural metalwork, rainwater goods, air vents, and the like. (Witness point)
- iii. Replacement stone units and indents delivered on site.

Note

- i. The Principal Contractor shall allow the Principal’s Representative access for the duration of the contract to inspect the masonry works.
- ii. Final sized stone units and indents shall be inspected in a free -standing condition so that all surfaces (with exception of the bed) are visible.

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- iii. The Principal Contractor is to notify one week in advance about delivery time to the site.

2.3.5. DETAILED SITE INSPECTION

Requirement: The Principal Contractors nominated Stonemason shall jointly inspect in detail, the building façade stonework with the Principal's Representative to confirm the details, sizes, fixings and finishes of all replacement stone units, indents and inserts to be replaced, prior to cutting out/or dismantling of the existing stonework.

2.3.6. PROCESSING NEW STONE

Requirement: Process and work all stone to the various forms and dimensions indicated in the Drawings and confirmed on site by measurements, carried up plumb to existing lines and to match the existing original finishes of the stone to be replaced or indented.

The lines of all mouldings, curves, returns and angles are to be worked out of the solid, to exactly match the original profile of that portion of stone cut out or removed.

New replacement stone and indent replacement stone shall be dressed to fit tightly into the opening made. It shall be cut, moulded and finished exactly as existing and detailed on the shop Drawings.

2.3.7. TOLERANCES

Note: Detailed investigation has determined that the existing stone profile, and stone unit sizes and joint width in the cornice area and in other locations has been altered from the original. Where these altered elements are to be replaced during the works they are to be reinstated to their original size and profile and joint width. Generally original stonework has 3-5 mm joint width and subsequent replacement work has been done in approx. 10 mm plus joint width.

Requirement: Process all new stonework to match the original stonework profile, stone unit size and joint width of 3-5 mm.

The Principals Heritage specialist will confirm the stonework scope at the Scheduled hold points during the works.

All new stonework to be finished to a tolerance of + or – 1mm, and to the satisfaction of the Heritage Architect.

2.3.8. MOULDING PROFILES

Requirement: Templates for moulding profiles must be taken from an existing joint, except as noted in 2.3.7 above.

In hand working mouldings, reverse moulds must be used to maintain the accuracy of the moulding profiles. All members of moulded profiles shall be maintained with clean sharp arises and internal angles. Flattened planes and planning machine marks must be removed by wet carborundum rub to present a true continuous profile of the moulding.

Do not feather ends of profiles to meet the existing eroded or weathered profiles of adjacent stonework mouldings.

2.3.9. PROFILE CUTTING

Cutting Back: Perform the necessary cutting of stone profiles as shown on the Drawings to indicate weatherings, jointing, forming grooves and drilling for handling, fixing, and the like. Work the bed, face and back joints of the stone square and true.

2.3.10. INDENT STONWORK

Requirement: New indent replacement stone shall be of 100 mm minimum depth or as detailed so as to become a genuine part of the wall. The original joint pattern shall be continued, and replacements shall be confined either to piecing or replacing individual stones.

Indent replacement stones with internal return angles shall have all internal angles chamfered at 45° in order to avoid potential weakness in the stone at these corners.

2.3.11. HOLES / INSERTS

Cutting for Holes/Inserts: Mark the exact positions for any drilling and cutting of holes for bolts, inserts and pipes on shop Drawings before stone is delivered on site.

Broken arises or chipped stone will mean rejection of that stone.

2.3.12. BED AND KEY PREPARATION

Preparation (Mandatory): The bottom bed of each stone is to be punch scrubbed to provide an adequate mortar key with 2 rows of punch marks 24mm min. from exposed outside faces and not more than 50mm apart.

All hidden perpendicular joints are to be worked with 2 concealed centrally located corresponding “y” joggles, filled with grout during fixing.

2.3.13. SWEETENING

Requirement: Sweetening of replacement stone may be permitted only in areas where new stones need slight adjustment to match the correct profile, dimension and finish. This must also meet the requirements of clause 3.7 Tolerances in this section. Stone units, indents and inserts requiring excessive sweetening in may be rejected.

2.3.14. PATCHING

Patching: Small patching of new stone using hairline or tight jointed stone insert patches may only be permitted if approved by the Principal’s Representative / Heritage Architect. Similar coloured matching stone must be used to match the new replacement parent stone unit.

2.3.15. WASHING

Requirement: Wash down the newly excavated or worked stone surfaces to remove stone dust etc.

2.3.16. STONE FINISHES

Requirement: All finishes shall match the existing original finishes.

2.3.17. DRESSED AND RUBBED FINISH (D & R)

Requirement: For dressed and rubbed finishes, rub completely back up to 3mm generally by hand using a carborundum block and water.

All rubbed finish stonework shall be finished free from all saw and other tool marks.

2.3.18. STORAGE OF PROCESSED STONE

Requirement: Store processed stone so that it is protected from the weather, clear of the ground on its natural bed, on supports which do not locally overstress or damage it, and which allow room for slings to be put around processed units for future use and transportation.

Store in conditions where the stone will not be subjected to staining, contamination, marking or damage.

2.3.19. INSPECTION OF PROCESSED STONE IN THE YARD

Inspection: All processed replacement stone shall be inspected in the yard immediately prior to transportation to the site.

2.3.20. DELIVERY OF PROCESSED STONE

Requirement: Deliver processed stone to the site when requested by the Principal's Representative, in accordance with the approved work program.

Damage Due to Transportation and Handling: Do not damage any processed stone. Damaged stone may not be accepted, and any stone damaged due to transportation and handling must be made good at the Principal Contractors expense, to the satisfaction of the Principal's Representative.

Handling and Transportation: Arrange each stone for handling and transportation to take its own weight without support from adjoining stones, and without damage to the stones.

Mark for identification and store as directed on site by the Principal's Representative for re-fixing.

Keep all straps and slings etc, free of all arises, mouldings, etc.

2.4. STONEMASONRY

2.4.1. GENERALLY

SCOPE: This subsection of the Specification includes, but is not necessarily limited to the following on site stone masonry fixing work;

Cutting out and removal of decayed stone and stone units for stone indents, inserts and units to be replaced.

Dismantling of existing stone units for retention and reuse.

Taking delivery of new replacement stone units, indents and inserts.

Fixing of new stone replacement units, inserts and indents, complete with all associated materials and including, bedding, jointing, associated pointing and re-pointing, and accessories such as fixings, flashings, damp proofing course (DPC) insertion, structural elements etc., and all associated stone masonry.

All Stonemasonry work listed in the PROPOSED REPAIR WORKS SCHEDULES.

ASSOCIATED STONEMASONRY SUBSECTIONS: Refer to the following subsections to be included in the work specified in this contract;

Subsection. POINTING AND RE-POINTING

2.4.2. QUALITY

INSPECTION

REQUIREMENT: The proposed work shall be jointly inspected in detail by the Principal Contractors' Nominated Representative and the Heritage Architect, to confirm the work on each stone, and in each location.

REQUIREMENT: The Principal Contractor shall coordinate with the Heritage Architect, so that stonework may be inspected in the following stages. Give sufficient notice so that the following may be inspected;

All stones to be cut out or removed prior to cutting out and/or dismantling, to confirm the works. (Hold point)

Principal contractor must advise Principal's Representative, Heritage Architect of any additional defective stones discovered during dismantle process, prior to removal from site or re-insertion in façade. (Hold Point)

- i. Stones on site prior to fixing. (Hold point)
- ii. Substrate prepared to receive the stone. (Witness point)
- iii. At regular intervals during the installation period. (Witness point)
- iv. Items to be built-in located in their correct positions including damp-proof courses, flashings, bolts, cramps, brackets, structural metalwork, rainwater goods and the like. (Witness point)
- v. Stones fixed prior to pointing. (Witness point)
- vi. Pointing mix samples. (Hold point)
- vii. When joints are clean and ready for pointing. (Witness point)
- viii. Stonework completed. (Hold point)

Note

1. The Principal Contractor shall allow the Principal's Representative access for the duration of the contract to inspect the masonry works.
2. Final sized stone blocks shall be inspected in a free-standing condition so that all surfaces (with exception of the bed) are visible.
3. The Principal Contractor is to notify two weeks in advance when delivery to the site is anticipated.

2.4.3. BANKER MASON

REQUIREMENT: Provide an experienced and approved banker mason on site qualified to supervise fixing, site adjustment to joints and surface finishing.

IDENTIFICATION: Before commencing stonework submit the names and details of the qualifications of the banker masons proposed to be used on the Work.

2.4.4. MORTAR

REQUIREMENT: Provide mortar for bedding, pointing and re-pointing stone as specified below;

MORTAR MATERIALS

REQUIREMENT: To be as specified in Stonework Subsection Pointing and Re-pointing - Mortar Materials.

MORTAR MIXES

REQUIREMENT: To be as specified in Stonework Subsection Pointing and Re-pointing - Pointing and Re-pointing Mortar and Bedding Mortar.

BEDDING MORTAR

REQUIREMENT: To be as specified in Stonework Subsection Pointing and Re-pointing Mortar and Bedding Mortar.

POINTING AND RE-POINTING MORTAR

REQUIREMENT: To be as specified in Stonework Subsection Pointing and Re-pointing. Colour and texture to match approved samples as required.

2.4.5. PROTECTION AND STORAGE OF STONE

PROTECTION: Protect existing building surfaces from damage resulting from the provision of mason's constructional plant, including scaffolding, hoisting facilities and the like. Isolate points of contact or potential contact.

Stonework shall be liable to rejection if damaged or disfigured during the course of the work under the Contract. The Principal Contractor shall make good at his own expense.

STORAGE: Store stone so that it is protected from the weather, clear of the ground on its natural bed, on supports which do not locally overstress it, and in conditions suitable without staining, marking or damage, and which allow room for slings to be put around units or blocks for future use or movement.

Store in conditions where the stone will not be subjected to staining, contamination, marking or damage.

2.4.6. UNSAFE AND BADLY DECAYED STONES

REQUIREMENT: Carefully shore insecure sections of stonework and remove loose or dangerous stones and fragments.

Immediate attention shall be given to structural defects.

2.4.7. STONEMASONRY – DISMANTLING AND CUTTING BACK

REQUIREMENT: Where Scheduled cut out the existing stone and replace it with matching new natural stone units or indents.

Cutting Back: Cut back the face of decayed stone where Scheduled and/or as shown in the tender Drawings to a firm sound surface, but generally not less than 100mm deep, in preparation for inserting the replacement stone. Provide chamfers, tongues, undercut edges and the like as shown or as required.

Existing joint lines shall be maintained unless otherwise Scheduled. Cutting shall be carried out under the supervision of an experienced Banker Mason, and all newly excavated surfaces shall be immediately covered and protected from exposure to the weather. Carefully bag debris and remove as soon as possible to keep scaffold clear of debris and prevent overloading.

IN-SITU WORK: Carry out in-situ work to existing stonework by methods which do not disturb the bed or damage the arises or exposed faces of the original stone.

DISMANTLING WORK: Keep the lines of all arises, worked faces and returns undisturbed during the dismantling of stone units, handling, breaking up mortar beds, transportation and storage work.

STACKING: All stones to be stacked to provide a natural sequence for refixing.

PROPPING AND PACKING: Use non-staining softwood wedges, supports and spacers or approved equal for propping and packing stone. Metal pinches shall not bear directly on worked faces or no closer than 75mm to worked arises.

2.4.8. REPLACEMENT STONE UNIT DELIVERY

REQUIREMENT: Arrange for the supply and taking of delivery of all new replacement stone units, indents and insert stones.

All replacement stones to be delivered to the site and stored before installation at location as agreed with Superintendent.

Give two weeks' notice of requirements for delivery. Submit delivery day times and the list of stones to be delivered.

Arrange to check immediately the condition of all replacement stones in conjunction with the Heritage Architect.

Once delivered, the new replacement stones shall become the responsibility of the Stonemasonry fixing Principal Contractor who shall make good any damage at his/her own cost.

2.4.9. REPLACEMENT STONE HANDLING, TRANSPORTATION AND REFIXING

HANDLING AND TRANSPORTATION: Arrange each stone for handling and transportation to take its own weight without support from adjoining stones, and without damage to the stones. Keep all straps etc. free of arises etc.

REFIXING: Remove stone wall units indicated in the Drawings without damaging exposed faces and arises, mark for identification and store for re-fixing.

The preferred method of fixing stones is with nylon straps and softening used for hoisting the stones into their initial position. This enables placement of the stone on timber packers on the wall to permit easy removal of the slings. Use approved Lewis Pins for the final fixing onto the mortar bed.

2.4.10. STONEMASONRY – BEDDING AND FIXING

REQUIREMENT: Bed and fix all replacement stone units, indents and inserts.

BEDDING: Set stone on its natural or quarry bed. Ensure Banker Mason to have input into the laying of all new replacement stones especially prior to cutting the Blocks in the Stonemason's yard.

The beds, face and back joints of every stone throughout shall be worked square and true from end to end to existing lines and be free from hollow or rough surfaces. Where possible, stone shall be bedded and jointed in one operation.

Before bedding any stone, the replacement stone and the excavated area of existing stone shall be cleaned free of all dust and impurities and shall be thoroughly wetted or dampened down before the mortar is laid. After any stone is bedded and adjusted to its correct position it shall be solidly grouted at its back and at the joints.

FIXING: No stone shall be fixed against work surfaces which, because of an irregularity or defect may prevent the proper execution or permanency of the mason's work.

Each stone shall be fixed to take its own weight without support from adjoining stones, unless otherwise specified.

Prior to the stonework grouting, all stone shall be set and packed out as necessary.

Joggles, cramps, pins and dowels shall be used in the fixing of the replacement stone in accordance with the engineer's Drawings, engineer's instructions and best masonry practice and shall be 316 grade stainless steel

unless otherwise noted (iron and steel shall not be used). Refer to Drawing D01 for detailed repair methods, cramp and pin attachment types.

In the setting of the stone, care shall be taken to ensure that no mortar or grout, either from spillage or from over filling, shall come in contact with the external face of the stone.

Non staining softwood wedges soaked in water or laths shall be used for fixing stone. Metal pinches shall not bear directly on stone.

DAMAGED STONE: Remove from the site stone damaged during the course of the work. Where prior written permission to attempt repairs has been given, satisfactorily repaired stone may be accepted.

RE-BEDDING EXISTING STONE UNITS: Allow to carefully lift up and/or re-bed existing stone units where Scheduled in the WORK SCHEDULES and re-point all affected points.

CLEANING: Clean all the stonework progressively as the work proceeds without using acid and without damage to the work, as necessary to remove mortar smears, stains discolouration, and the like, and leave the stonework clean on completion. Mortar stains to be washed off the stone at the end of each day's work.

Remove all debris off the scaffolding and prepare the area as required ready for further stonework.

SWEETENING: Carry out sweetening on replacement stonework as necessary to provide accurate mouldings and surfaces to match existing, and on existing work where shown on the Drawings to remove surface imperfections, or to remove protrusions at joint lines.

SITE ADJUSTMENT: To be the Principal Contractors responsibility.

2.4.11. FIXING CRAMPS AND PINS

REQUIREMENT: Harmful iron cramps and fixings are wherever possible to be removed and replaced by approved 316 grade stainless steel or other approved non-ferrous metal. Cut away for key and insert new cramps to afford all necessary additional support for the stone.

Refer to Drawings for detailed repair methods, cramp and pin attachment types.

Refer to Drawings for detailed repair methods relating to old and new cramping and pinning of stonework.

Provide and fit all necessary fixings, cramps, pins. as is required to fix the stone in accordance with the best masonry practice or as directed by the Principal's Representative or Heritage Architect

1. The metal fixings shall be of stainless steel of approved 316 grade alloy in accordance with the requirements of the appropriate codes.
2. The tying back and together (restraint) fixings shall be 316 grade stainless steel as required in accordance with the engineer's Drawings and the appropriate codes.
3. The load bearing fixings shall be of 316 grade stainless steel, all to the appropriate AS Codes.

Cramps, pins, bolts, ties and all other fixings shall be designed and fixed to effectively support each stone.

The Principal Contractor shall be responsible for the positioning and strength of each cramp.

2.4.12. DAMP PROOFING COURSE

REQUIREMENTS: Allow to use specialist Contactor such as Westox to undertake a wall by wall damp reading tests. The testing will need to be taken when the walls are not wet from falling (current demolition works. Westox or similar to provide written report.

Where necessary allow to install chemical dampproof course where damp nominated in above mentioned study, all to Manufacturers Recommendations equivalent to Westox. Allow to desalinate areas above damp areas generally to approx. 12mm above floor height using min two coats of Westox Cacocon ensuring minimum

drying periods between coats. Westox to provide salt testing analysis of walls at following points: before desalination, at each coat of the Cacoon layers.

2.4.13. REPLACEMENT STONE JOINTING

REQUIREMENTS: Provide all new joints of a width and appearance exactly matching the original existing joints. Maintain all existing joint lines.

Set all stones on a full bed of mortar and tap home.

All joints and joggles shall be completely filled with mortar, and all mortices and cramps must be completely grouted to ensure that no cavities are left.

Rake out new and existing joints as required to take pointing and re-pointing material.

Form all joggles with air escape holes as required, mortises, sinkings or ties, checks, perforations and grooves for flashings.

All stone is to be thoroughly wetted before pointing.

Point all joints affected by the stonemasonry work. Pointing and re-pointing shall be as specified in Subsection Pointing and Re-pointing.

2.4.14. STONE FINISHES

All stonework shall be finished to match the existing stonework and as listed in the work Schedules.

i. DRESSED AND RUBBED FINISH (D & R)

REQUIREMENT: Where Scheduled rub completely back 3mm minimum generally. Use a wet head angle grinder using coarse grit initially, thence medium grit. Then complete the rubbed finish by hand using a carborundum block and water.

All rubbed finish stonework shall be finished free from all saw and other tool marks.

ii. CLEAN CHISEL AND RUBBED FINISH

REQUIREMENT: Where Scheduled or where stones contain internal corners. or where access is unobtainable with a grinder, stones shall be hand chiselled back 3mm minimum with a fire sharpened chisel and then hand rubbed with a carborundum block and water to remove chisel marks where stones are originally dressed and rubbed finish.

All rubbed finish stonework shall be finished free from all saw and other tool marks. Allow for all clean chisel and rubbed finish work to be free of chisel marks unless otherwise directed on site by the Heritage Architect.

iii. SPARROW PECKED FINISH

REQUIREMENT: Where specified, Scheduled or where a matching finish is required to achieve the same finish as existing on the stone to be repaired or replaced.

Allow for the sparrow pecked finish stone to be finished as follows:

- Lightly chisel a drafted margin around the exposed face of the stone (approx. 20mm - 40mm wide, to match adjacent or repaired stone margins).
- Then use a punch to the entire face of the stone (excluding the drafted margin) to achieve the matching sparrow pecked finish.
- Finally, lightly boast the remaining entire exposed stone face or faces to match the existing sparrow pecked stone finish.

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- Allow to prepare up to three samples, each 900mm x 300mm for approval by the Heritage Architect prior to commencement of the work.

iv) ROCK FACE FINISH

REQUIREMENT: Where specified, Scheduled or where a matching finish is required to achieve the same finish as existing on the stone to be repaired or replaced.

2.4.15. HAIRLINE JOINTED INSERT

REQUIREMENT: Provide hairline jointed inserts where Scheduled.

Inserts to be placed where directed and documented and sweetened into the parent stone. Execution of tight joints is to be carried out by a Banker Mason.

Use an approved epoxy resin as a jointing adhesive with the necessary quantity of hardener and binder mixed to the manufacturer's recommendations. Submit technical details of proposed epoxy material to be used.

The two stone faces shall be bonded for their full depth and the finished exposed hairline joint shall simulate the stone being flush and of the same colour and particle density. Take extreme care to avoid adhesive contacting the exposed face of the stone, causing staining etc.

2.4.16. SWEETENING

REQUIREMENT: Carry out sweetening as required to provide accurate moulding and face lines in order to finish new stonework to match existing. It shall be performed in a manner similar to "Rubbed Finish".

On joint lines where protruding rubbed stone surfaces exist, sweetening shall be carried out to remove protrusions.

2.4.17. PROTECTION

REQUIREMENT: Protect all stonework from ongoing work, staining, damage of any kind, and inclement weather.

Protect adjoining surfaces and surfaces immediately below work being carried out to prevent damage during cleaning and pointing work.

Completely protect the stone edges and arises of all cornices, in areas where there is access to the scaffolding above the stone.

2.4.18. SCHEDULE OF PROPOSED REPAIR WORKS - STONEMASONRY

Complete all work as Scheduled for this section of the Specification in scope of works and as indicated on the Drawings.

Treat all aggressive salt contamination prior to carrying out the repairs.

2.5. DESALINATION (REMOVAL OF SALT DEPOSITS FROM STONE)

Requirement:

Desalinate stone to remove salt deposits and to lower aggressive salt content in stones by dry and wet vacuum salt extraction process.

Retain a sample of the extracted salt laden water from each treatment for testing by the heritage architect. Samples to be placed in small clean sample bottles labelled to fully describe the location and cycle. NOTE: it is

critical to ensure exactly same stones are used for each of the four testings. Allow for testing at least 12 areas of each façade.

Provide a price in the tender Schedule per square metre for additional treatments if required. This process shall be repeated as many times as directed by the principal's representative based on the heritage architect's testing.

Removal of the decayed loose stone surface layers shall be carried out by an approved stonemason. The intent is to remove as little as possible

Perform the work as specified for "Desalination" where directed and to all stone soffits in the work area. Note new stones do not require desalination.

Treat all aggressive salt contamination prior to carrying out the repairs.

Desalination Washing – Dry / Wet Vacuum Process:

Wet vacuum desalination work shall comprise a cycle of Dry vacuum, water saturation, wet vacuum removal and drying processes, at regular intervals as specified or as directed by the Heritage Architect.

Commence salt extraction process by removing the decayed soft and loose stone surface layers and dry vacuum off loose surface dust and salt particles. Prior to mist water spraying, fill all open joints, protect all openings from water and provide a suitable water disposal system for wet vacuum.

Proceed with wet vacuum desalination work by mist spray saturating one stone at a time. Wherever possible, no salt laden water is to flow onto adjacent stones. Thoroughly wet a horizontal strip along the top area of the stone. Repeat the process of water saturation in layers down the stone. Repeat by starting again at the top and continue the spraying until the stone is saturated.

At the end of the wetting phase, extract salt laden water with wet vacuum using appropriate heads.

Repeat the work over the entire face of the contaminated stone area for at least 4 cycles, keeping the stonework moist continuously. Provide samples of removed salt-ridden water using small screw topped bottles, clearly labelled and forward to Heritage Architect for testing. Allow sample for each cycle. Allow 4 samples per façade.

Desalination and Drying Times: Allow stone to dry out to allow salt to migrate and form on the surface of the stone. Allow to monitor the drying process and adjust the extent of time in the cycle to allow the stone to dry out (varies due to climatic conditions).

Dry vacuum Process: After the suitable drying out time has elapsed, use an approved dry vacuum to remove all the newly formed salt crystals on the surface of the stone, prior to further wetting desalination treatment.

Wet vacuum cycle: Repeat the desalination, drying and dry vacuum processes initially on a 24 - 48-hour cycle (minimum of 24 and a maximum of 48 hour) cycle.

Wet Weather: Where wet weather occurs during the work, allow for a longer drying out time.

Repeat Dry vacuum / Desalination / Drying Cycles: Allow for at least four (4) cycles in total, unless otherwise directed by the Principals Heritage Architect.

2.6. CLEAN AND TREAT STONWORK (REMOVAL OF MOULD, LICHENS AND BIOLOGICAL GROWTH FROM STONE)

Requirement:

Clean and Treat nominated stonework walls with "Boracol 100" or equal as described below to remove biological growth on existing stonework and to prevent re-growth on existing and new stonework. Cleaning and treatment are to be undertaken following completion of all stonework replacement in the nominated area. New stonework is to be treated to prevent / retard future biological growth on stonework. Synthetic stone repairs in the area are to be undertaken following cleaning and treating stonework, this is to allow an accurate colour match between the patch material and the cleaned stone.

Methodology for cleaning and applying biocide:

1. The area nominated for this treatment has been identified as a known microenvironment for biological growth on stonework. Only the areas nominated are to be treated.
2. Lightly clean the nominated area with a soft bristle (non-ferrous) brush and low-pressure water to remove lightly bonded pollution and biological growth. Leave lichen on the surface of the stone prior to applying the biocide as it will die with the following biocide treatment. Scrubbing the lichen off (not the algae) may lift of some of the stone surface.
3. Protective clothing and equipment as per materials safety data sheet or product information sheet must be worn.
4. General protection of the surrounding area is required to prevent over spraying area, drips etc treating adjacent areas. Vertical stone surfaces to be protected with plastic. The biocide is to be contained to spray area as much as possible as drips on the other areas of stone will show up in the future as cleaner spots.
5. Biocide ('Boracol 100') to be applied using either small bottles with a fine mist spray or with paint brushes at a rate of 500ml per m2.
6. Biocide to be applied evenly over the surface so that a uniform appearance is achieved long term.
7. Biocide is applied to the stone when slightly wet so that the biocide is drawn into the stone via capillary action. It is not to be applied during rain as it will wash off.
8. After at least 2 days the surface can be brushed with dry soft bristle (non-ferrous) brush to remove remaining organisms.
9. Re-apply treatment to any areas of synthetic stone repair following full curing of those repairs.

2.6.1. ASSOCIATED DRAWINGS

Refer to and complete all work as indicated on the Drawings.

2.7. POINTING & RE-POINTING

2.7.1. GENERAL

EXISTING POINTING BETWEEN STONES CONTAINS ASBESTOS

The removal of asbestos pointing shall be undertaken by qualified persons.

Remove all asbestos pointing to stonework joints in the work area. Removal of asbestos contaminated product to be undertaken by suitably qualified and licensed asbestos removal Contractor in accordance with this Specification.

All pointing in stone joints in the work area is deemed to contain asbestos. Proposed method of removal (without damage to stonework) in the form of a detailed method statement to be approved prior to commencement of work. Test sample area to be undertaken and upon approval used as the standard for the project.

SCOPE: This subsection of the Specification includes, but is not necessarily limited to the following pointing and re-pointing work;

- Removal of hard cement mortar and asbestos mortar;
- Removal of original pointing;

-
- 80% repointing of all stonework;
 - Preparation of mortar for bedding, pointing and re-pointing stonework.

ASSOCIATED STONEWORK SUBSECTIONS: Refer to the following subsections to be included in the work specified in this contract;

Subsection GENERAL

Subsection STONEMASONRY

ASSOCIATED DRAWINGS: Refer to the Drawings located in this Specification.

REQUIREMENT: Unless otherwise specified all pointing and re-pointing shall be in an approved mortar as specified to match the original existing mortar.

Use an approved elastomeric sealant only in locations specified below. Refer to clause - Elastomeric Sealant Pointing and Re-pointing.

Provide samples of up to 10 lineal metres and obtain approval before commencing the work.

SEQUENCE: Do not commence pointing or re-pointing until cleaning and repair work in the vicinity has been completed.

Clean down generally before commencement of pointing and re-pointing.

Point and re-point all joints in new work, all joints affected by the work and all open and defective loose joints.

Protect all stonework and clean up on completion of the work.

2.7.2. QUALITY

REQUIREMENT: The proposed work shall be jointly inspected in detail by the Principal Contractors Nominated Representative and the Heritage Architect, to confirm the work in each location.

REQUIREMENT: The Principal Contractor shall co-ordinate with the Heritage Architect so that pointing and re-pointing may be inspected in the following stages;

- i. Existing pointing removal and joint preparation for pointing and re-pointing. Submit tools and proposed removal method for approval. (Hold point)
- ii. Sand proposed for use. (Witness point)
- iii. Mortar pointing and re-pointing samples. (Hold point)
- iv. Elastomeric sealant material and colour, complete with manufacturers data sheets and application recommendations prior to the preparation of samples. (Witness point)
- v. Elastomeric sealant pointing and re-pointing samples. (Hold point)
- vi. Pointing and re-pointing work completed. (Hold point)

APPROVED CONTRACTORS AND APPLICATORS:

REQUIREMENT: All pointing and re-pointing shall be carried out only by Contractors and personnel experienced in the type of work specified.

Submit with the tender a list of personnel proposed to be used for the work, complete with details of experience, previous work on buildings etc. List referees etc. who can establish that the tenderers and nominees have executed the same work to that specified. This information will be taken into account when assessing the tender.

2.7.3. POINTING AND RE-POINTING MATERIALS

Pointing and re-pointing materials to be as specified and Scheduled shall be either:

- a) Mortar
- b) Elastomeric Sealant (only where indicated on Drawings or directed by heritage architect)

Use of Elastomeric Sealant not shown in the documents must be approved and signed off by the Heritage Architect prior to use.

MORTAR MATERIALS:

REQUIREMENT: Provide mortar for bedding, pointing and re-pointing stone as specified below.

GENERALLY: Provide mortar for pointing and re-pointing which shall as nearly as possible match in colour, texture, strength and porosity, that of the original mortar or the approved sample. Being always softer and more porous than the stones, in order to "chaperone" and protect them.

Mix with an oxide colouring to match existing colour where required. Submit all relevant suppliers guarantees, data sheets etc for approval to the Principal's representative prior to commencement of the work.

MORTAR MATERIALS: To AS 3700. Mortar for masonry construction.

CEMENT

Off-White Cement: To AS 3972, Type GP, with iron salt content not exceeding 1%.

SAND

General

Sand: Fine evenly graded, washed sand with low clay content and free from effervescing salts in accordance with BS1200.

Submit sample of sand for each required use, complete with sand grading analysis prior to commencement of the work.

The table below sets out the size grading requirements of the two sand types. This table is to be used in sourcing and supplying appropriate sand.

Sand used for pointing and re-pointing shall be subject to approval after the preparation of sample panels as specified later in this section.

Size – grading Specifications		
	Fine – medium sand	Medium – coarse sand
Sieve size	% passing	% passing
4.75 mm	100	98 - 100
2.36 mm	100	90 - 100
1.18 mm	95 - 100	70 - 100
600 ums	65 - 100	40 - 75
300 ums	30 - 80	10 - 40
150 ums	10 - 30	2 - 15
75 ums	0 - 5	0 - 5

Sand specified in this section allows for two sand types:

-
- Fine to medium sands – For use in 3mm (nominal) joint one sand type that is currently acceptable is H Sydney Sand, Kurnell by Rocla
 - Medium to coarse sands - For use in 10mm (nominal) joint widths. One sand type that is currently acceptable is Glenella, Fine Coarse by Glenella Quarry Pty Ltd.

The sands listed above are a guide only, other sands that meet the standard will be acceptable. Please note that blending sands from different sources in the correct proportions is allowable and can assist in achieving sand with the correct size grading. Sand grain shape is also an essential requirement of the standard, grains need to be sharp and angular not rounded. Sand colour will also be considered when assessing an appropriate sand for the works.

LIME

STANDARDS:

Lime shall generally conform to AS 1672.1: Limes and Limestones – Limes for Building excepting and including where this Specification provides for additional requirements.

Hydraulic lime (not covered by AS 1672.1) shall conform to BS EN 459 Building Lime

DEFINITIONS:

Lime putty—the product obtained by slaking quicklime with a surplus of water, and aging for a minimum of three months.

Processing additions—constituents, other than those defined in this Section, which are added in minor quantities during the manufacturing process to aid the manufacture or improve the handling properties of lime.

Quicklime—essentially calcium oxide in a form which can be readily slaked by reaction with water.

Water—either town supply, runoff water, recycled water or from natural underground sources, free from deleterious chemicals with a maximum concentration of total dissolved solids (TDS) of 2500 mg/L.

TRIAL MIXES:

Lime for use in mortars shall be either (Supply samples of the following for approval):

- Hydraulic Lime NHL 3.5
- Sydney sand
- River sand

2.7.4. TRIAL MORTAR MIX

Sample 1: Stonework pointing: 3:1+ oxide

- 3 sand (made up of 1½ Sydney, 1½ river)
- 1 hydraulic lime NHL 3.5
- Oxide (approx. ½ cup)

Sample 2: Stonework pointing: 3:1+ oxide

- 3 sand (made up of 1½ Sydney, 1½ river)
- 1 hydraulic lime NHL5.0
- Oxide (approx. ½ cup)

Mix by volume. Drain water from lime putty before use. Particular attention shall be paid to the exact measurement of mortar contents and the mixing procedure. Use approved batching boxes for mixing of mortar by volume. Machine mix.

Prepare sample labelled with permanent marker.

2.7.5. MARKING & STORAGE

Lime putty shall be delivered and stored in airtight containers that can be resealed. The containers shall be of approved type and size.

Containers in which lime or lime-based products are packed or slaked and stored (on or off site) shall be marked with the following information:

- a) Name of product.
- b) Name and address of manufacturer.
- c) Net mass per container.
- d) Date of slaking or placement in the container

SAFETY

When working with lime eye protection, gloves and safety clothing are essential.

LIME PUTTY

Lime putty shall be directly slaked from quicklime. This process is to occur in a safe manner off site.

Quicklime to be progressively added while the mix is stirred until there is an excess of water and the reaction subsides. Avoid lumps of unslaked lime. Pass the finished putty through a fine sieve to remove any lumps.

When cool the slaked lime shall be transferred to an airtight container, and the lime putty allowed to mature for a minimum of three months before use.

Commercial pre-slaked lime putties shall be equal to "Blue label" Lime Putty" by Lime Industries of Western Australia, or "Slaked Lime" and "Putty Lime" by Westox Building Products of Sydney, provided account is taken of their density and components as follows:

2.7.6. PREPARING LIME PUTTY FOR USE

Lime putties must be drained of any free liquid and slurry-like material and only stiff (cheese-like) putty that will stand without losing its shape shall be used for mortars.

The liquids shall be retained in sealed containers and for future use in small quantities to make a mortar more workable.

BULK DENSITY:

Directly slaked lime putties shall have a bulk density of at least 1.35 kg/litre.

ADMIXTURES AND ADDITIVES:

Admixtures (such as air-entraining and water-retaining agents) and additives (such as ground limestone) may be specified but are not to be used otherwise.

Reportable properties and characteristics

(i) the nature and quantity of any processing additions (such as air-entraining agents) shall be disclosed;

ADDITIVES: Do not use additives unless prior approval has been obtained.

2.7.7. POINTING AND RE-POINTING MORTAR

MORTAR MIX: To AS 3700. Mix by volume. Particular attention shall be paid to the exact measurement of mortar contents and the mixing procedure.

Used approved batching boxes for mixing of mortar by volume. Machine mix.

All stonework below the lead weathering on course line E shall have:

BEDDING AND JOINTING MORTAR:

Sample 1: Stonework pointing: 3:1+ oxide

- 3 sand (made up of 1½ Sydney, 1½ river)
- 1 hydraulic lime NHL 3.5
- Oxide (approx. ½ cup)

All stonework above the lead weathering on course line E shall have:

BEDDING AND JOINTING MORTAR:

Sample 2: Stonework pointing: 3:1+ oxide

- 3 sand (made up of 1½ Sydney, 1½ river)
- 1 hydraulic lime NHL5.0
- Oxide (approx. ½ cup)

Note:

Where stone can be bedded in successive courses (from bottom up) they can be bedded as stated above with bedding and pointing mixes as specified. However, where stones are required to be inserted into a course where existing stones are located above and below then this method is not possible, and the stone units will be fixed in position as follows;

2.7.8. POINTING AND RE-POINTING MORTAR

Due to the fine tolerance of 3-5 mm bed joints the stones are to be carefully inserted into position between the existing stones above and below without damaging edges. Insert a closed cell polyurethane backing rod into the joint all around the stone to a depth of at least 3 times the thickness of the joint. Fine grout (1 cement: 5 sand) is to be poured into a port at the top joint and is to fully fill the void all around the stone including the back. This process will require the placing of port vents at the bottom joint and will verify the full grouting of the void. After the grout has hardened sufficiently remove the backing rod to allow the joint to be pointed with pointing mortar as specified above.

MORTAR COLOUR

REQUIREMENT: Colour and texture to match approved sample. Use a small amount of approved oxide to match colour.

SAMPLES: Allow for samples of pointing and re-pointing mix to be prepared. Tenderers shall allow using either hydraulic lime NHL3.5 or NHL5.0 for the contract, depending on the approved sample mix.

2.7.9. POINTING AND RE-POINTING MORTAR

THE WORK AREA: Clean down the work area prior to commencement.

DEFINITION: Defective joints are those joints having:

- Loose or missing mortar;
- Excessively soft, powdery or crumbling mortar;

- Hard cement mortar.
- Mortar containing asbestos.

The building fabric, scaffolding, and work area shall be maintained free of all residual or excess pointing or re-pointing material.

POINTING REMOVAL: Carefully remove the existing pointing from open and loose and defective joints and where indicated in the Work Schedules, to a depth of 20mm, using an approved method and hand tools, without damaging the adjacent stonework and arises. No power tools shall be used.

Do not widen the joints.

Submit tools and proposed removal method for approval.

Prepare sample area of joint removal, prior to commencement of the work.

CLEANING OUT JOINTS: Use either vacuum suction or compressed air jetting etc, to remove dust and loose debris. Lightly hose out the joint, clean out free of foreign material and loose stone, and leave damp for pointing or re-pointing. Dry joints shall not be re-pointed.

Prepare all joints to take a minimum of 20mm mortar as well as any backing rods.

TAPING JOINTS: Tape all joints with 50mm wide masking tape, after washing down and immediately prior to re-pointing or pointing.

The tape shall be set along the joint arris as close as possible to enable the re-pointed joint to appear as thin as possible to match the original joint line.

Strip off the masking tape when the joint is partially set, so removal does not disturb the new pointing.

Place backing rod in joint under compression.

APPLICATION OF MORTAR: The pointing or re-pointing mortar shall be applied in a putty-like consistency and be plastic enough to be sufficiently stable.

It shall be capable of being moulded into a ball-like consistency so that it can be firmly pushed completely back in several applications into the joint to completely fill the empty joint. Cut the mortar back before it sets, and finish with a brush.

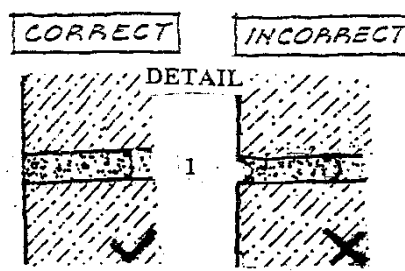
The mix shall be applied in an approved manner, using approved tools, from approvals given during preparation of the sample panels.

Finish joint to match approved sample finish.

PROTECTION: Protect all adjoining stone surfaces during application. Clean off all mortar and mortar droppings on a daily basis.

ON COMPLETION: Clean away all debris off site etc.

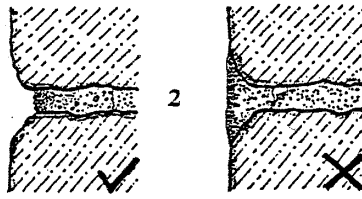
2.7.10. POINTING AND RE-POINTING MORTAR



NOTES

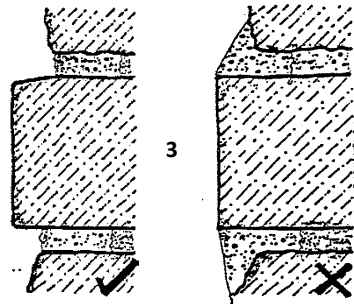
DETAIL 1. STANDARD JOINT POINTING & RE-POINTING

Point and re-point all open, loose and defective joints as specified, and where indicated. Maintain the original joint width using standard details as specified for pointing and re-pointing. Flush fill joints to the original face line.



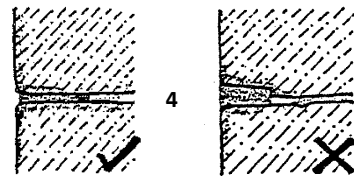
DETAIL 2. ERODED ARRIS JOINT PATCHING

Maintain original joint width by not filling these joints out to the original face line. Use mortar and workmanship procedures as before stated Detail 1. Fill joints out only to where the eroded arrises begin to widen in the joint. Avoid thickening the joint appearance. Avoid mortar being feathered on the outside of the stone where water traps may be created.



DETAIL 3. PROJECTING STONE OR BRICK JOINT RE-POINTING

Point and re-point all open and defective joints as before stated Detail 2. Allow to slightly chamfer or round the top bed of the projecting stone or brick to throw off water. Do not change the thickness or appearance of the joint by using weather struck mortar fillets, which may also trap water.



DETAIL 4. THIN JOINT RE-POINTING

Point and re-point all open and defective joints as before stated Detail 1. Maintain original joint width.

(Not to scale)

Details and information from: "Conservation of Building & Decorative Stone", Vol. 2. John Ashurst & Francis G. Dimes, pp. 87

2.8. ELASTOMERIC SEALANT POINTING AND RE-POINTING

2.8.1. GENERAL

The intention of using an elastomeric sealant is to prevent water penetration into joints (in joints with excessive movement) and as specified and indicated on the Drawings. Elastomeric sealant shall be used to seal the first joint above the cornice lead weatherings as detailed and in horizontal joints where specified on Drawings.

Elastomeric sealant shall not be used in other locations without written approval from Heritage Architect.

EXTENT OF WORK

REQUIREMENT: Pointing or re-pointing shall be applied to the stonework areas as specified above in clause "Generally" and/or as Scheduled in scope of work and as indicated on the Drawings.

- a) In joints with excessive movement as specified and indicated on the Drawings.
- b) In horizontal joints not to be covered by lead as specified and indicated on the Drawings
- c) At top of lead weatherings, the sealant shall only be used to seal the first joint above the cornice or as detailed or instructed by the Heritage Architect.

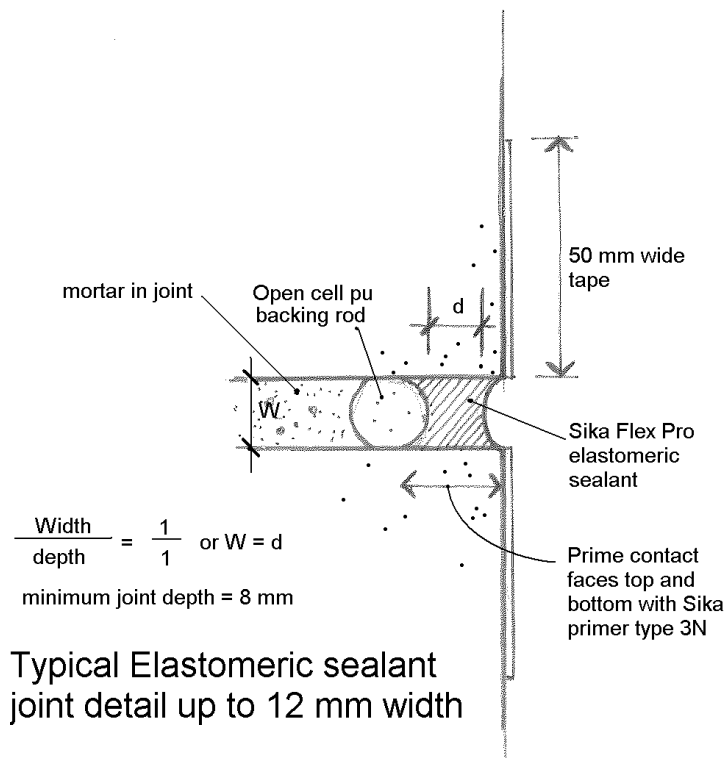
2.8.2. MATERIAL

REQUIREMENT: To be an approved elastomeric sealant material. The material to be equal in all respects to Sika Flex Pro colour pale brown. Submit colour sample and details of sealant proposed to be used for approval prior to any work being carried out on site. The sealant shall be applied in accordance with manufacturer's instructions, using bulk or air gun equipment, foam backing rod, primer, etc.

2.8.3. SAMPLE AREA

REQUIREMENT: Prepare a sample area of approximately six (6) lineal metres in the presence of the Heritage Architect. Principal Contractor to nominate an experienced applicator to perform this work.

Submit the Manufacturer's recommendations for use and application prior to commencement of the sample.



CUTTING OUT

REQUIREMENT: All joints nominated for the use of elastomeric sealant shall be cut out to provide a width/depth ratio of 1:1 for the insertion of the sealant after placement of a foam backing rod. Joints narrower than 6mm may be carefully widened to admit the pointing or re-pointing.

CLEANING OUT JOINTS: All joints shall be cleaned and dry and free from foreign matter, immediately prior to application.

THE WORK AREA

REQUIREMENT: Clean down prior to commencement. The building fabric, scaffolding, and work area shall be maintained free of all residual or excess pointing or re-pointing material, and all empty sealant cartridges. The building fabric and scaffolding (including planks) shall not be used for wiping applicators guns, hands etc. free of pointing or re-pointing material.

Water cleaning shall not be used where open joints and or degraded facades allow water penetration into the building fabric.

TAPING

REQUIREMENT: Protect the stonework surface on each side of the joint by 50mm wide masking tape. On completion of pointing or re-pointing remove the tape and remove any stains or marks from the stonework surface.

BACKING ROD

REQUIREMENT: An approved foam backing rod shall be used in accordance with the manufacturer's recommendations.

Provide and insert a closed cell backing rod or strip such as a non-stick expanded polyethylene or polyurethane foam which doesn't adhere to the sealant and does not inhibit movement.

Place backing rod in joint under compression.

PRIMER: An approved primer such as Sika primer 3N (or equivalent) shall be used and applied in an approved manner. The primer is to be brush applied to the contact face of the joint to assist with the adhesion of the sealant to the stone.

APPLICATION GENERALLY

REQUIREMENT: The jointing material shall be applied in accordance with the manufacturer's instructions.

AVOIDING DAMAGE TO THE STONE

REQUIREMENT: The sealant material and primer shall be kept off the exposed face of the stone.

ON COMPLETION: Clean away all debris and spent cartridges. Clean down any exposed residual elastomeric sealant material etc.

2.8.4. ASSOCIATED DRAWINGS

Refer to:

- Associated Drawings as in General Requirements and
- Schedule of Proposed Repair Works

END OF SECTION - STONWORK

3 SYNTHETIC STONE REPAIR

3.1 GENERAL

3.1.1 SCOPE OF WORKS

The works include but are not necessarily limited to the following;

Provide items listed in Scope of Works. and on the Drawings

The stonework repair referred to in this section includes, but is not necessarily limited to, the following items and related subsections;

- Synthetic Stone Repair – including pinning and injection repairs.
- Provide synthetic stone repair to all items identified on the Drawings and as specified.
- Remove metal inserts and fixings in stone and provide synthetic stone patch where applicable.

3.1.2 CROSS REFERENCES

GENERAL

Refer to the General Requirements section.

RELATED SECTIONS

Refer to the following sections:

- General Requirements
- Stonework
- Architectural Drawings
- Schedule of Proposed Repair Works

3.2 REQUIREMENTS

SCOPE: This subsection of the Specification applies to and includes the provision of all materials, tools, labour and equipment required for the repair of weathered decayed and physically damaged sandstone using an approved synthetic stone resin and mortar.

The work includes, but is not necessarily limited to;

- Selection of proven resin and synthetic stone material with approved matrix colouring agents and reinforcement.
- Cutting back of defective substrate to sound stone.
- Removal of inserts.
- Reinstatement of stone faces and profiles to an unweathered and/or undamaged moulding by filling with the approved material.
- Filling of cracks in stone.
- Pointing and re-pointing of joints affected by the work.

- Provision of pin reinforcement in stonework where required.
- Provision of samples for approval, warranties, tests etc and quality control items.

Complete all synthetic stone repair listed as specified and indicated on the Drawings.

EXTENT OF WORK: Complete all work as specified in the scope of work and indicated on the Drawings.

3.3 APPROVED SUB CONTRACTOR AND APPLICATORS

REQUIREMENT: All synthetic stone repair shall be carried out only by approved Contractors and/or personnel with ten years minimum sandstone experience in the type of work specified.

Submit with the tender a list of personnel proposed to be used for the work, complete with details of experience, previous work on buildings etc. List referees etc. who can establish that the tenderers and nominees have executed the same work to that specified. This information will be taken into account when assessing the tender.

The Principal's Representative has a list of approved synthetic stone repair applicators capable of performing this type of work. The names of these applicators will be given to the tenderer, on request, by the Contact Officer.

Tenderer to submit name of proposed applicator with the tender.

3.4 QUALITY

3.4.1 INSPECTION

NOTICE

The Principal Contractor shall be responsible for all OH&S and quality issues on site. Principal Contractor's site supervisor / foreman shall be on site each working day. Principal Contractor's site supervisor shall inspect work prior to pre-handover inspections, and to aim for nil defects.

Witness points: The Principal Contractor shall give notice to the Principal's Representative at the stage of work when the Witness Point items listed in the Schedule require inspection.

Hold points: The Principal Contractor shall give notice to the Principal's Representative at the stage of work when the Hold point items listed in the Schedule require inspection. Do not conceal those parts of the works or proceed without approval.

Minimum notice for inspections to be made: 5 working days for on-site inspections.

Concealed elements: Give notice so that inspection may be made of elements to be concealed.

HOLD POINTS

Refer to Inspection Test Plan (ITP) in Section 1 for Hold and Witness point activities.

INSPECTION: The proposed work shall be jointly inspected in detail by the Principal Contractors' Nominated Representative and the Heritage Architect to confirm the work on each stone, and in each location.

REQUIREMENT: The Principal Contractor shall coordinate with the Heritage Architect so that stonework may be inspected in the following stages. Give sufficient notice so that the following may be inspected;

- i) The location and extent of the synthetic stone repair work to be done. (Hold point);
- ii) The prepared sample ranges. (Hold point);
- iii) The stone cut out and the sub-base prepared to receive the synthetic stone mortar. (Witness point);
- iv) Reinforcement for the synthetic stone in position. (Hold point);

- v) Filling in holes and the stone profiles completed. (Witness point);
- vi) Joints prepared ready for pointing and re-pointing. (Witness point);
- vii) Completed work. (Witness point).

3.4.2 SAMPLES

REQUIREMENT: Where requested by the Heritage Architect or listed in the ITP provide samples as specified prior to the commencement of the work and obtain approval from the Heritage Architect. Label all samples.

COLOUR CONTROL SAMPLES: Tenderer to submit with the tender two (2) sets of at least three (3) different 150 x 150 mm synthetic stone colour control samples varying in colour to match the colour range of the weathered sandstone in the project. Use these colours, if approved, in the locations directed by the Heritage Architect. One set of approved colour samples will be retained by the Heritage Architect, the other shall be retained by the Principal Contractor.

Repairs that vary excessively in colour from the surrounding stone or from the original samples shall be replaced at the Principal Contractors expense.

Nominate for each colour control sample, the source of all aggregates, the particle size gradation of aggregates, the binder/aggregate ratio, the binder (resin & hardener) and any other additives.

SAND OR BLENDED MIX SAMPLE: Tenderer to submit a representative sample of the proposed sand or blended mixture for approval and if required by the Heritage Architect it shall be tested by a NATA registered laboratory or by the CSIRO Building Construction and Engineering Division, Testing Laboratory, North Ryde, Sydney according to the requirements of Sections 11, 12, 24, 33 and 35 of AS 1141-1974 at the Principal Contractor's expense. Submit sample in approved clear plastic containers.

SAND GRADING: If required by the Heritage Architect submit a sieve analysis of the sand or sands proposed to be used carried out by a NATA registered laboratory.

REINFORCEMENT: Submit samples of proposed stainless-steel reinforcement.

TESTING: All tests shall comply with the testing requirement nominated in the preliminaries section of the Specification.

Prior to the commencement of the works and not later than two weeks after the issue of a letter of acceptance the Principal Contractor shall provide if required by the Heritage Architect, six 50mm cubes made of the synthetic stone materials.

3.4.3 SHOP DRAWINGS

REQUIREMENT: Where requested by the Heritage Architect supply shop Drawings where specified and showing the following where applicable: setting out position and identifying number of each stone, details of 1:10 scale of each major synthetic stone repair unit showing reinforcement and type of finish for each stone

Allow for four (4) working days for review of each set of shop Drawings. For each drawing supply two copies in the form of prints on paper.

3.5 SYNTHETIC STONE MATERIALS

REQUIREMENT: Synthetic stone materials shall be an approved epoxy mortar of at least 10 years proven durability of use in similar situations and locations to those proposed in this contract.

All materials used in the preparation of an epoxy mortar shall be approved by the Heritage Architect.

RESIN AND HARDENER - MORTAR RESIN REQUIREMENTS: For synthetic stone mortar the epoxy resin, and hardener shall be supplied by a recognised manufacturer and used in accordance with the manufacturer's instructions.

The epoxy mortar shall be moisture insensitive.

Both components of the resin shall be 100% reactive without any solvent content.

Where resins change colour within the defect's liability period, they will be rejected and made good or replaced at the Principal Contractor's expense.

LOW VISCOSITY EPOXY RESIN: For crack repairs i.e. fine cracks, fill with low viscosity epoxy resin especially formulated for this type of application using a hypodermic type syringe and where appropriate a vacuum suction to ensure full penetration of the epoxy resin.

Both components shall be 100% reactive without any solvent content.

HEALTH HAZARD: There are certain health hazards associated with the use and application of epoxy resins, particularly from skin contact and lack of sufficient ventilation. The Principal Contractor shall ensure that the operators are adequately protected and comply with the requirements of the Occupational Health & Safety Act.

SAND REQUIREMENT: The sand used in the preparation of the epoxy mortar shall be clean, well-washed material, free from clay and any other deleterious impurities.

A blended mixture of different sands shall be used to produce a suitable mortar.

SAND SAMPLE: Submit a representative sample of the proposed sand or blended mixture for approval A.B.S (as before specified) Clause Quality.

SAND GRADING: Submit a sieve analysis A.B.S Clause Quality.

COLOURING AGENTS REQUIREMENT: The colour of the repair mortar shall blend closely with the surrounding sandstone.

Prepare trial samples as specified in Clause Colour Control Samples to the Heritage Architect's approval that this requirement can be met.

Where possible, the colour matching shall be achieved by the careful selection of naturally coloured sands. If it is necessary to use artificial colouring agents, only inorganic pigments approved by the Heritage Architect shall be used, and also in locations approved by the Heritage Architect.

Organic pigments are not permitted.

No ultra-violet absorbing liquid coatings shall be used.

REINFORCEMENT REQUIREMENT: Reinforcement to be Stainless Steel 316 Grade or equal.

Depending on the size and shape of the repair, reinforcement can be provided as a mesh or as individual wires with a minimum diameter of 3mm. A sample of the proposed reinforcement shall be submitted for approval.

BOND COAT REQUIREMENT: Use approved bond coat between the underlying sandstone substrate and the repair mortar as recommended by the manufacturer of the resin used in the mortar.

3.6 EXECUTION

3.6.1 SUBSTRATE PREPARATION

GENERALLY: Complete other preparation -work as before specified (ABS) and prepare stone substrate to provide a firm base to support the synthetic stone repair and reinforcement as required.

3.6.2 SUBSTRATE CLEANING

CLEANING REQUIREMENT: Generally, where directed by the Heritage Architect clean surfaces of all stones to be repaired, of all relatively loose surface deposits, unwanted stains, bird debris, fungal and lichen growths etc. Cleaning shall only be performed to leave the stonework exposed faces with an even weathered and naturally oxidised appearance without streaks or stains.

Determine, with the Heritage Architect, the nature and extent of the dirt and deposits to be removed.

Complete a general washing clean initially with a brush and water then check with the Heritage Architect where further detailed or 'spot' cleaning is required. Do not over clean. Do not damage the stone or building during cleaning. Do not attempt to produce a 'new stone' appearance. Do not use acids. Do not use cleaning agents unless approval in writing has been given by the Heritage Architect, and then on stones specified in the approval.

The aim in cleaning is to provide the approved colour required of the synthetic stone repair.

SAMPLE CLEANING PANEL. Where and when directed by the Heritage Architect provide a sample area using water and scrubbing brushes initially. If this is unsuccessful, use approved bronze brushes and water. Allow to soak the stone prior to brushing.

Where the previous two methods are unsuccessful allow to use an approved very mild cleaning agent such as a mild detergent, soak and brush. This work on the sample panel shall be carried out in the presence of the Heritage Architect.

Allow each sample area to be 300mm long x 300mm high, in locations selected by the Heritage Architect.

PROTECTION: Take all necessary precautions to prevent damage to the building, stonework or nuisance to the occupants.

3.6.3 LIGHT CHISEL SUBSTRATE

REMOVAL OF SALT DEPOSITS: Where required on stones to be repaired, lower aggressive salt content in stones by light chiselling and brushing all 'hardened crust' or decayed stone surface layers on the nominated stones. Chiselled work shall vary from scraping soft surfaces with a chisel to applying a light mallet chisel work. Work to be performed by an approved mason. On completion of light chisel work where required commence cycles of dry vacuum, mist water spraying, wet vacuum removal, drying and brushing in accordance with the desalination Specification requirements.

Perform the work as specified for 'Sponge Washing' where required.

Treat all aggressive salt contamination prior to carrying out the repairs.

3.6.4 REMOVAL OF SALT DEPOSITS

REQUIREMENT:

Desalinate to remove salt deposits and to lower aggressive salt content in stones by dry and wet vacuum salt extraction process. Remove the "hardened crust" or decayed loose stone surface layers as before stated and dry vacuum off loose surface dust and salt particles. Following this mist water spray stone surface, then remove salt laden water with wet vacuum. Then allow stone to dry (drying phase). This process shall be repeated as many times as directed by heritage architect.

Chiselled work shall be carried out by an approved mason.

Perform the work as specified for 'Desalination Wash' where required to all synthetic stone patches in the work Schedules

Treat all aggressive salt contamination prior to carrying out the repairs.

Desalination Washing – Dry / Wet Vacuum Process:

Wet vacuum desalination work shall comprise a cycle of Dry vacuum, water saturation, wet vacuum removal and drying processes, at regular intervals as specified or as directed by the Heritage Architect.

Commence salt extraction process by removing the "hardened crust" or decayed stone surface layers as before stated and dry vacuum off loose surface dust and salt particles. Prior to mist water spraying, fill all open joints, protect all openings from water and provide a suitable water disposal system for wet vacuum.

Proceed with wet vacuum desalination work by mist spray saturating one stone at a time. Wherever possible, no salt laden water is to flow onto adjacent stones. Thoroughly wet a horizontal strip along the top area of the stone. Repeat the process of water saturation in layers down the stone. Repeat by starting again at the top and continue the spraying until the stone is saturated.

At the end of the wetting phase, extract salt laden water with wet vacuum using appropriate heads.

Repeat the work over the entire face of the contaminated stone area for at least 4 cycles, keeping the stonework moist continuously.

Desalination and Drying Times: Allow stone to dry out to allow salt to migrate and form on the surface of the stone. Allow to monitor the drying process and adjust the extent of time in the cycle to allow the stone to dry out (varies due to climatic conditions).

Dry vacuum Process: After the suitable drying out time has elapsed, use an approved dry vacuum to remove all the newly formed salt crystals on the surface of the stone, prior to further wetting desalination treatment.

Wet vacuum cycle: Repeat the desalination, drying and dry vacuum processes initially on a 24 - 48-hour cycle (minimum of 24 and a maximum of 48 hour) cycle.

Wet Weather: Where wet weather occurs during the work, allow for a longer drying out time.

Repeat Dry vacuum / Desalination / Drying Cycles: Allow for at least four (4) cycles in total, unless otherwise directed.

3.6.5 REMOVAL OF INSERTS

REQUIREMENT: Allow to carefully remove inserts where Scheduled prior to repair work. Check extent of insert removal with the Heritage Architect prior to starting the work. Complete all work as specified and work identified on Drawings.

Inspect all holes and other defects. All exposed timber, iron and metal plugs and inserts foreign to the stone shall be carefully extracted with a minimum of damage to the stone. All work shall be executed in an approved manner.

Once all inserts have been removed, all holes shall be thoroughly cleaned out to provide a good key for the patching material.

3.6.6 CUTTING BACK SYNTHETIC STONE REPAIR WORK

REQUIREMENT: Remove all decayed and unsound stone from the repair area to provide a sound base for the repair mortar to adhere to. Use only approved fire sharpened or tungsten tipped chisels. Feather edges are not permitted. The edges of the repair area shall be undercut to provide an effective physical key. The minimum depth shall be as specified in Synthetic Stone Repair and— Repair Methods.

3.6.7 CHEMICAL CONSOLIDANTS OR SOLVENTS

REQUIREMENT: No chemical consolidants or solvents shall be used. Solvent based chemicals shall not be applied over epoxy mortar repairs.

3.6.8 MATCHING EXISTING STONE FINISHES

REQUIREMENT: Synthetic stone repair shall match surface colour, texture and finish of adjacent natural stone. Synthetic stone repair is to match the surface finish of the stone it is applied to. This could be (but not limited to) any of the following finishes;

- Clean Chisel & rubbed finish
- Chiselled finish

- Rockface finish
- Sparrow Pecked finish

3.7 SYNTHETIC STONE MORTAR MIX

REQUIREMENT: All work shall be strictly in accordance with the technical advice of the product manufacturer. All mixing shall be carried out exactly, using the correct proportions in mechanical mixers.

Mix material with suitably approved clean naturally coloured silica sands to ensure that the patch material used resembles the natural sandstone being replaced as closely as possible in colour and structure.

BATCHING AND MIXING: All batching of the mortar ingredients shall be done by weight.

All batches must be prepared using an electric mixer. Very small batches may be mixed by hand. Allow for less than 0.25 of a litre.

Resin and hardener shall be premixed strictly in accordance with the technical advice of the product manufacturers.

The resin and hardener shall be mixed together to obtain a uniform appearance. A machine mixer shall be operated until a thorough blending of the ingredients is achieved. Use “Magapoxy H” or equivalent in mortar mix.

THE MIX: The mix shall consist of not less than 1:10 and not more than 1:12 parts of resin and hardener to sand by weight.

AGGREGATE MIXES: The aggregate mixes shall be carried out using the proportions approved for the three (3) nominated colour mixes.

Aggregate mix batches shall be pre-weighed and packaged to suit both the scale of patching undertaken and pot life both on site conditions and each binder/aggregate ratio.

ADDITIVES: Additives shall not be used to extend pot life.

COMPRESSIVE STRENGTH: To be not less than 30MPa and the bulk density not less than 1750kg/m³ for an epoxy-based mortar mix of 1:10 and to be not less than 25MPa and the bulk density not less than 1720kg/m³ for an epoxy-based mortar mix of 1:12.

3.8 SYNTHETIC STONE REPAIR WORK

3.8.1 SYNTHETIC STONE REPAIR

REQUIREMENT: Repair individual stones separately. Patching shall preserve existing joints and maintain the integrity of individual stones. Pointing between repairs must be carried out separately. Areas should never be repaired as render and joint-scored.

3.8.2 APPLICATION

REQUIREMENT: Prior to any epoxy patching, carry out all preliminary work as specified herein. Provide a minimum of 300 lux lighting level to the working surface during the work. This is particularly important where the working surface is in shade due to scaffolding, hoarding and/or shade cloth etc.

The work shall be kept dry, before, during and 24 hours after patching. Provide complete protection from sun, wind and rain, and allow for temperature and wind variations at all times.

Treat excessive salt contamination prior to carrying out the synthetic stone repairs.

The contact surfaces shall be roughened and then cleaned before being repaired. They shall be free of dust and shall be dry.

Generally, the minimum depth of any unreinforced repair shall be 6mm and 25mm for reinforced repairs. However, for this contract, the Principal Contractor shall allow to provide approved metal reinforcement for each separate repair item for all Epoxy Repair (EP) Work and also for Inject (In) repair crack with epoxy resin. Unreinforced patches may be used where approved by the Heritage Architect and after detailed advice from the Structural Engineer.

Provide all necessary reinforcement, pins, wire, etc. using approved 316 Grade stainless steel to patches as specified.

Patching shall be carried out with resin/sand mixes as previously specified.

The Principal Contractor shall ensure that no epoxy resin or other material discolours or stains the surface of adjoining stones. The Principal Contractor shall make good all such damage.

3.8.3 REINFORCEMENT

REINFORCEMENT REQUIREMENT: All overhanging stone requires reinforcement. Where repairs exceed 75mm diameter or exceed 50mm in depth use reinforcement, which can be provided as a mesh or as individual wires. The reinforcement shall be fixed to sound stone by stainless steel pins or tie wires, whichever is appropriate. Provide all necessary reinforcement, pins, wire, etc. using approved 316 Grade stainless steel. Wires must be 3mm diameter cleaned and abraded / roughened before installation. Reinforcement to be spaced to adequately restrain the patch in relation to depth and patch configuration.

Where requested by the Heritage Architect submit all reinforcement details for approval prior to commencement of the work. Refer to hold point 39 & 41 in this Specification section 3.

All reinforcement is to be inspected and approved by the Principals engineer prior to applying synthetic mortar.

All anchoring pins or tie wires shall be embedded in drilled holes, a minimum of 25mm deep for in-situ patches and with an approved epoxy resin of a stiff, paste consistency such as "Mega poxy PM" or equivalent.

The minimum cover for reinforcement shall be 10mm, unless otherwise advised by the Structural Engineer. Patches deeper than 30mm may require layers of reinforcement.

3.8.4 WORK FINISH

REQUIREMENT: No in situ work shall be finished off with rollers or plasterer's templates. All work must be confined to the cut-out area only and compacted with handheld tools. At no time shall the finished work be smoothed over with trowels or rollers. Completed work shall have an exact textured match with that of the surrounding naturally weathered stone. Any excessively smooth poorly matched finish will be rejected and made good at the Principal Contractor's expense.

3.9 REPAIR METHODS

REQUIREMENT: The following methods of repair are to be used, depending on the size and location of the proposed patch. The synthetic stone repair work may be divided into the following work methods:

Refer to Clause EXTENT OF WORK SCHEDULES for extent and location of the work.

All synthetic stone repair items not specified or documented shall be submitted for approval by Heritage Architect (in writing) prior to commencement of that additional work.

Provide a rate/patch in the SCHEDULE OF LUMP SUM PRICES AND RATES to be submitted with the Tender.

3.9.1 M1 - SMALL PATCHES WITHOUT REINFORCEMENT (SEP)

These patches shall only be carried out (unreinforced patches) following approval by the Heritage Architect.

Patching of small cavities in the stone, filling of small holes etc. less than 80mm diameter, previously formed to hold metal fixing or inserts to be removed, and repairs to edge spalls.

These repairs may require reinforcement. After cleaning, fill with synthetic stone mortar as specified. Finish off flush with the adjacent stone surface.

3.9.2 M2 - REINFORCED PATCHES (EP) AND (PIN)

All repairs shall require the use of stainless-steel reinforcement and pin etc, to increase adhesion and prevent cracking or spalling and for public safety.

These repairs shall be completed insitu. Prepare shop Drawings for all patches where reinforcement is required.

Formwork is to be constructed into which the synthetic stone mortar shall be compacted.

3.9.3 M5 - INJECTION FILLED CRACKS (IN)

Fine cracks in stone which is otherwise sound shall be filled with low viscosity epoxy resin such as "Megapoxy HX" or equivalent. As specified below and in accordance with clause 4.6 Injection Patching – In.

Drill injection ports at maximum 150mm centres - in both directions and ensure that the cracks appearing on the surface are drilled for receiving the synthetic stone resin. Drill the holes down to sound stone depth in the stone plus 25mm.

Gravity inject with an approved low viscosity resin which is compatible with the stone, flowable, durable and compatible with the approved stainless-steel inserts.

During injection, maintain sufficient pressure to enable all cracks and voids to be completely filled. However, all care must be taken to avoid any bursting or breaking of the stone.

3.10 APPLICATION OF SYNTHETIC STONE REPAIR MORTAR - EP

Mortar shall not be placed in any reinforced patches until the Heritage Architect has inspected and approved the reinforcement.

APPLICATION: Place the mortar with a trowel and firmly compact the mortar particularly around reinforcement into corners and around the edges of the repair to prevent voids. It must be applied within the duration of the pot life of the mortar resin/hardener mix. Where required, entire patch planes are to be patched in layers of one application.

The mortar shall be applied in layers in accordance with the Manufacturers data sheets or Specifications and may be applied in some cases not more than 50mm thick, where deep repairs are required.

Repairs showing visible changes in layers in compaction or appearance are unacceptable and shall be replaced at the Principal Contractors expense.

The outer surface shall be smoothed with a trowel dipped in solvent such as methylated spirits, in order to achieve a textural match with that of the adjacent stone.

Repairs may not be sanded back after setting to remove feathered edges or finish defects and shall be replaced at the Principal Contractors expense.

Synthetic stone mortar repairs shall be carried out within a temperature range of 10°C to 30°C. They shall not be applied when the relative humidity is in excess of 80%.

CHEMICAL REACTION: The chemical reaction between the resin and hardener is exothermic. Large repairs are likely to generate considerable heat which can have harmful effects on the durability of the mortar. Refer to the manufacturer's data sheets or Specification.

MASKING TAPE: Use approved masking tape to avoid detrimental staining of adjacent stone.

COMPATIBILITY OF MORTAR AND STONE: The success of the repairs will be influenced by the degree of compatibility of the mortar and the adjacent stone. It is undesirable to have an excessively strong mortar bonded to a weak stone. Their permeability's, thermal expansion and moduli of elasticity should also be similar.

BOND COAT: An epoxy bond coat recommended by the manufacturer of each resin used in the mortar shall be applied over the stone just prior to the placement of the mortar. The bond coat must be still tacky when the mortar is placed. The bond coat shall not be applied over the whole contact surface, but shall have some regularly spaced areas of stone, approx. 40% shall be left uncoated so that the underlying stone can breathe. Where the bond coat has dried prior to the application of epoxy mortar mix, it shall be removed and re-applied. At no time shall one bond coat layer be applied over another.

3.11 INJECTION PATCHING - IN

FILLING OF FINE CRACKS: Remove all loose debris in cracks prior to repairs. Compressed air jetting shall be used to remove dust from cracks etc.

Seal the external surface of the cracks temporarily during the injection treatment with a removable plugging material so that the low viscosity resin does not run back over the stone.

Use a hypodermic-type syringe to inject the resin in the crack or drill small holes and insert small tubes / straws for gravity injection. Submit proposed method for approval prior to commencement of works.

Use Vacuum suction where appropriate to remove air in order to achieve greater penetration in deep cracks.

Take special care to avoid surface staining of the stone adjacent to cracks being repaired.

PROTECTION: At all times protect all stonework from ongoing work, staining, damage of any kind, and inclement weather.

3.12 COMPLETION

3.1.1 CLEANING DOWN ON COMPLETION:

On completion of all work all stone shall be cleaned down and protected. All mortar stains shall be removed from the stone as soon as possible after they occur, and no later than 12 hours after the time of application. In warm weather, the epoxy could harden soon after mixing.

Clean down all stonework and building areas, free of all debris, stone, dust, stains etc.

3.1.2 POINTING AND RE-POINTING

REQUIREMENT: Point and/or re-point all open and defective joints, and all jointing affected by the synthetic stone repair work.

Provide all pointing and/or re-pointing as specified in - Pointing and Re-pointing.

END OF SECTION: SYNTHETIC STONE REPAIR

4 LEADWORK

4.1 GENERAL

Refer to the *General Requirements* section.

4.2.1 CLEANING DOWN ON COMPLETION:

The works include but are not necessarily limited to the following;

The Principal Contractor is to:

- Provide lead weatherings and flashings as indicated in the Scope of Works and as indicated on the Drawings.
- Remove all existing lead weatherings as directed (except for trial area), carefully remove sealant from stone under lead without damaging stonework (leadwork has been adhered to stone using sealant). Provide new lead weatherings and flashings to scoped area as specified and indicated on the Drawings
- Provide new bird deterrent stainless-steel horizontal wires on stainless steel brackets to areas shown on Drawings and per Schedule of Works. Submit sample of and proposed locations for bird deterrent for approval of heritage Architect prior to installation.

4.2.2 INTERPRETATION OF DOCUMENTS

REQUIREMENT: Check dimensions and information on site before proceeding with the work.

The associated drawing is diagrammatic only. Obtain measurements and other information necessary to carry out the work specified.

The Contractor shall be responsible for the accuracy of the work set out and shall bear the cost of making good any inaccuracy to the satisfaction of the Superintendent.

4.2.3 HERITAGE REQUIREMENTS

REQUIREMENT: The Former Education Department Building is listed under the Heritage Act - State Heritage Register and Local Environmental Plan.

The building is of great heritage significance and all work shall be performed and completed without any damage to the heritage fabric of the building.

The Contractor shall be familiar with current conservation philosophy of the ICOMOS Burra Charter and the NSW Heritage Act.

4.2.4 RELATED SECTIONS

Refer to the following sections:

- General Requirements
- Stonework
- Architectural Drawings
- Schedule of Works

4.2 QUALITY

4.2.1 APPROVED CONTRACTOR AND APPLICATOR

Requirement: The work shall be carried out by qualified workers with operatives and applicators experienced in the type of work to be completed in this Specification.

4.2.2 INSPECTION

NOTICE

The Principal Contractor shall be responsible for all WH&S and quality issues on site. Principal Contractor's site supervisor / foreman shall be on site each working day. Principal Contractor's site supervisor shall inspect work prior to pre-handover inspections, and to aim for nil defects.

Witness points: The Principal Contractor shall give notice to the Principal's Representative at the stage of work when the Witness Point items listed in the Schedule require inspection.

Hold points: The Principal Contractor shall give notice to the Principal's Representative at the stage of work when the Hold point items listed in the Schedule require inspection. Do not conceal those parts of the works or proceed without approval.

Minimum notice for inspections to be made: 5 working days for on-site inspections.

Concealed elements: Give notice so that inspection may be made of elements to be concealed.

HOLD POINTS

Refer to Inspection Test Plan (ITP) in Section 1 for Hold and Witness point activities.

4.2.3 SAMPLES

Submit samples of the following:

- Lead sheet and underlay
- Sealant

4.3 MATERIALS

4.3.1 LEAD

To be cast copperised lead sheeting of NSW manufacture and equal in all respects to that supplied by either Consolidated Alloys Pty Ltd, Wetherill Park NSW, or Thomas Thoms Pty Ltd, Lead products, 16 Jurnal Pl Smithfield NSW.

Lead shall conform to AS 1804-1976 with copper content between 0.01 & 0.02%. Weight of lead is to be minimum 25 kg/m².

4.3.2 UNDERLAY

Underlay for all leadwork shall be an approved underlay system which will not adhere to the lead or stone / timber substrate under temperature changes. Provide a non-woven polyester felt underlay 220g/m² "Midland Lead Multi-Lay" (supplied by Architectural leadwork Ph 0416 243 396 or equal).

4.3.3 PATINATION OIL

To be equal to "Patination Oil" as manufactured by "Valspar" (Paint Product UN No. 1263) and as supplied by such suppliers as Thomas Thoms Pty Ltd Lead Products, 16 Jurnal Pl Smithfield NSW.

4.3.4 COPPER FIXING CLIPS

Copper to comply with AS 1566 (Copper and copper alloys), minimum thickness 24 gauge, not less than 50mm wide.

4.3.5 COPPER

To conform to AS 1566 (1997). Use 24 gauge for clips. Use 24 gauge for the continuous copper strip on medium projections along the front edge of the stone to stiffen the lead covering along that edge and for the continuous copper strip along the rear edges of coping and coping/cornice areas. Use 22 gauge for stiffening clips for wide projections.

4.3.6 SEALANT

To be an approved elastomeric sealant material the material to be equal in all respects to Sika Flex Pro colour pale brown. Submit colour sample and details of sealant proposed to be used for approval prior to any work being carried out on site. The sealant shall be applied in accordance with manufacturer's instructions, using foam backing rod, primer 3N, etc. Note: the sealant shall only be used to seal the first joint above the cornice or as detailed or instructed by the Heritage Architect.

4.3.7 BACKING ROD

To be an approved open cell polyurethane backing rod supplied by Sika or equal. Open cell PU backing rod has the advantages of allowing moisture access to the front and back of the joint simultaneously facilitating faster curing. Also, open cell PU backer rod is much more compressible than closed cell PE foam thus one diameter rod can be used in a much wider range of joint widths. Closed cell PE backer rod can cause bubbling in uncured sealant in rising temperature conditions if its outer skin is punctured. It is essential that oil or tar impregnated backing materials are not used. Refer to *Sika Technical data Sheet*.

4.4 EXECUTION

4.12.1 PROTECTION

General: Keep the roofing and rainwater system free of debris and loose material during construction and leave them clean and unobstructed on completion. Repair damage to the roofing and rainwater system.

4.12.2 METAL SEPARATION

Prevent direct contact between incompatible metals, and between green hardwood or chemically treated timber and aluminium or coated steel, by either applying an anti-corrosion, low moisture transmission coating to contact surfaces; or inserting a separation layer.

4.12.3 FLASHINGS AND CAPPINGS

Flashing material: Lead flashings to relevant Standards.

Installation: Provide leadwork as specified.

Preform to required shapes where possible. Notch, scribe, bossing, flute or dress down as necessary to follow the profile of adjacent surfaces. Mitre angles and lap joints 150mm in running lengths. Provide matching expansion joints at intervals indicated in Lead Sheet in Building - A Guide to Good Practice by the Lead Development Association.

In masonry or concrete: Turn 25 mm into joints or grooves, wedge at 200mm centres with compatible material and seal with elastomeric sealant and backing rod.

Fixing to pipes: Solder, or when instructed by Heritage Architect seal with neutral cured silicone rubber and either secure with a clamping ring; or provide a proprietary stainless-steel flexible clamping shoe with attached metal surround flashing.

4.12.4 WORKMANSHIP – LEAD WEATHERING

All leadwork is to be carried out by suitably skilled and experienced leadworkers and shall be in accordance with the best work practices as recommended in "Lead Sheet in Building – A Guide to Good Practice" 1978 (amended 1984) by the Lead Development Association, London.

4.12.5 LAYING – LEAD WEATHERING

4.4.5.1 REQUIREMENT

Lay lead in accordance with the details and Specification.

Lead sheets shall be laid on an approved underlay, laid over a clean, smooth stone surface, free of any sharp edges, objects or debris.

4.4.5.2 SUBSTRATE PREPARATION

Where sufficient fall is not available allow to provide an approved mortar topping in order to provide a smooth, even, slightly sloping surface to the leading edge. Mortar topping to be 4:1 sand cement mix.

4.4.5.3 LAYING

The lead shall be laid flat, inserted 25mm into the first joint above or along the cornice and fixed in the joint with lead wedges. Where the joint is wider than 12mm, insert the lead 25mm into the joint with a folded edge into the joint.

The joint above the cornice shall be pointed with the approved elastomeric sealant and applied as before specified (A.B.S).

Where there is no joint along the wall or stonework at the rear of the horizontal projection to be covered with lead, provide a continuous welt with a 25kg/m² continuous lead strip, or approved equal, for the lead weathering to be turned over. Refer to sketch Detail No. 2 at the end of this Section.

The continuous lead strip for the welt shall be 150mm wide to allow for approved screw fixing to the stone A.B.S, and for forming the turnover or welt. Allow 100mm width for fixing to the stone. Create the continuous strip with a 50mm upturn approximately 12-15mm from the wall. Turn the lead strip over, with the lead weathering from the wall to form an approved lead welt as specified.

Insert a foam backing rod into the gap formed by the welt and the stone wall and apply the approved elastomeric sealant A.B.S. along the gap.

The lead shall be dressed from the first joint or rear welted joint along the rear wall to the front edge of the cornice stone or portico, where it shall be turned down 25mm lower than leading edge profile of the stone to form a drip clear of the stone. Refer to sketch Detail No. 1 at the end of this Section.

4.4.5.4 LAYING WIDE PROJECTIONS

Where specified and/or indicated in the Drawings and where horizontal projection stones over 500mm wide are to be covered, lead weatherings shall be of No. 6 lead sheet laid in maximum lengths of 800mm.

4.4.5.5 LAYING MEDIUM PROJECTIONS

Where specified and/or indicated in the Drawings and where horizontal projection stones over 300mm wide are less than 500mm wide, provide lead weatherings of No. 5 lead sheet in maximum lengths of 800mm.

4.4.5.6 LAYING NARROW PROJECTIONS

Where specified and/or indicated in the Drawings and where horizontal projection stones or cornices are less than 300mm wide, provide lead weatherings of No. 4 lead sheet in maximum lengths of 1500mm.

4.12.6 JOINTING – LEAD WEATHERING

4.4.6.1 REQUIREMENT

Join lead sheets in accordance with the details required to suit the width of the horizontal offset surface or projection.

4.4.6.2 JOINTING WIDE PROJECTION

Join with flat folded welts or seams, with lead edges turned up 50mm for the overlap and 25mm for the underlap and copper fixing clips between the lead laps to fix the welt to the stone. Allow two (2) clips per joint.

The edge of the overlap is to be loosely turned over, lightly folded down and dressed away from the prevailing weather. Unless otherwise specified, line the welts generally at right angles with the drip edge.

The copper fixing clips are to be 50mm x 24-gauge copper, twice brass or stainless steel screwed with brass washers, screwed into approved plastic inserts set into the stone. Provide two clips per seam, evenly spaced along the width (or girth) of the cornice. The screws to be countersunk 30mm long x 10 gauge. Brass washers to be of a diameter of 6mm size and of 19 gauge.

Allow for dress the lead weathering horizontally into the projection jointing and seal with the approved elastomeric sealant or up any upstand where needed to insert the weathering up to the first joint above the projection.

Seal the top joint where the lead is inserted into the first stone joint above the projection using the approved elastomeric sealant A.B.S.

4.4.6.3 JOINTING MEDIUM AND NARROW WIDE PROJECTION

Join with flat folded welts or seams with lead edges turned up 50mm for the overlap and 25mm for the underlap and copper fixing clips between the lead laps to fix the welt to the stone. Allow one (1) clip per joint.

The edge of the overlap is to be loosely turned over, lightly folded down and dressed away from the prevailing weather. Line the welts generally with the stone joints.

The copper fixing clips are to be 50mm x 24-gauge copper, twice brass or stainless steel screwed with brass washers, screwed into approved plastic inserts set into the stone. Evenly space the copper clip in the middle of the projection width (or girth). The screws to be countersunk 30mm long x 10 gauge. Brass washers to be of a diameter of 6mm size and of 19 gauge.

Allow to dress the lead weathering horizontally into the projection jointing and seal with the approved elastomeric sealant or up any upstand where needed to insert the weathering up to the first joint above the projection.

Seal the top joint where the lead is inserted into the first stone joint above the projection using the approved elastomeric sealant A.B.S.

4.12.7 FIXING – LEAD WEATHERING

4.4.7.1 REQUIREMENT

Fix lead weatherings in accordance with the details required to suit the fixings for the widths of the horizontal offsets, surfaces and projections.

The front bottom edging of the lead is to be held and stiffened by turning it back under to form a neat continuous welted drip edge of 15mm below the bottom leading edge of the stone offset. This drip is to also be 15 mm clear of the stone face.

4.4.7.2 FIXING WIDE PROJECTION

Fix and stiffen the front edge of the lead over the cornice by turning it over a continuous lead strip of maximum 1500mm lengths. Provide the lead strip which shall be approximately 250mm x 20 kg/m² lead, fixed with brass or stainless-steel screws into approved plastic plugs and herringbone spaced at 75mm minimum centres with plugs set back approx. 150-175mm from the face edge.

Where fixings for the continuous lead strip to the wide projections are greater than 150mm back from the leading edge, provide 50mm wide copper clips to stiffen the lead. Allow two (2) clips per bay. Locate copper clips underneath the continuous lead edge strip.

Provide two (2) intermediate fixings equally spaced in each bay of the leadwork and located in the rear one-third of the width of the horizontal projection. The intermediate fixings shall be made with lead burned capped screws and washers screwed into approved plastic or brass inserts set into the stone. The intermediate fixings shall be capped with lead burned to the lead covering.

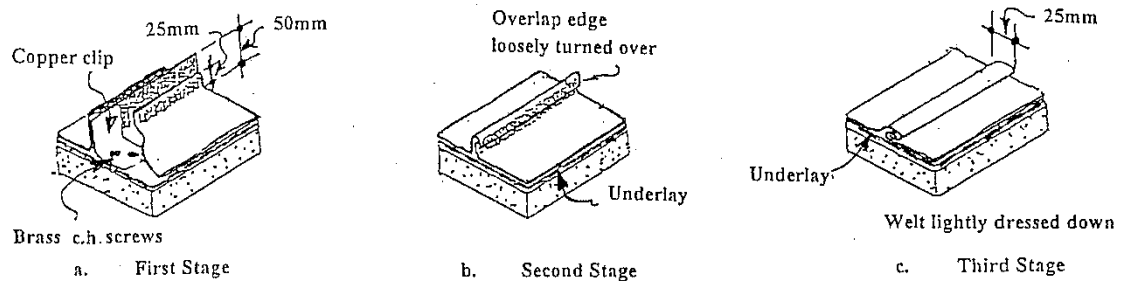
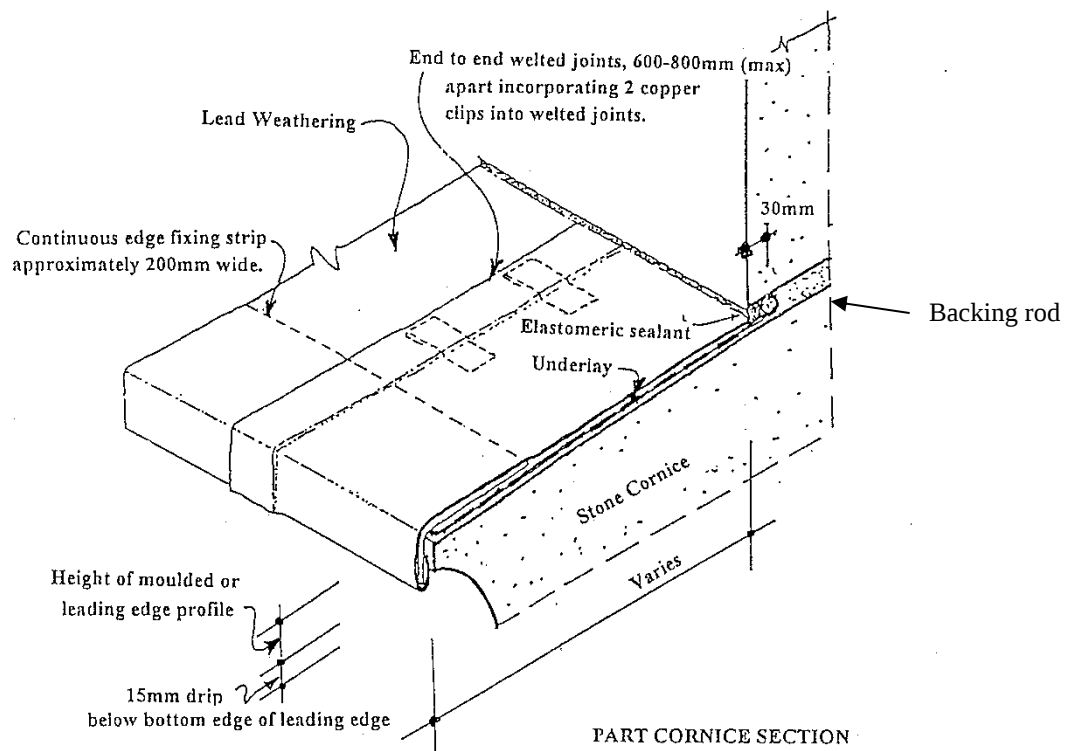
4.4.7.3 FIXING MEDIUM PROJECTION

Fix and stiffen the front edge of the lead by turning it over a continuous copper strip of maximum 1500mm lengths. Provide the copper strip which shall be approximately 175mm wide complete with a welted edge or safe edge with 10mm seam, fixed with brass or stainless-steel screws set into approved plastic plugs and herringbone spaced at 75mm minimum centres with plugs set back approximately 150mm from the face edge.

4.4.7.4 FIXING NARROW PROJECTION

Fix and stiffen the front edge of the lead by turning it back under to form a neat continuous welted drip edge of 25mm below the bottom leading edge of the stone projection. Provide 50mm wide by 21-gauge (0.71 mm) copper clips at 450mm centres maximum, screw fixed 75mm back from the leading edge and turned down the depth of the lead face, with the copper clips engaged inside the lead welting.

Where required, additional fixings shall be placed approximately 750mm centres along the centre of the cornice or horizontal weatherings, made with lead burned capped screws and washers screwed into approved plastic or brass inserts set into the stone. The intermediate fixings shall be capped with lead burned to the lead covering.

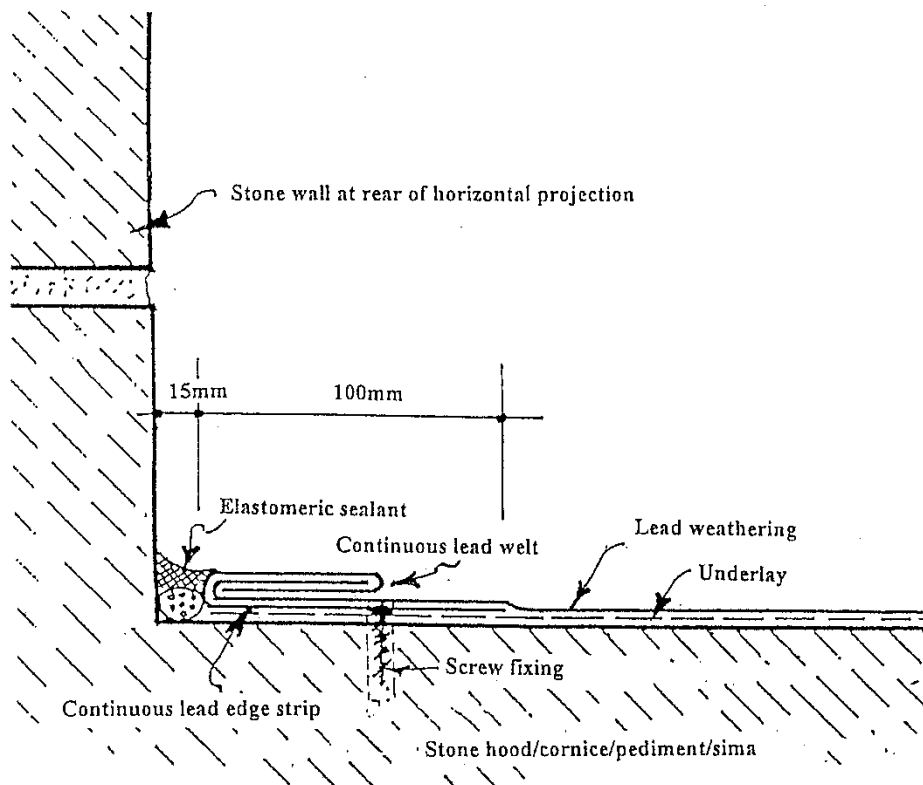


SEAM OR WELT DETAILS

This drawing is diagrammatic only

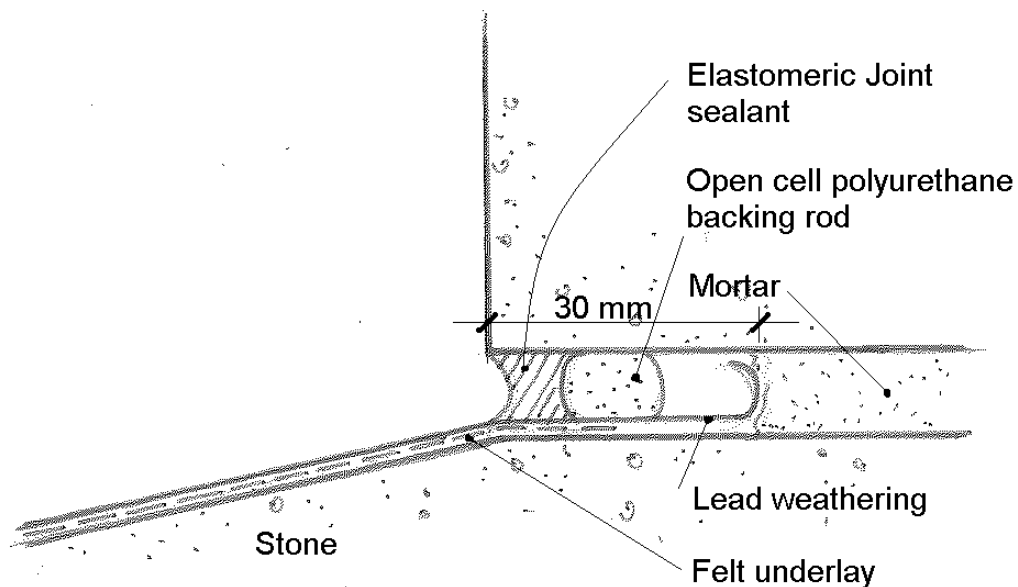
Not to scale

Lead Weathering Detail No. 1. Welt Details and Part Cornice Section



Not to scale

Lead Weathering Detail No. 2. Cornice Wall Detail



Typical top vertical joint at cornice

Not to scale

Confirm with Heritage Architect correct wall detail type in each location.

END OF SECTION: LEAD WEATHERINGS

5 BALCONY FLOOR MEMBRANE

5.1 GENERAL

5.1.1 CLEANING DOWN ON COMPLETION:

The works include but are not necessarily limited to the following;

Provide new floor membrane over existing flooring to all balconies. Keep existing lead flashing, readjust into position when all works are completed.

5.1.2 INTERPRETATION OF DOCUMENTS

REQUIREMENT: Check dimensions and information on site before proceeding with the work.

The associated drawing is diagrammatic only. Obtain measurements and other information necessary to carry out the work specified.

5.2.1 HERITAGE REQUIREMENTS

REQUIREMENT: The Former Education Department Building is listed under the Heritage Act - State Heritage Register and Local Environmental Plan.

The building is of great heritage significance and all work shall be performed and completed without any damage to the heritage fabric of the building.

The Contractor shall be familiar with current conservation philosophy of the ICOMOS Burra Charter and the NSW Heritage Act.

5.2.2 RELATED SECTIONS

Refer to the following sections:

- General Requirements
- Stonework
- Leadwork
- Architectural Drawings
- Schedule of Works

5.2 QUALITY

5.2.1 APPROVED CONTRACTOR AND APPLICATOR

Requirement: The work shall be carried out by qualified workers with operatives and applicators experienced in the type of work to be completed in this Specification.

5.2.2 INSPECTION

NOTICE

The Principal Contractor shall be responsible for all WH&S and quality issues on site. Principal Contractor's site supervisor / foreman shall be on site each working day. Principal Contractor's site supervisor shall inspect work prior to pre-handover inspections, and to aim for nil defects.

Witness points: The Principal Contractor shall give notice to the Principal's Representative at the stage of work when the Witness Point items listed in the Schedule require inspection.

Hold points: The Principal Contractor shall give notice to the Principal's Representative at the stage of work when the Hold point items listed in the Schedule require inspection. Do not conceal those parts of the works or proceed without approval.

Minimum notice for inspections to be made: 5 working days for on-site inspections.

Concealed elements: Give notice so that inspection may be made of elements to be concealed.

HOLD POINTS

Refer to Inspection Test Plan (ITP) in Section 1 for Hold and Witness point activities.

5.2.3 SAMPLES

Submit samples of the following:

- Built-up Membrane

5.3 MATERIALS

5.3.1 BUILT-UP MEMBRANE

Provide three coat Tremco Tremproof 3000 system or approved equivalent.

Supply and fix new 3mm thick polyester mat impregnated with polymer- based bitumen compound "Tremco Tremproof 3000". Sub-base to be primed with Tremco's Bituminous Primer. Finish with second layer consisting of 4mm thick polyester mat impregnated with Polymer based bitumen compound with surface of mineral slate chips "Tremco's Tremproof 4000M".

All applied as per manufacturer's recommendations and work undertaken by Contractors recommended by Tremco.

On Balcony as per Schedule of Proposed Repair Works membrane is to span maximum 3000mm lengthwise. At every 3000mm provide new brick plinth laid in mortar and brick plinth to be capped with continuous copper 0.71 mm strip

5.4 PROTECTION

Keep existing balcony outlets. Check if they are functioning, clean if blocked.

6 METAL FRAME WINDOWS

6.1 GENERAL

6.1.1 CROSS REFERENCES

6.1.1.1 RELATED SECTIONS

Schedule of Works

Architectural drawings

Protection and Removal of Elements

6.1.1.2 SCOPE

For full scope of works, refer to Schedule of Works and architectural drawings. Note dimensions shown on drawings are indicative only and contractor is to check all dimensions on site.

Windows within scope include all windows to all external elevations East, South, West and North .

The project scope is for the repair and repainting of window frames, restriction of window sash openings and replacement of broken glazing.

All repairs to frame are to be undertaken with windows in situ. Exterior works to be undertaken from scaffold.

6.1.1.3 STANDARDS

SAA loading codes – wind loads: to AS 1170.

Glass type & thickness to AS 1288-2006.

Materials and Installation to AS/NZS 4667.

NCC

6.1.1.4 QUALITY

6.1.1.4.1 SUBMISSIONS

Provide the following:

- Site preparation including safety aspects on the site
- Proposed Schedule of Repairs to each window
- Proposed primer, finished paint type and colour
- Methods of re-installation of hardware including fixing.
- Proposed Putty /sealant type, Glazing details / workmanship
- Hardware, fittings and accessories.
- Method to limit of window opening distance to 100 mm, including details of tamper proof fixings (Only where windows will remain operational to allow opening and closing)
- Proposed exterior mastic sealant and colour

6.1.1.5 NOTICE

The Principal Contractor shall be responsible for all OH&S and quality issues on site. Principal Contractor's site supervisor / foreman shall be on site each working day. Principal Contractor's site supervisor shall inspect work prior to pre-handover inspections, and to aim for nil defects.

Witness points: The Principal Contractor shall give notice to the Principal's Representative at the stage of work when the Witness Point items listed in the schedule require inspection.

Hold points: The Principal Contractor shall give notice to the Principal's Representative at the stage of work when the Hold point items listed in the schedule require inspection. Do not conceal those parts of the works or proceed without approval.

Minimum notice for inspections to be made: 5 working days for on-site inspections.

Concealed elements: Give notice so that inspection may be made of elements to be concealed.

6.1.1.6 HOLD POINTS

Refer to Schedule of Works for Hold point activities.

6.1.2 SAMPLE AREA

Samples shall be incorporated into the repair of one selected window. This window when completed to the Heritage Architect's satisfaction will be used as reference for the acceptable standard of repair for the rest of the windows.

6.2 MATERIALS

6.1.1 GENERALLY

All steel-framed windows within the scope are to be refurbished as per Window Schedules and repainted

Use salvaged materials in the first instance for any repairs and where permissible by relevant Codes and standards. Use new material where the existing is damaged beyond repair and where suitable salvaged material is not available.

6.1.2 STEEL FRAMED WINDOWS

Metals

Performance: Provide metals so that they transmit the loads imposed and ensure the rigidity of the assembly without causing deflection or distortion of finished surfaces.

Incompatible metals: Do not use incompatible metals.

All stainless steel to be of Grade 316.

New and part sashes, frames, glazing bars, stays and the like shall match existing. Refixing of windows into the masonry reveals shall use new stainless steel.

The site has had a Salvage Window Program from Internal Windows- allow to use any missing elements where shown on Window Schedules and where instructed on site by Superintendent to install using salvaged currently stored elements

Furniture and Fasteners

Existing window furniture: Refer to Window Schedules. Preserve existing, where missing re-instate from currently stored salvaged windows.

6.1.3 GLAZIER'S PUTTY

The replacement glass is to be installed into the frames with small plastic spacers and set into a bed of silicone on the internal face. The silicone is a (non- acetic) neutral cure silicone to prevent etching of the glass similar or equal to GE (General Electric) Silglaze N-10 (SCS 2700).

Glazier's 'steel window' putty shall be used for re-glazing windows on the external face between the steel frame and the glass. The putty is to be "Robertson's Fast Steel putty" by Oldfields Pty Ltd. The putty must cure for a minimum of one week but no longer than four weeks before painting. The putty must be sealed.

Apply putty to manufacturer's recommendations. Putty to be finished smooth and even.

6.1.4 GLASS

Generally

Replacement of the glazing is required where glass is broken to all metal framed windows following the removal of existing broken glass, putty and silicone.

Lead paint removal to occur at the start of the works prior to metal framed window dismantling and repair works.

Install new Grade A safety glass in metal framed windows in accordance with AS1288, and as indicated on drawings. The edges of the laminated sheets of glass are to be fully sealed with clear silicone to prevent ingress of moisture into the plastic layer.

Metal framed windows to toilet and laundries are to have 6 mm thick, toughened, clear, obscure "Kosciuszko" pattern Grade A or Grade B safety glass.

Louvres to be replaced with 6mm Georgian wire obscure Grade A toughened safety glass louvre blades. Hexagonal wired patterned glass to be replaced with like 6mm Grade A safety glass.

Georgian wire obscured glass, to be replaced with 6mm Georgian wire obscured Grade A safety glass. All other areas are to have 6 mm thick, toughened, clear, Grade A safety glass.

Contractor to allow sufficient delivery time for the ordering of toughened glass, which will require greater lead time than standard glass to manufacture. If any of the above products cannot be sourced, report to heritage architect for direction.

6.3 EXECUTION

6.1.1 PROTECTION GENERALLY

Provide and maintain all necessary protection against ongoing work to exclude damage to the building fabric, contents or passers-by etc.

6.1.2 PREPARATION OF THE WORK SITE

The Principal Contractor shall ensure that the work site is adequately prepared to ensure that the section or individual windows to be worked on are isolated from general access to tenants and public. This area is referred to as the "Site".

6.1.3 CONSTRUCTION GENERALLY

Fasteners

Performance: Provide new stainless-steel grade 316 fasteners.

Materials: Provide fasteners of adequate mechanical strength.

Fabrication

Edges and surfaces: Keep clean, neat and free from burrs and indentations. Remove sharp edges without excessive radiusing.

Thermal movement: Accommodate thermal movement in joints and fastenings.

Joints

General: Fit joints to an accuracy appropriate to the class of work. Finish visible joints made by welding, brazing or soldering using grinding, buffing or other methods appropriate to the class of work, before further treatment.

Self-finished metals: Free of surface colour variations, after jointing.

Joints: Fit accurately to a fine hairline.

Welding

Quality: Provide finished welds free of surface and internal cracks, slag inclusion, and porosity.

6.1.4 METAL FRAME WINDOWS

Scope of work

Refer to Schedule of Works for full details along with the architectural drawings.

The works include the removal of existing lead paint where required due to poor existing condition , window repairs, replacement of glazing where broken and application of new paint.

6.1.5 PAINT STRIPPING

Where paint is in very poor condition remove all lead based paint from window frames, sashes and hardware in situ using a proprietary paint removal poultice equal to Heritage No1. Undertake paint removal in accordance with the manufacturer's recommendations and in accordance with relevant Australian Standards, Codes and Regulations i.e. dealing with hazardous material removal (lead based paint) and AS 4361.2-1998 "Guide to lead paint management, Part 2: Residential and commercial buildings".

Refer to Painting section for further details.

6.1.6 METAL TREATMENT

Preparation and cleaning

All new and existing metalwork to be prepared for painting as detailed in the paint manufacturer's data sheets.

- Remove all lead based paint from window sashes and frames in situ as described in above in section 6.1.5 Paint Stripping and Painting section.
- Rust, millscale, oxide deposits and old paint films on metal surfaces should be removed by hand or power tool (AS1627.2 St 3) cleaning as a minimum. Badly deteriorated steel shall be scraped to remove loose and flaky material. All steel should be thoroughly wire brushed until clean sound metal is showing consistently over the whole surface of the material to AS 1627.2. The surface preparation should be finished with hand sanding.
- Fully wash down and desalinate metal with clean water to remove any surface salts. Remove grease, oil and other contaminants in accordance with AS1627.1 prior to priming.
- Coating performance is proportional to the degree of surface preparation. Apply paint sealer within manufacturers recommended time period. Refer to Painting section of this Specification.

Treatment of On Site Welding

- Remove weld splatter.
- Round off all rough welds and sharp edges.

6.1.7 PAINT APPLICATION

Refer to Paint Section

6.1.8 GLAZING PUTTY - WORKMANSHIP

Wherever glazing putty is required the following procedures shall be undertaken:

The replacement glass is to be installed into the frames with small plastic spacers and set into a bed of silicone on the internal face. Tool off excess silicone internally.

The silicone is a (non acetic) neutral cure silicone to prevent etching of the glass similar or equal to GE (General Electric) Silglaze N-10 (SCS 2700).

Glazier's 'steel window' putty shall be used for re-glazing windows on the external face between the steel frame and the glass. The putty is to be "Robertson's Fast Steel putty" by Oldfields Pty Ltd. The putty must cure for a minimum of one week but no longer than four weeks before painting.

- Apply putty to manufacturer's recommendations.

- Clean steel rebate surfaces, ensure all surfaces are free from dirt, dust, grease and foreign matter.
- Clean the glass surface to be in contact with the putty and silicone
- Install new glazing putty into the rebate and tool off to match existing profile. Ensure a smooth surface finish is achieved and any excess putty is removed from glass and frame.
- Allow putty to cure, as required by the manufacturer, and prime the tooled surface.
- Glass Installation Methods to AS 1288.

6.1.9 EASE AND ADJUST WINDOW HARDWARE

Where windows are nominated to stay functional ease and adjust window hardware to ensure sashes open easily. Provide adequate clearance between stop and beads to accommodate new coats of paint.

Where window sashes are warped, allow to manipulate the hinges to straighten the sash and enable the window to open and close.

6.1.10 HARDWARE

REQUIREMENT: Check existing window hardware. Where required, remove paint from hardware using paint stripping method. Treat hardware to prevent corrosion. Lightly oil or lubricate with graphite powder as appropriate. Ensure fixings are secure.

For existing non-painted furniture, prior to painting, dismantle and tag, repair/modify reinstate in original locations on completion of painting.

MISSING HARDWARE: Where original hardware is missing, allow to replace with recycled hardware from currently stored salvaged windows. This includes but is not limited to window handles, catches, casement stays, ring pulls etc.

REPRODUCTION: On this project not required. Use elements from currently stored salvaged windows.

MODIFICATION: Where windows are nominated to stay functional allowing opening and shutting allow to modify window opening function in accordance with architectural drawings and Schedule of Works to limit the opening of the windows sashes to 100mm. Modification to comply with Part 3.9.2.5 of the National Construction Code 2016.

REINSTATEMENT: On completion of painting, reinstate window furniture using the original attachment points unless otherwise approved. Matching fixings to be used unless noted otherwise.

COMPLETION: All windows must be able to be latched closed. Existing latches to be reused or where missing, be reinstated using recycled hardware from currently stored salvaged windows. The latch is to be fixed using the original fixing points.

6.1.11 FINISHING

On completion of painting, window frame and brick reveal junction to be caulked in a colour to match the stone work. Sample to be provided for heritage architect's review and approval.

6.4 PAINT FINISHES SCHEDULES

Metal framed Windows & Doors - Finishes schedule for windows with currently very poor paintwork.

Item	Surface	Finish	Preparation On site
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Metal window Preparation	All interior and exterior surfaces to the metal windows	Hand or power tool cleaned to AS1627.2 St 3	Removal of paint with stripping method. Removal of rust with hand scraping and sanding.
Metal window 1 st coat	All interior and external surfaces to the metal framing excluding the hardware	1 coat 125 microns DFT	Durebild STE
Metal window 2 nd coat	All interior and external surfaces to the metal framing excluding the hardware	1 coat 125 microns DFT	Durebild STE
Metal window 3 rd coat	All interior and external surfaces to the metal framing excluding the hardware	1 coats 100 microns DFT	Weathermax HBR Gloss
Metal window 4 th coat	All interior and external surfaces to the metal framing excluding the hardware	1 coats 100 microns DFT	Weathermax HBR Gloss

Dry film thickness (DFT)

WINDOWS THAT ARE IN REASONABLE CONDITION:

For windows that are in reasonable condition, Superintendent will advise based on current Window Trail the number of required paint coats. Note where paintwork is not fully removed to base metal surfaces the extent of paint warrantee cannot be provided with a guarantee and hence Owner will need to place those windows onto their Maintenance Register and annually check their condition and repaint as necessary.

7 PAINTING

7.1 GENERAL

7.1.1 RESPONSIBILITIES

7.1.1.1 General

Requirement: Provide coating systems to substrates, as documented.

7.1.2 CROSS REFERENCES

7.1.2.1 General

Requirement: Conform to the following:

- *Schedule of Works*
- *Architectural drawings*
- *Metal Frame Windows*

7.1.3 STANDARDS

7.1.3.1 Painting

General: To the recommendations of those parts of AS/NZS 2311 referenced in this work section.

7.1.4 SUBMISSIONS

7.1.4.1 Samples

Opaque coatings: Submit labelled samples of each coating system, on representative substrates, showing surface preparation, colour, gloss level, texture, and physical properties.

7.1.4.2 Coated samples schedule

Substrate	Paint system	Colour	Sample size (Hold Point)
Steel window frame	Top coat	To match existing	One window
Ground Floor External Gates and External Ground Floor Grills	Final Coat	To Match Existing	One Gate and one window grill
Bronze Door assembly Main Entry South Elevation	Do Not Paint Preserve patina and lightly restore	To match existing	small 300x300 mm

7.1.4.3 Paint

General: Submit the following at least 3 weeks before the paint is required:

- Paint brand name and product range quality statement.
- Safety data sheets (SDS) showing the health and safety precautions to be taken during application.
- The published recommendations for maintenance.

7.1.5 INSPECTION

7.1.5.1 Notice

Inspection: Give notice so that inspection may be made of the following:

- Painting stages:
 - . Completion of surface preparation.
 - . After application of final coat.

7.2 PRODUCTS

7.1.1 GENERAL

7.2.1.1 Storage and handling

General: Store materials not in use in tightly covered containers in well-ventilated areas with temperatures maintained at the manufacturer's recommendations.

7.1.2 PAINTING MATERIALS

7.2.2.1 Standards

Paint types: To AS/NZS 2311 Table 4.2 and the following:

- Metal primer for steel, lead and chromate free: To AS 3730.21 and AS/NZS 3750.19.
- Metal primer, latex: To AS 3730.15.
- Metal primer for metallic-coated surfaces, solvent-borne: To AS 3730.21.
- Zinc-rich organic binder/primer for steel: To AS/NZS 3750.9.

7.2.2.2 Combinations

General: Do not combine paints from different manufacturers in a paint system.

7.2.2.3 Putty and fillers

Material: To the recommendations of the paint system manufacturer, suitable for the substrate and compatible with the primer.

7.2.2.4 Tinting

General: Provide only products which are colour tinted by the manufacturer or supplier.

7.2.2.5 Toxic ingredients

General: To the *Poisons Standard July 2016 (including SUSMP 13)* Part 2 Section 7.

7.3 EXECUTION

7.1.1 MANAGEMENT OF LEAD CONTAMINATED PAINTED SURFACES

7.3.1.1 Lead safe practice

Where assessment by the Principal or testing by the Principal Contractor has established the presence of lead exceeds the permissible level all surface preparation and painting must be carried out in accordance with this specification and the requirements of AS4361.2, Guide to lead paint management.

7.3.1.2 Protection of personnel

The Principal Contractor must, when working on "lead paint risk" surfaces, ensure that its employees, the Principal's tenants and the public are protected from exposure to lead hazards in accordance with the requirements of section 6 of AS4361.2.

7.3.1.3 Painted surfaces internal and external

When working on "lead paint risk" surfaces, all necessary precautions must be taken to ensure the containment of all debris, dust and contaminants in accordance with the requirements of AS4361.2, Section 5. All blistered, flaked and peeling paint must only be removed by safe methods as described in AS4361.2, Section 3.4.4(a). Allow surfaces to dry. Voids and imperfections are then to be filled, sanded smooth, dusted off and spot sealed (unless specified otherwise). Remove lead paint debris during the process and at the end of every day.

New paint is to be applied in accordance with the relevant requirements of the specification.

All paint scrapings and residue are to be collected up into sealed bags and properly disposed as required by the Environment Protection Authority.

The above procedures should be carried out for both internal and external surfaces requiring repainting.

The main aim in the above process is to minimise dust, fumes and lead contaminated spores entering the surrounding atmosphere, soil and waterways or causing health problems for people or animals.

Ensure that no waste from the site is conveyed to or deposited at any place that cannot lawfully be used as a waste facility for that waste.

7.3.1.4 Monitoring

Monitor waste volumes and record their method and location of disposal and whether or not that location is a place that could lawfully be used as a waste facility for that waste. Submit a progress report every two months, and a summary report before Completion, on the implementation of waste management measures, including the total quantity of material purchased, quantity purchased with recycled content and the total quantity of waste generated, total quantity recycled, total quantity disposed of and the method and location of disposal.

Report immediately the details of any waste from the site which has been conveyed to or deposited at any place that cannot lawfully be used as a waste facility for that waste.

7.1.2 PREPARATION

Existing paint: Where existing paint is very badly deteriorated remove existing paint with a proprietary paint stripping method equal to **Heritage No. 1** as described in 7.5 Paint Stripping.

General: Prepare substrates to receive the painting systems. Refer to Metal Frame Windows section.

Cleaning: Clean down the substrate surface. Do not cause undue damage to the substrate or damage to, or contamination of, the surroundings.

Filling: Fill cracks and holes with fillers, sealants, putties or grouting mortar as appropriate for the finishing system and substrate, and finish smooth.

All metal surfaces to be treated with rust converter or similar product where corrosion is evident.

7.3.2.1 Order of work

Other trades: Before painting, complete the work of other trades as far as practicable within the area to be painted, except for the installation of fittings.

7.3.2.2 Protection

General

Before painting, clean the area and protect it from dust contamination. Use drop sheets and masking agents to protect surfaces, including finished surfaces and adjacent finishes, during painting.

Fixtures and furniture: Remove window furniture before painting, and conform to the following:

- Labelling and storage: Attach labels or mark fixtures using a non-permanent method, identifying location and refixing instructions, if required. Store and protect against damage.
- Difficult to remove fixtures: Where removal is impractical or difficult, apply surface protection before substrate preparation and painting.

Private property

Protect all tenants' property from damage including furniture, floor coverings, curtains, gardens, plants, etc. make good any damage. When working on or about any open windows and doors ensure that any necessary temporary barriers are in position to stop dust and/or debris from entering the premises. All tools, in particular electric sanders and planes, must have dust bags attached to ensure the encapsulation of all disturbed debris and dust.

7.3.2.3 Wet paint warning

Notices: Place in a conspicuous location and do not remove until the paint is dry.

7.3.2.4 Substrate preparation – generally

General: Prepare substrates to receive the painting systems to the paint manufacturer's recommendations.

Cleaning: Clean down the substrate surface. Do not cause damage to the substrate or the surroundings.

Filling: Fill cracks and holes with fillers, sealants, putties or grouting cements as appropriate for the finishing system and substrate, and sand smooth.

7.3.2.5 Unpainted surfaces

Standard: To AS/NZS 2311 Section 3.

7.3.2.6 Previously painted surfaces

Preparation of steel substrates with protective coatings: To AS/NZS 2312.1 Section 8 and AS 1627.1.

7.1.3 PAINTING

7.3.3.1 Light levels

General: ≥ 400 lux.

7.3.3.2 Substrate moisture content

Requirement: Use a moisture meter to demonstrate that the moisture content of the substrate is at or below the recommended maximum level for the type of paint and the substrate material.

7.3.3.3 Paint application

Standard: To AS/NZS 2311 Section 6.

Prior to application, ensure that the surface is free of contaminants including oil, grease, dirt, dust, salt and any other deleterious materials that will interfere with coating performance.

Timing: Apply the first coat immediately after substrate preparation and before contamination of the substrate can occur. Apply subsequent coats after the manufacturer's recommended drying period has elapsed.

Ensure each coat of paint is uniform in colour, gloss and texture and free of runs, sags, blisters and other dis-continuances, and to correct dry film thickness of paint.

7.3.3.4 Painting conditions

General: Unless the paint is recommended for such conditions, do not paint under the following conditions:

- Dusty conditions.
- Relative humidity: $> 85\%$.
- Surface temperature: $< 10^{\circ}\text{C}$ or $> 35^{\circ}\text{C}$.

7.3.3.5 Spraying

General: If the paint application is by spraying, use conventional or airless equipment which conforms to the following:

- Satisfactorily atomises paint being applied.
- Does not require paint to be thinned beyond the maximum amount recommended by the manufacturer.
- Does not introduce oil, water or other contaminants into the applied paint.

Paint with known health hazards: Provide personal protection, masking, ventilating and screening facilities to AS/NZS 4114.1 and AS/NZS 4114.2.

7.3.3.6 Sanding

Clear finishes: Sand the sealer using abrasives no coarser than 320 grit without cutting through the colour. Take special care with round surfaces and edges.

7.3.3.7 Repair

Requirement: Clean off marks, paint spots and stains progressively and restore damaged surfaces to their original condition.

Maintenance painting: To AS/NZS 2311 Section 8.

7.3.3.8 Tinting

General: Tint each coat of an opaque coating system so that each has a noticeably different tint from the preceding coat, except for top coats in systems with more than one top coat.

Proprietary items: Repaint only if damaged.

7.3.3.9 Windows

Operation: Make sure opening windows function correctly before and after painting.

7.1.4 COMPLETION

7.3.4.1 General

Protection and masking: Remove masking and protection coverings before paint has dried.

7.3.4.2 Cleaning

On completion of painting, remove splatters by washing, scraping or other methods which do not scratch or damage adjacent finished surfaces.

In addition to the progressive cleaning required of the Works area, the Principal Contractor shall clean and polish all window glass and frames inside upon completion. Cleaning shall be carried out by professional trades-persons, leaving the whole of the work in good and safe condition.

Glass cleaning agents shall be clean distilled water to which detergents may be added in small quantities or an approved glass cleaning agent. Do not use agents such as paraffin (kerosene), acid or abrasive cleaners or proprietary household cleaners which contain feldspar. Remove cement, paint or labels without cutting, scratching or otherwise marking the glass surface.

Allow to remove paint where it has been applied wider than the putty thickness, i.e. on glazing bars and edges of stiles or rails.

7.3.4.3 Reinstatement

Repair, replace or refinish any damage, including works of other trades. Touch up new damaged decorative paintwork or misses only with the paint batch used in the original application.

7.3.4.4 Removed fixtures

Refix undamaged fixture in the original location, make sure they are properly fitted and in proper working order.

7.3.4.5 Disposal of paint and waste materials.

Requirement: Conform to requirements of the local government authority.

7.4 SELECTIONS

7.1.1 PAINTING SYSTEMS

7.4.1.1 General

Number of coats: Except where one or two coat systems are documented, each paint system consists of at least 3 coats.

Final coat selection: **EXTERIOR PAINTING SCHEDULE.**

7.4.1.2 Low VOC emitting paints

General: Provide the VOC limits as documented in the **Exterior painting schedule.**

7.4.1.3 New unpainted exterior surfaces

Standard: To AS/NZS 2311 Table 5.2.

7.4.1.4 Previously painted surfaces

Standard: To AS/NZS 2311 Tables 8.2 and 8.3.

7.1.2 PAINTING SCHEDULES

7.4.2.1 Exterior painting schedule

Substrate	Final coat	VOC g/litre	limit	Colour reference
Steel window frames, windows and window grills Gates (at four elevations at Ground Level)	Weathermax	280		To match existing

7.5 PAINT STRIPPING

7.1.1 SCOPE

7.5.1.1 Requirement

Where existing paintwork badly deteriorated remove existing applied paint finish coatings using a chemical stripping method to all steel framed windows, internally and externally, Refer to Schedule of Works .

7.5.1.2 Recommended chemical method

Paint removing poultice applied by hand with a spreader and left on surface for up to 24 hours or longer before removing. This is a propriety product Heritage No. 1 manufactured by Heim Surface Technologies. It may be diluted with sufficient amount of water to allow application by spraying. Suggested supplier: Let's Clean Pty Ltd 3/93 Greenwich Road Greenwich NSW, 2065 Telephone: +61 2 9438 204

7.5.1.3 Application

- > Mix poultice thoroughly before use
- > Apply thick coat of stripper (approx. 3mm) onto surface to be stripped. Application methods: trowelled on or sprayed on with hopper gun.
- > Leave for 30 minutes to an hour, test with scraper to determine if paint is sufficiently softened. Stripping time depends on number of paint layers, age and type. The product may be left on for 24 hours or even longer. Keep poultice moist. In dry conditions cover with gladwrap, plastic sheets.
- > Remove poultice with scraper and collect waste into bucket. Wash off residue with low to high pressure water or wash and scrub clean with medium to hard brush. Removal of multi layers of paint may need repeat application.

7.5.1.4 Safety and personnel

Lead based paints shall be removed by personnel who are properly trained and qualified in the methods of removal. Provide personnel with protective equipment. Protect and contain the immediate environment from air borne lead dust contamination. Disposal of lead paint shall be in accordance with NSW regulations and Workcover guidelines.

7.5.1.5 Alternative methods of lead paint removal

If the Contractor wishes to nominate alternative methods for preparation and lead paint removal these methods must be submitted to the Superintendent and Heritage Architect for approval prior to testing and work commencing.

7.5.1.6 Disposal

Dispose of the waste in accordance with the Environmental Protection Authority requirements, and all other appropriate authorities' requirements, particularly where the paint waste may contain lead and be considered as hazardous waste material.

7.1.2 DATA SUBMISSIONS- PAINT STRIPPING

7.5.2.1 Requirement

Submit the following data to the superintendent:

- Certificates/approvals, etc, of acceptability from the relevant authorities for proposed: works.
- Paint-stripping methods;

- Hazardous waste capture, containment, storage, hazardous waste transportation and disposal methods.
- Product Supplier's Data: Written technical data from the product supplier, stating:
- Experience in the required type of work and particulars of established quality control procedures (if any), and the category of the procedures to the relevant standard;
- The physical properties and test data of the various materials to be used;
- A warranty certifying that the materials supplied comply with the specification and are suitable for the intended use;
- Approval of the specialist applicator firm, if the warranty is conditional on such approval;
- Recommendations for application.

7.5.2.2 Technical data requirement

Submit for approval prior to commencement, the intended paint-stripping methods. The paint-stripping process shall be an approved proven system for the removal of the existing lead paint systems.

7.5.2.3 Steel window and sash frames, window and door grills and entry gates

"Heritage No. 1" paint stripping system, as manufactured by Heim Surface Technologies or equal. Remove paint in accordance with relevant Australian Standards, Codes and Regulations i.e. dealing with hazardous material removal (lead based paint). Also refer to section 11.

Submit a full description of the nominated paint stripping process complete with all relevant technical data sheets; the recommended procedures and process by the Manufacturer, the relevant safety requirements and the Manufacturer's Warranty. Submit material safety data sheets. Submit evidence of previous work where the proposed paint-stripping system has been used to remove paintwork off similar materials. Name buildings, locations, areas, etc. and name the relevant referees.

Where required submit details of the manufacturer's requirements for proven applicators to carry out the work. Submit safety precautions and requirements.

The relevant paint-stripping manufacturer's technical data sheets for each product shall form part of this specification. The products shall be applied strictly in accordance with these data sheets.

7.1.3 TESTING AND SAMPLE PANELS

7.5.3.1 Paint-stripping samples

Before commencing paint-stripping, provide representative sample of stripping to one window frames and sash which meet the specified requirements for the paint-stripping method and process. Locations shall be confirmed on site with the Principal's Heritage Architect prior to commencement.

Amend methods where required to meet the specified requirements for the paint stripping and prepare further samples until the specified requirements are achieved. The cost of preparing such samples and any alterations to the tendered methods and/or processes shall be borne by the Principal Contractor.

7.1.4 MATERIALS GENERALLY

7.5.4.1 Paint strippers

Use paint-strippers in accordance with the manufacturer's data sheets and recommendations.

7.5.4.2 Paint-stripping Processes

Use only paint-stripping processes and materials, which only produce hazardous waste material able to be disposed of in accordance with the Environment Protection Authority requirements.

7.1.5 PAINT-STRIPPING WORK

7.5.5.1 Requirement

Where required, and as scheduled, remove all existing applied finishes including previously applied kalsomine and lead based paint systems, etc, to obtain a clean finish. Clean down and remove oil, grease and loose foreign matter, including laitance, efflorescence, moss, lichen, mould, mildew, dirt and

corrosion products in a manner which causes neither undue damage to the substrates nor damage to, or contamination of, the surroundings.

Remove all chemical residue and neutralise the substrate at the end of the process. The method of paint removal shall be in accordance with the environmental requirements of the relevant authorities.

Paint removal is not to commence until all required Data Submissions have been submitted to the Principal's Heritage Architect in accordance with Clause .2.1, and all work shall be completed in accordance with the requirements and provisions of the submitted Data Sheets.

Determine the paint removal or paint stripping process by performing an approved sample complete to the Principal's Heritage Architect's satisfaction. Sample areas when approved shall be used to compare the standard of the work.

7.1.6 PRECAUTIONS DURING PAINT-STRIPPING

7.5.6.1 Generally

Take the necessary precautions to prevent damage to the building and its surroundings resulting from paint-stripping operations. Prevent water paint-stripping material and wastes from entering the building or spraying over surrounding areas. Suspend work during weather conditions, which preclude compliance with the above.

7.5.6.2 Runoff

Prevent runoff from the paint-stripping operations from marking or tracking across other surfaces. Collect residual water and wastes and restrict them to an approved means of disposal. Prevent water from soaking into the ground adjacent to the building.

7.5.6.3 Caulking

Provide temporary caulking of an approved type where necessary to prevent the entry of water and wastes into open or suspect joints, penetrations, building-pavement junctions, and the like. Remove all traces on completion of paint-stripping.

7.5.6.4 Cleaning down on completion

On completion of all the work, all building areas shall be cleaned free of all paint-stripping debris, material and waste. Leave the site area clean and tidy.

7.1.7 FRENCH POLISHING

7.5.7.1 Generally

Where nominated in entry doorways on four elevations allow to re-French polish the doorways and adjacent flanking windows or highlights. All to be re-sanded, cleaned with mentholated spirits and re-French polished using two coats of orange shellac, finished with two coats of bees wax and rubbed in with traditional pumice powder. This work to be undertaken in-situ by an approved (By Heritage Architect) skilled and experienced French polisher (Note not a normal painting company).
Hold Point: Finished French polishing. Approval by Heritage Architect of sample 300x 300mm required.

SANDSTONES: FORMER DEPARTMENT OF EDUCATION BUILDING

BRIDGE STREET, SYDNEY

EAST EXTERIOR FAÇADE RESTORATION

SCHEDULE OF PROPOSED REPAIR WORKS



OCP ARCHITECTS PTY LTD

STUDIO 7, LEVEL 1, 35 BUCKINGHAM STREET, SURRY HILLS 2010

OTTO CSERHALMI NARN 4079

JOB NO 18050 ISSUE F

OCTOBER 2019

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DEPARTMENT OF EDUCATION BUILDING EAST ELEVATION
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Document Control

Issue	Description	Date	Reviewed by
A	Pre-Tender	1/07/19	MC / OC
B	Client Review	29/08/19	MC / OC
C	Review	10/2019	MC / OC

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1. PROPOSED REPAIR WORKS

Provide all items and works as indicated on the drawings in this Schedule of repair Works and in the specification.

Refer to architectural drawings:

A04 EAST ELEVATION OVERVIEW

A05 EAST ELEVATION TOP LEFT SECTION

A06 EAST ELEVATION TOP RIGHT SECTION

A07 EAST ELEVATION BOTTOM LEFT SECTION

A08 EAST ELEVATION BOTTOM RIGHT SECTION

Refer to specification: FAÇADE SPECIFICATION

Proposed repair works include but are not limited to the following:

NO	ITEM	DEFECT / CONDITION	OCP ARCHITECTS COMMENT	PHOTOGRAPHS / DRAWINGS
		All four facades show serious water damage indicating defects in waterproofing stone cornices and balcony floors.		

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1	SANDSTONE CLEANING	The sandstone has build-up of grime and black soot	Wash all façade, remove black stains	
2	REMOVAL OF BIOLOGICAL GROWTH	Some sections of the building facades are displaying biological growth	Remove biological growth as indicated on drawings and where needed by applying biocide. Apply biocide to all stones, existing /remaining on the building and all new stone replacements and indents	
3	SANDSTONE DESALINATION	Sandstone affected by ingress of rain water (existing lead weathering above is not sufficient)	Desalinate stones as scheduled on drawings including soffits of cornices, using Blue-V ac system. Rub back to remove soft surface where needed, ev. chisel back as indicated on drawings (where deeper damage).	

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4	SANDSTONE POINTING AND REPOINTING	Original sandstone pointing is cracking, in places already missing. Elastomeric sealant is used as a pointing material nearly in all joints of stone units installed during previous restoration and in some other places	Remove original cracking pointing, hard cement pointing and elastomeric sealant from sandstone joints 25mm deep	
5	SANDSTONE POINTING AND REPOINTING		80% repoint sandstone joints with soft mortar including reverse side of parapet wall and gables. Fill horizontal joints of top courses A, B, C, D and stringcourses U and BK with elastomeric sealant	
6	SANDSTONE POINTING AND REPOINTING	The west and east facades show multiple cracks filled by elastomeric sealant in the areas between original building and the later addition.	Structural engineer to investigate depth of cracks to suggest the depth of their new filling and material to be used (soft mortar or new elastomeric sealant)	

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7	SANDSTONE REPLACEMENT / INDENTING		Replace / indent deteriorated stones, provide hairline indents where scheduled below and as indicated on drawings. Exact extent of repair works on potential stone indents / replacement will be clarified when the lead weathering above is removed. Structural Engineer to clarify pinning of new stones	
8	INSERTS IN SANDSTONE		Remove all redundant inserts from reverse side of parapet walls (course E, F, G), make good with synthetic stone	
9	CRACKS IN SANDSTONE	Many cracks can be seen on east and west elevations where north part of the building was added later. Majority of these cracks are filled by elastomeric sealant	Engage Structural Engineer to investigate various existing cracks. Allow for replacement of elastomeric sealant	
10	ROCKFACED PLINTH	Rock faced bottom floor elevation was not fully accessible during the condition investigation	Make safe – chisel back loose surface of rock faced plinth. Extent to be clarified when access is available. Desalinate where needed	
11	SYNTHETIC STONE REPAIR		Provide synthetic stone repairs, pin and inject damaged stones with synthetic stone as scheduled below and as indicated on drawings. Provide extra synthetic stone patches if needed –	

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			scheduled in synthetic stone schedule bellow	
12	SYNTHETIC STONE REPAIR	The façade exhibits multiple synthetic stone patches from previous restoration. Many are deteriorating, cracking in contact with stone and are discoloured	Keep synthetic stone patches which are sound but monitor annually their condition.	
13	OVERFLOWS AND SUMPS	Course G	Reline two existing sumps and overflow through course G. Provide all details and materials as shown on drawing A19. Match existing overflow detail on the façade. Provide new overflow to an existing sump – match existing. Carefully drill new openings for three new overflows through course G, match size, height and slope of existing. Modify lead detail from drawing A19 for connection with roofing without sump. Use lead No.6 Refer to hydraulic engineer's drawings and elevations	
14	LEADWORK	Courses B, D	Remove lead from top courses B, D. The condition of the stones under will be clarified then. Allow to redress 15mm of the tops of the stones	

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15	LEADWORK	Lead weathering of window hoods at top level is in good condition and beneficial to the building despite being a new element not according to original design	Keep existing lead weatherings on window hoods at top level	
16	LEADWORK	Courses AE, BK	Adjust existing lead weathering: Bend existing leading edge 10mm off leading edge of balcony cornice. Cut and rebuild corners soldering on extra lead patches. Refer to detail. NOTE: This option is preferably to be undertaken in current works or to be part of future maintenance works. If later option is chosen, then provide separate cost to assist in allocation of relevant funding for future Maintenance Plan.	
17	LEADWORK	Courses E, P	Adjust existing lead weathering on parapet P and cornice E adding new strip of leading edge. Refer to detail. Allow for extra 15 repair patches to be leadburned over damaged spots on existing weathering. NOTE: This option is preferably to be undertaken in current works or to be part of future maintenance works. If later option is chosen, then	

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			provide separate cost to assist in allocation of relevant funding for future Maintenance Plan.	
18	LEADWORK	Courses E (north-east gable)	Replace lead weathering above stones Ea65, 66, 67, 68 (north-east gable)	
19	LEAD FLASHING	Roof lead flashings behind parapet (course E, F) is deteriorated and partly replaced with not suitable material (colorbond).	Replace roof lead flashing behind parapet wall (course E, F, G) over new bitumen roofing in full length. Seal flashing into existing recess together with supporting 50mm wide lead strips 400mm apart. Seal recess with elastomeric sealant and secure with lead wedges approx. 500mm apart. Refer to detail.	
20	BALCONY MEMBRANE	Serious water damage under the balconies indicates that the balcony floors are leaking	Seal all three balcony floors with new bitumen over existing flooring. Keep existing lead flashing, dress down when bitumen is completed. Provide expansion joints in bitumen max 3m apart. Cover expansion joint with lead. Refer to detail. Keep and clean existing floor outlets. Clear outlets where blocked.	

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21	METAL VENTS	Metal vents appear in the newer section of the building (north). They are in various state of disrepair	Remove all metal vents. Clean openings in sandstone. Remove rust from vents, treat against rust and coat. Reinstall vents to the original positions. Insert stainless steel mesh between vents and sandstone.	
22	ROSETTES	Original Rosettes	Remove rust from cast iron rosettes, treat against rust and repaint with DULUX Micaceous Iron Oxide grey	

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2. SANDSTONE REPLACEMENT / INDENT SCHEDULE

All dimensions are approximate only. Clarify all dimensions before commencement of works

NOTE:

Allow for indent pinning with 12 mm dia. stainless steel pins 150mm long. The pins to be placed max 450 mm apart.

STONE	INDENT/ REPLACEMENT	DIMENSIONS L x H x D mm	NOTE	INDENTS/ REPLACEMENTS SIZE m3	POTENTIAL INDENTS/ REPLACEMENTS SIZE m3
A5	HAIRLINE INDENT	320 x 150 x 330		0.0048	
A7	REPLACE	2200 x 500 x 915	L-Shaped	1.0065	
A8	REPLACE	2200 x 500 x 915	L-Shaped	1.0065	
B7	REPLACE	820 x 540 x 510		0.2258	
B8	INDENT	390 x 540 x 290		0.0612	
B9	INDENT	390 x 530 x 290		0.0600	
B10	REPLACE	1530 x 540 x 510		0.4214	
B11	POTENTIAL REPLACE	1330 x 560 x 1270			0.9460
B13	POTENTIAL REPLACE	1330 x 560 x 1270			0.9460
C10	HAIRLINE INDENT	280 x 180 x 100		0.0050	
C12	PARTIAL INDENT	1220 x 730 x 450		0.4007	
C13	HAIRLINE INDENT	450 x 60 x 100		0.0027	
C18	HAIRLINE INDENT	150 x 180 x 130		0.0035	
D12	HAIRLINE INDENT	940 x 150 x 190		0.0270	
D16	REPLACE	2100 x 490 x 510		0.5250	
D17	POTENTIAL REPLACE	1020 x 400 x 965			0.3937
D20	POTENTIAL REPLACE	1020 x 400 x 965			0.3937
E51	HAIRLINE INDENT	350 x 70 x 120		0.0029	
E52	HAIRLINE INDENT	200 x 180 x 320		0.0115	
E55	HAIRLINE INDENT	240 x 40 x 100		0.0010	
E57	INDENT	1280 x 770 x 840	L-Shaped, caved stone.	0.8280	

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E58	PARTIAL INDENT	1100 x 450 x 650		0.3218	
E70	HAIRLINE INDENT	200 x 60 x 100		0.0012	
E70	HAIRLINE INDENT	300 x 60 x 100		0.0018	
E71	HAIRLINE INDENT	300 x 60 x 100		0.0018	
F46a	HAIRLINE INDENT	200 x 45 x 160		0.0014	
F40a	PARTIAL INDENT	620 x 45 x 160		0.0045	
J111	HAIRLINE INDENT	100 x 210 x 120		0.0025	
J123	HAIRLINE INDENT	180 x 50 x 100		0.0009	
J125	HAIRLINE INDENT	440 x 60 x 100		0.0026	
L41	HAIRLINE INDENT	80 x 80 x 100		0.0006	
L43	HAIRLINE INDENT	250 x 90 x 100		0.0023	
N40	INDENT	1990 x 430 x 120		0.1027	
N41	INDENT	1830 x 430 x 120		0.0944	
N46	INDENT	1970 x 430 x 120		0.1017	
P55	PARTIAL INDENT	940 x 220 x 450		0.0931	
P55	HAIRLINE INDENT	300 x 220 x 220		0.0145	
P54	INDENT	1900 x 220 x 700		0.1881	
Q47	PARTIAL INDENT	1450 x 220 x 450		0.1436	
P43	POTENTIAL PARTIAL INDENT	960 x 220 x 450		0.0950	
P44	POTENTIAL PARTIAL INDENT	960 x 220 x 450			0.0950
P45	POTENTIAL PARTIAL INDENT	960 x 220 x 450			0.0950
Z48	HAIRLINE INDENT	280 x 100 x 230		0.0064	
AC206	HAIRLINE INDENT	50 x 80 x 100		0.0004	
AF57	PARTIAL INDENT	1970 x 320 x 120		0.0756	
AF59	PARTIAL INDENT	1970 x 320 x 120		0.0756	
AF60	HAIRLINE INDENT	150 x 160 x 100		0.0024	
AF61	PARTIAL INDENT	1970 x 320 x 180		0.1135	
AH57	HAIRLINE INDENT	610 x 130 x 100		0.0080	

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AN32	PARTIAL INDENT	1830 x 160 x 350		0.1025	
AN36	PARTIAL INDENT	1830 x 160 x 350		0.1025	
AN39	PARTIAL INDENT	900 x 160 x 280		0.0403	
AN42	PARTIAL INDENT	1805 x 160 x 350		0.1011	
AN54	PARTIAL INDENT	2170 x 160 x 500		0.1736	
AN57	PARTIAL INDENT	2170 x 160 x 500		0.1736	
AN62	PARTIAL INDENT	2140 x 160 x 500		0.1712	
AX44	HAIRLINE INDENT	150 x 65 x 100		0.0010	
AX53	HAIRLINE INDENT	100 x 40 x 100		0.0004	
AX60	PARTIAL INDENT	2130 x 160 x 500		0.1704	
AX61	PARTIAL INDENT	2740 x 160 x 500		0.2192	
BH40	PARTIAL INDENT	700 x 155 x 320		0.0347	
BI62	PARTIAL INDENT	1760 x 165 x 350		0.1016	
BI66	PARTIAL INDENT	1780 x 165 x 350		0.1028	
BI68	HAIRLINE INDENT	100 x 45 x 100		0.0005	
BI70	HAIRLINE INDENT	100 x 45 x 100		0.0005	
BK40	HAIRLINE INDENT	300 x 60 x 200		0.0036	
BK41	HAIRLINE INDENT	200 x 80 x 250		0.0040	
BK42	HAIRLINE INDENT	300 x 80 x 250		0.0060	
BK48	PARTIAL INDENT	920 x 140 x 630		0.0811	
BK49	PARTIAL INDENT	900 x 140 x 180		0.0227	
BK50	PARTIAL INDENT	3000 x 140 x 250		0.1050	
BK51	PARTIAL INDENT	900 x 140 x 180		0.0227	
BK55	HAIRLINE INDENT	60 x 40 x 250		0.0006	
BK56	HAIRLINE INDENT	180 x 100 x 250		0.0045	
BK63	PARTIAL INDENT	380 x 230 x 1040		0.0909	
BK69	HAIRLINE INDENT	120 x 50 x 250		0.0015	
BP38	HAIRLINE INDENT	230 x 40 x 120		0.0011	
BQ48	INDENT	1680 x 360 x 580		0.3508	
BS46	HAIRLINE INDENT	500 x 40 x 140		0.0028	
BS48	HAIRLINE INDENT	350 x 40 x 180		0.0025	

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ESTIMATED VOLUME OF PROPOSED STONE FOR REPLACEMENT / INDENT McCAFFREY PYRMONT YELLOW BLOCK, or 200 GEORGE STREET YELLOW BLOCK	8.2456 m3	2.8694 m3
Allow for extra 15% stone replacement/indent for concealed/unknown	1.2368 m3	0.4304 m3
Proposed stone replacement	9.4824 m3	3.2998
SUMMARY: 12.7822 m3		

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3.0 SYNTHETIC STONE SCHEDULE

All dimensions are approximate only. Clarify all dimensions before commencement of works.

Allow for stainless steel mesh reinforcement to synthetic stone patches.

STONE	WORK REQUIRED	NOTE	DIMENSIONS OF PATCHES L x H x B mm	SYNTHETIC STONE SIZE m3	INJECTING: L m / No OF
B12	Pin & Inject	cracks.			0.6 / 7
C13	Pin & Inject				0.5 / 6
C13	Replace Existing	Lewishole Fill	150 x 30 x 50	0.0002	
C18	Replace Existing	Lewishole Fill	150 x 30 x 50	0.0002	
C18	Replace Existing		150 x 20 x 20	0.00006	
C18	Replace Existing		100 x 20 x 20	0.00004	
D4	Pin & Inject				0.8 / 8
E50	Replace Existing		140 x 20 x 30	0.00008	
E57	Pin & Inject				0.6/6
E68	Pin & Inject				0.35/4
G51	Pin & Inject	Carvings			0.1 / 2
H35	Pin & Inject				0.25 / 3
I75b	Repair		100 x 20 x 20	0.00004	
I86	Pin & Inject				0.1 / 2
I87	Pin & Inject				0.1 / 2
K46		Crack with sealant, Structural Engineer to investigate			
L40	Repair		150 x 70 x 40	0.0004	
L43	Replace Existing		100 x 20 x 30	0.00006	
M42	Repair	Fill crack	25 x 450 x 30	0.00034	
M43	Replace Existing		100 x 20 x 20	0.00004	
M45		Crack with sealant, Structural Engineer to investigate			
Q44					

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R42					
T44					
U41					
V58	Pin & Inject	Structural			0.06 / 2
V61	Pin & Inject	Structural inject - to confirm			0.6 / 8
AF51	Pin & Inject				0.35 / 5
BA55	Repair	Replace existing sealant	20 x 425 x 30	0.0003	
EXTRA		30 patches	30 x 50 x 50 x 20	0.0015	
ESTIMATED VOLUME OF PROPOSED SYNTHETIC STONE REPAIRS AND PINNING				0.0033 m3	4.41 m 55 pins

SANDSTONES: FORMER DEPARTMENT OF EDUCATION BUILDING

BRIDGE STREET, SYDNEY

NORTH EXTERIOR FAÇADE RESTORATION

SCHEDULE OF PROPOSED REPAIR WORKS



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OTTO CSERHALMI NARN 4079

JOB NO 18050 ISSUE F OCTOBER 2019

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DEPARTMENT OF EDUCATION BUILDING NORTH ELEVATION
OCTOBER 2019

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A	Pre-Tender	1/07/19	MC / OC
B	Pre-Tender	10/2019	MC / OC

1.0 PROPOSED REPAIR WORKS

Provide all items and works as indicated on the drawings in this Schedule of repair Works and in the specification.

Refer to architectural drawings:

A09 NORTH ELEVATION OVERVIEW

A10 NORTH ELEVATION TOP LEFT SECTION

A11 NORTH ELEVATION TOP RIGHT SECTION

A12 NORTH ELEVATION BOTTOM LEFT SECTION

A13 NORTH ELEVATION BOTTOM RIGHT SECTION

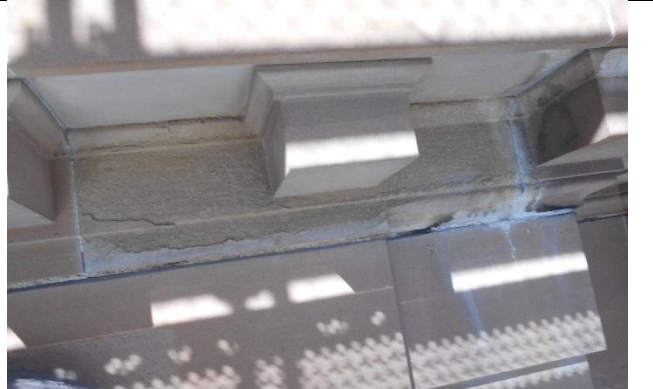
Refer to specification: FAÇADE SPECIFICATION

Proposed repair works include but are not limited to the following:

NO	ITEM	DEFECT / CONDITION	OCP ARCHITECTS COMMENT	PHOTOGRAPHS / DRAWINGS
		All four facades show serious water damage indicating defects in waterproofing of stone cornices and balcony floors.		 Stone E86

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1	SANDSTONE CLEANING	The sandstone has built up of grime and black soot	Wash all façade, remove black stains	
2	REMOVAL OF BIOLOGICAL GROWTH	Some sections of the building facades are displaying biological growth	Remove biological growth as indicated on drawings and where needed by applying biocide. Apply biocide to all stones, existing - remaining on the building and all new stone replacements and indents	
3	SANDSTONE DESALINATION	Sandstone affected by ingress of rain water (existing lead weathering above is not sufficient)	Desalinate stones as scheduled on drawings including soffits of cornices, using Blue-V ac system. Rub back to remove soft surface where needed, ev. chisel back as indicated on drawings (where deeper damage).	

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4	SANDSTONE POINTING AND REPOINTING	Original sandstone pointing is cracking, in places already missing. Elastomeric sealant is used as a pointing material nearly in all joints of stone units installed during previous restoration and in some other places	Remove original cracking pointing, hard cement pointing and elastomeric sealant from sandstone joints 25mm deep	
5	SANDSTONE POINTING AND REPOINTING		80% repoint sandstone joints with soft mortar including reverse side of parapet wall and gables. Fill horizontal joints of top courses A, B, C, D and stringcourses U and BK with elastomeric sealant	
6	SANDSTONE REPLACEMENT / INDENTING		Replace / indent deteriorated stones, provide hairline indents where scheduled below and as indicated on drawings. Exact extent of repair works on potential stone indents / replacement will be clarified when the lead weathering above is removed. Structural Engineer to clarify pinning of new stones	
7	INSERTS IN SANDSTONE		Remove all redundant inserts from reverse side of parapet walls	

			(course E, F, G), make good with synthetic stone.	
8	ROCKFACED PLINTH	Rockfaced bottom floor elevation was not fully accessible during the condition investigation	Make safe – chisel back loose surface of rock faced plinth. Extent to be clarified when access is available. Desalinate where needed	
9	STONWORK	Ground floor entry interior, First floor balcony interior	Wash sandstone, repoint approx. 20%	
10	SYNTHETIC STONE REPAIR		Provide synthetic stone repairs, pin and inject damaged stones with synthetic stone as scheduled below and as indicated on drawings. Provide extra synthetic stone patches if needed – scheduled in synthetic stone schedule below	
11	SYNTHETIC STONE REPAIR	The façade exhibits multiple synthetic stone patches from previous restoration. Many are deteriorating, cracking in contact with stone and are discoloured	Keep synthetic stone patches which are sound but monitor annually their condition.	
12	OVERFLOWS AND SUMPS	Course G	Reline two existing sumps and overflow through course G. Provide all details and materials as shown on drawing A19. Match existing overflow detail on the façade. Carefully drill new openings for two new overflows through course G,	

			match size, height and slope of existing. Modify lead detail from drawing A19 for connection with roofing without sump. Use lead No.6 Refer to hydraulic engineer's drawings and elevations	
13	LEADWORK	Courses B, D	Remove lead from top courses B, D. The condition of the stones under will be clarified then. Allow to redress 15mm of the tops of the stones	
14	LEADWORK	Courses AE, BK	Adjust existing lead weathering on cornices of three balconies (course AE and BK): Bend existing leading edge 10mm off leading edge of balcony cornice. Cut and rebuild corners soldering on extra lead patches. Refer to detail. NOTE: This option is preferably to be undertaken in current works or to be part of future maintenance works. If later option is chosen, then provide separate cost to assist in allocation of relevant funding for future Maintenance Plan.	
15	LEADWORK	Course BK (Middle Section)	Replace lead weathering of cornices BK (middle section). Use lead No.6. Provide proper drip 15mm off the leading edge. Use felt underlay between stone and lead weathering and between	

			continuous copper leading strip and lead weathering. Refer to detail.	
16	LEADWORK	Courses E, P	Adjust existing lead weathering on parapet P and cornice E adding new strip of leading edge. Refer to detail. Allow for extra 8 repair patches to be leadburned over damaged spots on existing weathering. NOTE: This option is preferably to be undertaken in current works or to be part of future maintenance works. If later option is chosen, then provide separate cost to assist in allocation of relevant funding for future Maintenance Plan.	
17	LEAD FLASHING	Roof lead flashings behind parapet (course E, F) is deteriorated and partly replaced with not suitable material (colorbond).	Replace roof lead flashing behind parapet wall (course E, F, G) over new bitumen roofing in full length. Seal flashing into existing recess together with supporting 50mm wide lead strips 400mm apart. Seal recess with elastomeric sealant and secure with lead wedges approx. 500mm apart. Refer to detail.	
18	BALCONY MEMBRANE	Serious water damage under the balconies indicates that the balcony floors are leaking	Seal all three balcony floors with new bitumen over existing flooring. Keep existing lead flashing, dress down when bitumen is completed. Provide expansion joints in bitumen	

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			max 3m apart. Cover expansion joint with lead. Refer to detail. Keep and clean existing floor outlets. Clear outlets where blocked.	
19	METAL VENTS	Metal vents appear in the newer section of the building (north). They are in various state of disrepair	Remove all metal vents. Clean openings in sandstone. Remove rust from vents, treat against rust and coat. Reinstall vents to the original positions. Insert stainless steel mesh between vents and sandstone. Replace two broken vents in the interior of first floor balcony, match existing. Insert stainless steel mesh between vents and sandstone.	
20	ROSETTES	Original Rosettes	Remove rust from cast iron rosettes, treat against rust and repaint with DULUX Micaceous Iron Oxide grey	

2. SANDSTONE REPLACEMENT / INDENT SCHEDULE

All dimensions are approximate only. Clarify all dimensions before commencement of works

NOTE:

Allow for indent pinning with 12 mm dia. stainless steel pins 150mm long. The pins to be placed max 450 mm apart.

STONE	INDENT/ REPLACEMENT	DIMENSIONS L x H x B mm	NOTE	INDENTS/ REPLACEMENTS SIZE m3	POTENTIAL INDENTS/ REPLACEMENTS SIZE m3
A9	REPLACE	2200 x 920 x 470	L-Shaped	0.9513	
A10	REPLACE	2200 x 920 x 470	L-Shaped	0.9513	
A11	REPLACE	2200 x 920 x 470	L-Shaped	0.9513	
A12	REPLACE	2200 x 920 x 470	L-Shaped	0.9513	
B17	PARTIAL INDENT	1320 x 1275 x 550		0.9220	
B18	PARTIAL INDENT	2080 x 120 x 100		0.0250	
C25	PARTIAL INDENT	300 x 615 x 120		0.0221	
C26	REPLACE	2050 x 860 x 950		1.6749	
D25	REPLACE	1020 x 970 x 430		0.4254	
D26	INDENT	1550 x 300 x 430		0.1999	
D28	POTENTIAL REPLACE	1020 x 970 x 430			0.4254
E71	HAIRLINE INDENT	250 x 100 x 40		0.0010	
E79	HAIRLINE INDENT	250 x 100 x 80		0.0020	
E81	INDENT	1700 x 120 x 380		0.0775	
E86	REPLACE	900 + 380 x 1020 x 1050	L-carved gable corner	1.3709	
E95	HAIRLINE INDENT	350 x 260 x 210		0.0191	
E99	POTENTIAL PARTIAL INDENT	1100 x 1020 x 800	Carved gable section		0.8976
E112	PARTIAL INDENT	1080 x 900 x 400	Shaped corner	0.3888	
E110	POTENTIAL REPLACE	900 + 380 x 1020 x 1050	L-carved gable corner		1.3709

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G78	POTENITAL INDENT	650 x 650 x 410	L-shaped		0.1732
P66	HAIRLINE INDENT	180 x 100 x 50		0.0009	
P68	HAIRLINE INDENT	180 x 100 x 50		0.0009	
P77	HAIRLINE INDENT	180 x 325 x 70		0.0041	
P78	HAIRLINE INDENT	150 x 100 x 50		0.0008	
P79	HAIRLINE INDENT	100 x 100 x 40		0.0004	
P80	HAIRLINE INDENT	180 x 100 x 40		0.0007	
P81	PARTIAL INDENT	960 x 1080 x 460		0.4769	
P82	PARTIAL INDENT	960 x 1080 x 460		0.4769	
P83	PARTIAL INDENT	960 x 1080 x 460		0.4769	
P84	PARTIAL INDENT	960 x 300 x 230		0.0662	
P85	PARTIAL INDENT	960 x 300 x 230		0.0662	
P86	HAIRLINE INDENT	250 x 100 x 60		0.0015	
P88	HAIRLINE INDENT	250 x 100 x 60		0.0015	
P93	PARTIAL INDENT	960 x 1080 x 460		0.4769	
P94	HAIRLINE INDENT	250 x 100 x 70		0.0018	
P99	HAIRLINE INDENT	220 x 100 x 60		0.0013	
P105	PARTIAL INDENT	960 x 300 x 230		0.0662	
P107	PARTIAL INDENT	1580 x 1100 x 235		0.4084	
P107	HAIRLINE INDENT	180 x 100 x 60		0.0011	
AF81	PARTIAL INDENT	570 x 400 x 530		0.1208	
AF85	PARTIAL INDENT	570 x 400 x 530		0.1208	
AF89	HAIRLINE INDENT	520 x 100 x 50		0.0026	
AF93	HAIRLINE INDENT	50 x 50 x 180		0.0005	
AX81	HAIRLINE INDENT	70 x 230 x 40		0.0006	
AX54	INDENT	1700 x 800 x 415		0.5644	
BF57	PARTIAL INDENT	700 x 550 x 300	Carved	0.1155	
BG58	PARTIAL INDENT	510 x 550 x 350	Carved	0.0982	
BH71	PARTIAL INDENT	800 x 480 x 210	Carved	0.0806	
BH72	HAIRLINE INDENT	140 x 430 x 110		0.0066	

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BH74	HAIRLINE INDENT	140 x 430 x 110		0.0066	
BK69	HAIRLINE INDENT	140 x 250 x 50		0.0018	
BK76	PARTIAL INDENT	1220 x 200 x 150		0.0366	
BK81	HAIRLINE INDENT	80 x 100 x 30		0.0002	
BK82	HAIRLINE INDENT	300 x 510 x 150		0.0229	
BK83	HAIRLINE INDENT	250 x 650 x 150	L-shaped	0.0244	
BK85	HAIRLINE INDENT	220 x 280 x 150		0.0092	
BK86	PARTIAL INDENT	1640 x 610 x 280		0.2801	
BK87	PARTIAL INDENT	1640 x 610 x 150		0.1500	
BK96	HAIRLINE INDENT	250 x 100 x 100		0.0025	
BK97	HAIRLINE INDENT	450 x 100 x 100		0.0045	
BK99	HAIRLINE INDENT	100 x 200 x 235		0.0047	
BK100	HAIRLINE INDENT	100 x 200 x 235		0.0047	
BL77	HAIRLINE INDENT	250 x 100 x 120	On reverse side of beam	0.0030	
BL77	HAIRLINE INDENT	250 x 60 x 100	On reverse side of beam	0.0015	
BS58	HAIRLINE INDENT	350 x 100 x 100		0.0035	
BT56	HAIRLINE INDENT	160 x 120 x 25		0.0005	
BT55	HAIRLINE INDENT	180 x 180 x 80		0.0259	
BT55	HAIRLINE INDENT	100 x 180 x 80		0.0014	
BV310	PARTIAL INDENT	1650 x 80 x 450	Seal with elasto-sealant	0.0594	
Left Marble Column	HAIRLINE INDENT	2x 550 x 60 x 250		0.0165	
Right Marble Column	HAIRLINE INDENT	320 x 50 x 150		0.0024	
ESTIMATED VOLUME OF PROPOSED STONE FOR REPLACEMENT / INDENT McCAFFREY PYRMONT YELLOW BLOCK, or					
				13.2363 m3	2.8671 m3

200 GEORGE STREET YELLOW BLOCK		
Allow for extra 15% stone replacement/indent for concealed/unknown	1.9854 m3	0.4300 m3
Proposed stone replacement	15.2217	3.2971
SUMMARY: 18.5188 m3		

3. SYNTHETIC STONE SCHEDULE

All dimensions are approximate only. Clarify all dimensions before commencement of works.

Allow for stainless steel mesh reinforcement to synthetic stone patches.

STONE	WORK REQUIRED	NOTE	DIMENSIONS OF PATCHES L x H x B mm	SYNTHETIC STONE SIZE m3	INJECTING: L m / No OF
C13	Repair		120 x 20 x 60	0.00014	
C19	Replace fill of Lewishole		280 x 20 x 180	0.0010	
C25	Replace fill of Lewishole		280 x 20 x 180	0.0010	
C32	Replace fill of Lewishole		280 x 20 x 180	0.0010	
D24	Repair	L-shaped	250 + 160 x 20 x 50	0.00041	
G75	Pin & Inject				0.18
AA63	Replace	Existing L-shaped patch	100 + 280 x 20 x 20	0.00015	
BS56	Pin & Inject				0.2 / 4
CH5	Replace	Existing patches and match existing surface	5x 100 x 20 x 20	0.0002	
Left Marble Column	Replace	Existing patches with synthetic stone	2x 130 x 140 x 20	0.0008	
Right Marble Column	Inject	Crack and match existing surface			0.15
	Inject				0.15
TS	Pin & Inject	Top of trachyte entry step			0.25 / 3
	Pin & Inject				0.25 / 3
EXTRA		20 patches	20 x 50 x 50 x 20	0.0010	
ESTIMATED VOLUME OF PROPOSED SYNTHETIC STONE REPAIRS AND PINNING				0.0057 m3	1.18 m 10 pins

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FORMER DEPARTMENT OF EDUCATION BUILDING

BRIDGE STREET, SYDNEY

WEST EXTERIOR FAÇADE RESTORATION

SCHEDULE OF PROPOSED REPAIR WORKS



OCP ARCHITECTS PTY LTD

STUDIO 7, LEVEL 1, 35 BUCKINGHAM STREET, SURRY HILLS 2010

OTTO CSERHALMI NARN 4079

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B	Client Review	9/09/19	MC / OC
C	Review	10/2019	MC / OC

1. SCHEDULE OF REPAIR WORKD

Provide all items and works as indicated on the drawings in this Schedule of repair Works and in the specification.

Refer to architectural drawings:

A14 WEST ELEVATION OVERVIEW

A15 WEST ELEVATION TOP LEFT SECTION

A16 WEST ELEVATION TOP RIGHT SECTION

A17 WEST ELEVATION BOTTOM LEFT SECTION

A18 WEST ELEVATION BOTTOM RIGHTSECTION

Refer to specification: FAÇADE SPECIFICATION

Proposed repair works include but are not limited to the following:

NO	ITEM	DEFECT / CONDITION	OCP ARCHITECTS COMMENT	PHOTOGRAPHS / DRAWINGS
		All four facades show serious water damage indicating defects in waterproofing stone cornices and balcony floors.		

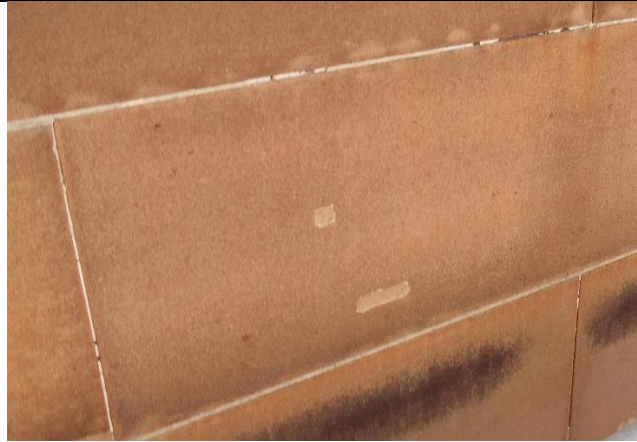
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1	SANDSTONE CLEANING	The sandstone has built up of grime and black soot	Wash all façade, remove black stains	
2	REMOVAL OF BIOLOGICAL GROWTH	Some sections of the building facades are displaying biological growth	Remove biological growth as indicated on drawings and where needed by applying biocide. Apply biocide to all stones, existing - remaining on the building and all new stone replacements and indents	
3	SANDSTONE DESALINATION	Sandstone affected by ingress of rain water (existing lead weathering above is not sufficient)	Desalinate stones as scheduled on drawings including soffits of cornices, using Blue-V ac system. Rub back to remove soft surface where needed, ev. chisel back as indicated on drawings (where deeper damage).	

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4	SANDSTONE POINTING AND REPOINTING	Original sandstone pointing is cracking, in places already missing. Elastomeric sealant is used as a pointing material nearly in all joints of stone units installed during previous restoration and in some other places	Remove original cracking pointing, hard cement pointing and elastomeric sealant from sandstone joints 25mm deep	
5	SANDSTONE POINTING AND REPOINTING		80% repoint sandstone joints with soft mortar including reverse side of parapet wall and gables. Fill horizontal joints of top courses A, B, C, D and stringcourses U and BK with elastomeric sealant	
6	SANDSTONE POINTING AND REPOINTING	The west and east facades show multiple cracks filled by elastomeric sealant in the areas between original building and the later addition.	Structural engineer to investigate dept of cracks to suggest the dept of their new filling and material to be used (soft mortar or ne elastomeric sealant)	
7	SANDSTONE REPLACEMENT / INDENTING		Replace / indent deteriorated stones, provide hairline indents where scheduled below and as indicated on drawings. Exact extent of repair works on potential stone indents / replacement will be clarified when the lead weathering above is removed. Structural	

			Engineer to clarify pinning of new stones	
8	INSERTS IN SANDSTONE		Remove all redundant inserts from reverse side of parapet walls (course E, F, G), make good with synthetic stone	
9	CRACKS IN SANDSTONE	Many cracks can be seen on east and west elevations where north part of the building was added later. Majority of these cracks are filled by elastomeric sealant	Engage Structural Engineer to investigate various existing cracks. Allow for replacement of elastomeric sealant	
10	STONE MOVEMENT	Balcony cornice stones BK100 and BK101 are leaning down towards the middle joint	Engage Structural Engineer to investigate the movement of balcony cornice stones BK100 and BK101. Allow for potential replacement of both stones	
11	ROCKFACED PLINTH	Rockfaced bottom floor elevation was not fully accessible during the condition investigation	Make safe – chisel back loose surface of rock faced plinth. Extent to be clarified when access is available, desalinate where needed	
12	STONWORK	Ground floor entry interior	Wash sandstone, repoint approx. 20%	
13	SYNTHETIC STONE REPAIR		Provide synthetic stone repairs, pin and inject damaged stones with synthetic stone as scheduled below and as indicated on drawings. Provide extra synthetic	

			stone patches if needed – scheduled in synthetic stone schedule bellow	
14	SYNTHETIC STONE REPAIR	The façade exhibits multiple synthetic stone patches from previous restoration. Many are deteriorating, cracking in contact with stone and are discoloured	Keep synthetic stone patches which are sound but monitor annually their condition. (As stone units BJ94, BJ96, BJ98)	 Stone BJ94
15	OVERFLOWS AND SUMPS	Course G	Reline two existing sumps and overflow through course G. Provide all details and materials as shown on drawing A19. Match existing overflow detail on the façade. Provide new overflow to an existing sump – match existing. Carefully drill new openings for three new overflows through course G, match size, height and slope of existing. Modify lead detail from drawing A19 for connection with roofing without sump. Use lead No.6 Refer to hydraulic engineer's drawings and elevations	

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16	LEADWORK	Courses A, B, D	Remove lead from top courses A, B, D. The condition of the stones under will be clarified then. Allow to redress 15mm of the tops of the stones	
17	LEADWORK	Lead weathering of window hoods course I and on window sills (courses AC, AN, AX) is in good condition and beneficial to the building despite being a new element not according to original design	Keep existing lead weathering on window hoods course I and on all window sills (courses AC, AN, AX)	
18	LEADWORK	The lead weathering of string course sections of course BK between balcony cornices is due to wrong detail damaging stones below and is not necessary on so small projection in lower part of the building with multiple cornices above	Remove lead from string course BK between balcony cornices	
19	LEADWORK	Courses AE, BK	Replace lead weatherings on all cornices of balconies (course AE and BK). Use lead No.6. Provide proper drip 15mm off the leading edge. Use felt underlay between stone and lead weathering and between continuous copper leading strip and lead weathering. Refer to detail	

20	LEADWORK	Courses E, P	Adjust existing lead weathering on parapet P and cornice E adding new strip of leading edge. Refer to detail. Allow for extra 15 repair patches to be leadburned over damaged spots on existing weathering. NOTE: This option is preferably to be undertaken in current works or to be part of future maintenance works. If later option is chosen, then provide separate cost to assist in allocation of relevant funding for future Maintenance Plan.	
21	LEAD FLASHING	Roof lead flashings behind parapet (course E, F) is deteriorated and partly replaced with not suitable material (colorbond).	Replace roof lead flashing behind parapet wall (course E, F, G) over new bitumen roofing in full length. Seal flashing into existing recess together with supporting 50mm wide lead strips 400mm apart. Seal recess with elastomeric sealant and secure with lead wedges approx. 500mm apart. Refer to detail.	
22	BALCONY MEMBRANE	Serious water damage under the balconies indicates that the balcony floors are leaking	Seal all three balcony floors with new bitumen over existing flooring. Keep existing lead flashing, dress down when bitumen is completed. Provide expansion joints in bitumen max 3m apart. Cover expansion joint with lead. Refer to detail.	

			Keep and clean existing floor outlets. Clear outlets where blocked.	
23	METAL VENTS	Metal vents appear in the newer section of the building (north). They are in various state of disrepair	Remove all metal vents. Clean openings in sandstone. Remove rust from vents, treat against rust and coat. Reinstall vents to the original positions. Insert stainless steel mesh between vents and sandstone.	
24	ROSETTES	Original Rosettes	Remove rust from cast iron rosettes, treat against rust and repaint with DULUX Micaceous Iron Oxide grey	

2. SANDSTONE REPLACEMENT / INDENT SCHEDULE

All dimensions are approximate only. Clarify all dimensions before commencement of works

NOTE:

Allow for indent pinning with 12 mm dia. stainless steel pins 150mm long. The pins to be placed max 450 mm apart.

STONE	INDENT/ REPLACEMENT	DIMENSIONS L x H x B mm	NOTE	INDENTS/ REPLACEMENTS SIZE m3	POTENTIAL INDENTS/ REPLACEMENTS SIZE m3
A13	REPLACE	2220 x 480 x 915	L-shaped	0.9662	
A14	REPLACE	2220 x 480 x 915	L-shaped	0.9662	
B20	REPLACE	1350 x 555 x 1270		0.9515	
B22	REPLACE	1350 x 555 x 1270		0.9515	
B21	HAIRLINE INDENT	700 x 160 x 220		0.0246	
C39	HAIRLINE INDENT	80 x 40 x 100		0.0003	
C42	HAIRLINE INDENT	200 x 535 x 60		0.0064	
C43	HAIRLINE INDENT	140 x 535 x 60		0.0045	
C43	HAIRLINE INDENT	600 x 70 x 100		0.0042	
D33	HAIRLINE INDENT	1450 x 100 x 220		0.0319	
G83	HAIRLINE INDENT	660 x 80 x 140		0.0074	
G94	INDENT	1850 x 415 x 120		0.0921	
H74	HAIRLINE INDENT	660 x 80 x 140		0.0074	
H87	INDENT	1760 x 120 x 415		0.0876	
P108	PARTIAL INDENT	1600 x 240 x 1300		0.4992	
T80	HAIRLINE INDENT	100 x 150 x 100		0.0015	
AF107	HAIRLINE INDENT	60 x 40 x 100		0.0002	
AF111	HAIRLINE INDENT	60 x 40 x 100		0.0002	
AF111	HAIRLINE INDENT	140 x 70 x 100		0.0010	
AI104	HAIRLINE INDENT	200 x 70 x 100		0.0014	

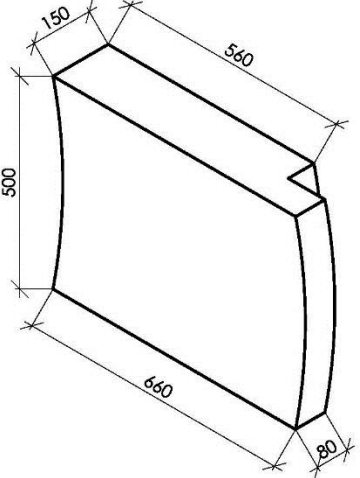
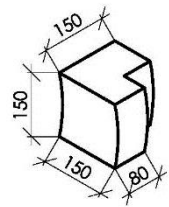
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AL68	HAIRLINE INDENT	180 x 50 x 100		0.0009	
AN118	PARTIAL INDENT	1660 x 205 x 350		0.1191	
AW66	HAIRLINE INDENT	50 x 150 x 100		0.0008	
BC69	HAIRLINE INDENT	200 x 80 x 100		0.0016	
BI248	HAIRLINE INDENT	180 x 50 x 120		0.0011	
BI246	HAIRLINE INDENT	200 x 130 x 180		0.0047	
BJ99	INDENT	510 x 420 x 850	L-Shaped	0.1821	
BJ95	INDENT	510 x 420 x 200		0.0428	
BJ93	HAIRLINE INDENT	200 x 150 x 100		0.0030	
BJ123	PARTIAL INDENT	450 x 420 x 200		0.0378	Extra 0.8432
BJ128	HAIRLINE INDENT	180 x 420 x 180		0.0136	
BK100	PARTIAL INDENT	1760 x 930 x 130	L-Shaped	0.2128	
	POTENTIAL REPLACEMENT	1760 x 400 x 1500	Structural engineer to investigate 1.0560 m3		
BK101	PARTIAL INDENT	1220 x 130 x 220	L-Shaped	0.0349	
	POTENTIAL REPLACEMENT	1220 x 400 x 1500	Structural engineer to investigate 0.7320 n3		Extra 0.6971
BK104	PARTIAL INDENT	1220 x 130 x 220	L-Shaped	0.0349	
BK114	PARTIAL INDENT	1330 x 600 x 330		0.2633	
BK115	PARTIAL INDENT	1700 x 130 x 350	L-shaped	0.0774	
BK116	HAIRLINE INDENT	120 x 40 x 100		0.0005	
BK128	INDENT	1590 x 280 x 480		0.2137	
BK127	HAIRLINE INDENT	120 x 40 x 100		0.0005	
BK135	HAIRLINE INDENT	300 x 60 x 100		0.0018	
BT73	HAIRLINE INDENT		Allow for extra H/L indent for carvings. To be investigated due to lack of access.	0.0040	

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BT74	HAIRLINE INDENT		Allow for extra H/L indent for carvings. To be investigated due to lack of access.	0.0040	
BV74	HAIRLINE INDENT	760 x 130 x 250		0.0247	
BW1	PARTIAL INDENT	1000 x 450 x 800	Carved gable corner	0.3600	
BW2	PARTIAL INDENT	1000 x 450 x 800	Carved gable corner	0.3600	
BZ72	PARTIAL INDENT	150 x 500 x 660		0.0495	
CA414	HAIRLINE INDENT	150 x 150 x 150		0.0034	
CC44	PARTIAL INDENT	200 x 420 x 435		0.0365	
CD30	PARTIAL INDENT	200 x 510 x 425		0.0434	
CD38	HAIRLINE INDENT	300 x 230 x 150		0.0104	
CF35	HAIRLINE INDENT	40 x 510 x 150		0.0031	

ESTIMATED VOLUME OF PROPOSED STONE FOR REPLACEMENT / INDENT McCAFFREY PYRMONT YELLOW BLOCK, or 200 GEORGE STREET YELLOW BLOCK	6.7516 m3	1.5403 m3
Allow for extra 15% stone replacement/indent for concealed/unknown	1.0127 m3	0.2310 m3
Proposed stone replacement	7.7643 m3	1.7713 m3
SUMMARY: 9.5356 m3		

3. SYNTHETIC STONE SCHEDULE

All dimensions are approximate only. Clarify all dimensions before commencement of works.

Allow for stainless steel mesh reinforcement to synthetic stone patches.

STONE	WORK REQUIRED	NOTE	DIMENSIONS OF PATCHES L x H x B mm	SYNTHETIC STONE SIZE m3	INJECTING: L m / No OF
C33	Replace	Fill of Lewis hole	280 x 180 x 20	0.0010	
C39	Replace	Fill of Lewis hole	280 x 180 x 20	0.0010	
C33	Pin & Inject				0.250 / 4
AG14	Pin & Inject				0.200 / 3
Q67	Inject Crack				0.220
U110	Inject Crack				0.420
CB43	Replace	Existing patch with synthetic stone	30 x 300 x 70	0.0006	
CC45	Replace	Existing patch	70 x 70 x 20	0.0001	
CD31	Replace	Existing patch	70 x 80 x 20	0.0001	
CD31	Replace	Existing patch	60 x 210 x 50	0.0006	
CD409	Replace	Existing patch – interior corner	90 x 280 x 50	0.0013	
CE36	Replace	Existing patch	40 x 140 x 60	0.0003	
CE36	Replace	Existing patch	80 x 120 x 100	0.0010	
EXTRA		30 patches	30 x 50 x 50 x 20	0.0015	
Allow for 30 extra patches				0.0432	
ESTIMATED VOLUME OF PROPOSED SYNTHETIC STONE REPAIRS AND PINNING				0.0075 m3	1.090 m 7 pins

SANDSTONES: FORMER DEPARTMENT OF EDUCATION BUILDING

BRIDGE STREET, SYDNEY

SOUTH EXTERIOR FAÇADE RESTORATION

SCHEDULE OF PROPOSED REPAIR WORKS



OCP ARCHITECTS PTY LTD

STUDIO 7, LEVEL 1, 35 BUCKINGHAM STREET, SURRY HILLS 2010

OTTO CSERHALMI NARN 4079

JOB NO 18050 ISSUE F

OCTOBER 2019

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Section 2	Sandstone Replacement / Indent Schedule	9
Section 3	Synthetic Stone Repair Schedule	12

Document Control

Issue	Description	Date	Reviewed by
A	Pre-Tender	1/07/19	MC / OC
B	Pre-Tender	10/2019	MC / OC
C	Update	10/2019	MC / OC

1. PROPOSED REPAIR WORKS

Provide all items and works as indicated on the drawings in this Schedule of repair Works and in the specification.

Refer to architectural drawings:

A01 SOUTH ELEVATION OVERVIEW

A02 SOUTH ELEVATION TOP SECTION

A02 SOUTH ELEVATION BOTTOM SECTION

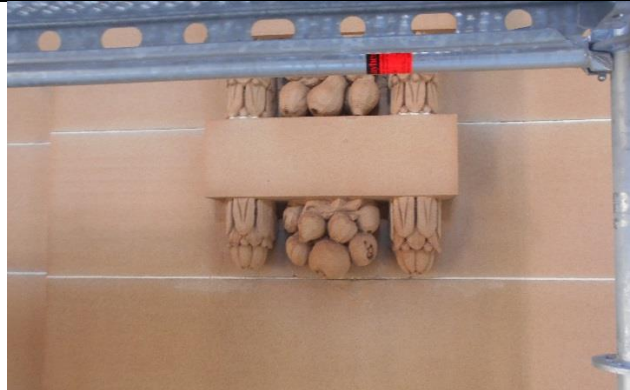
Refer to specification: FAÇADE SPECIFICATION

Proposed repair works include but are not limited to the following:

NO	ITEM	DEFECT / CONDITION	OCP ARCHITECTS COMMENT	PHOTOGRAPHS / DRAWINGS
		All four facades show serious water damage indicating defects in waterproofing stone cornices and balcony floors.		
1	SANDSTONE CLEANING	The sandstone has built up of grime and black soot	Wash all façade, remove black stains	

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2	REMOVAL OF BIOLOGICAL GROWTH	Some sections of the building facades are displaying biological growth	Remove biological growth as indicated on drawings and where needed by applying biocide. Apply biocide to all stones, existing - remaining on the building and all new stone replacements and indents	
3	SANDSTONE DESALINATION	Sandstone affected by ingress of rain water (existing lead weathering above is not sufficient)	Desalinate stones as scheduled on drawings including soffits of cornices, using Blue-V ac system. Rub back to remove soft surface where needed, ev. chisel back as indicated on drawings (where deeper damage).	
4	SANDSTONE POINTING AND REPOINTING	Original sandstone pointing is cracking, in places already missing. Elastomeric sealant is used as a pointing material nearly in all joints of stone units installed during previous restoration and in some other places	Remove original cracking pointing, hard cement pointing and elastomeric sealant from sandstone joints 25mm deep	

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5	SANDSTONE POINTING AND REPOINTING		80% repoint sandstone joints with soft mortar including reverse side of parapet wall and gables. Fill horizontal joints of top courses A, B, C, D and stringcourses U and BK with elastomeric sealant. Replace existing seal in horizontal joints between trachyte stones TR1, TR2 and TR3 with new elastomeric sealant	
6	SANDSTONE REPLACEMENT / INDENTING		Replace / indent deteriorated stones, provide hairline indents where scheduled below and as indicated on drawings. Exact extent of repair works on potential stone indents / replacement will be clarified when the lead weathering above is removed. Structural Engineer to clarify pinning of new stones	
7	INSERTS IN SANDSTONE		Remove all redundant inserts from reverse side of parapet walls (course E, F, G), make good with synthetic stone.	
8	CRACKS IN SANDSTONE	All elevations except north have stones with various vertical cracks. Majority of these cracks are filled by elastomeric sealant of poor quality failing to seal the elevations.	Engage Structural Engineer to investigate various existing vertical cracks. Allow for replacement of elastomeric sealant.	
9	ROCKFACED PLINTH	Rock faced bottom floor elevation was not fully	Make safe – chisel back loose surface of rock faced plinth. Extent	

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		accessible during the condition investigation	to be clarified when access is available. Desalinate where needed	
10	SYNTHETIC STONE REPAIR		Provide synthetic stone repairs, pin and inject damaged stones with synthetic stone as scheduled below and as indicated on drawings. Provide extra synthetic stone patches if needed – scheduled in synthetic stone schedule bellow	
11	OVERFLOWS AND SUMPS	Course G	Provide two new overflows above existing down pipes trough course G, match size, height and slope of existing. Provide all details and materials as shown on drawing A19. Match existing overflow detail on the façade. Line with lead No. 6. Refer to hydraulic engineer's drawings and elevations	
12	LEADWORK	Lead weathering of window hoods at top level is in good condition and beneficial to the building despite being a new element not according to original design	Keep existing lead weatherings on window hoods at top level	
13	LEADWORK	Courses AE, BK	Adjust existing lead weathering: Bend existing leading edge 10mm off leading edge of balcony cornice. Cut and rebuild corners soldering on extra lead patches. Refer to detail. NOTE:	

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			This option is preferably to be undertaken in current works or to be part of future maintenance works. If later option is chosen, then provide separate cost to assist in allocation of relevant funding for future Maintenance Plan.	
14	ITEM REMOVED			
15	LEADWORK	Courses E, P	Adjust existing lead weathering on parapet P and cornice E adding new strip of leading edge. Refer to detail. Allow for extra 7 repair patches to be leadburned over damaged spots on existing weathering of course E. NOTE: This option is preferably to be undertaken in current works or to be part of future maintenance works. If later option is chosen, then provide separate cost to assist in allocation of relevant funding for future Maintenance Plan.	
16	LEAD FLASHING	Roof lead flashings behind parapet (course E, F) is deteriorated and partly replaced with not suitable material (colorbond).	Replace roof lead flashing behind parapet wall (course E, F, G) over new bitumen roofing in full length. Seal flashing into existing recess together with supporting 50mm wide lead strips 400mm apart. Seal recess with elastomeric sealant and secure with lead wedges approx. 500mm apart. Refer to detail.	

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17	BALCONY MEMBRANE	Serious water damage under the balconies indicates that the balcony floors are leaking	Seal all three balcony floors with new bitumen over existing flooring. Keep existing lead flashing, dress down when bitumen is completed. Provide expansion joints in bitumen max 3m apart. Cover expansion joint with lead. Refer to detail. Keep and clean existing floor outlets. Clear outlets where blocked.	
18	ROSETTES	Original Rosettes	Remove rust from cast iron rosettes, treat against rust and repaint with DULUX Micaceous Iron Oxide grey	
19	ORIGINAL SERVICE BOX (Likely gas)	Original rusty metal service box with pipe leading to underground	Remove rust from cast iron service box and treat against. Replace three missing or damaged pipe brackets in copper using existing original screws. Remove rust from the original screws and treat them against rust	
20	BIRD PROOFING		Install bird proofing at the sides of door D006 as indicated on drawing. Use horizontal stainless steel wires on stainless steel brackets installed in sandstone joints	

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21	GILDING		Clean and restore gold leaf gilding above entrance door in trachyte architrave. Use gold leaf 22ct or above. The gold gilding shall be protected at all times from damage throughout the duration of the contract	
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2. SANDSTONE REPLACEMENT / INDENT SCHEDULE

All dimensions are approximate only. Clarify all dimensions before commencement of works

NOTE:

Allow for indent pinning with 12 mm dia. stainless steel pins 150mm long. The pins to be placed max 450 mm apart.

STONE	INDENT/ REPLACEMENT	DIMENSIONS L x H x B mm	NOTE	INDENTS/ REPLACEMENTS SIZE m3	POTENTIAL INDENTS/ REPLACEMENTS SIZE m3
A2	HAIRLINE INDENT	150 x 100 x 150		0.0023	
A4	HAIRLINE INDENT	150 x 100 x 100		0.0015	
B2	HAIRLINE INDENT	1200 x 240 x 120	Replace existing patch	0.0346	
B3	HAIRLINE INDENT	650 x 240 x 120	Replace existing patch	0.0187	
C1	HAIRLINE INDENT	600 x 150 x 100		0.0090	
C3	HAIRLINE INDENT	120 x 100 x 100		0.0012	
C5	HAIRLINE INDENT	100 x 80 x 100		0.0008	
C8	HAIRLINE INDENT	100 x 80 x 100		0.0008	
D5	HAIRLINE INDENT	220 x 80 x 100		0.0018	
D6	REPLACEMENT	2090 x 490 x 510		0.5223	
D7	HAIRLINE INDENT	350 x 80 x 100		0.0028	
D8	HAIRLINE INDENT	400 x 80 x 100		0.0032	
D11	REPLACEMENT	2090 x 490 x 510		0.5223	

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Ea2	INDENT	1480 x 220 x 350		0.1140	
Ea5	INDENT	1900 x 220 x 350		0.1463	
Eb7	INDENT	2170 x 210 x 480	Corner stone	0.2187	
E8	INDENT	680 x 430 x 500	Corner stone	0.1462	
E9	PARTIAL INDENT	2230 x 220 x 350		0.1717	
E10	PARTIAL INDENT	2250 x 220 x 350		0.1733	
E11	PARTIAL INDENT	2250 x 220 x 350		0.1733	
E12	PARTIAL INDENT	2250 x 220 x 350		0.1733	
E13	HAIRLINE INDENT	350 x 60 x 150	Indent with raked joint	0.0032	
E15	INDENT	600 x 390 x 500	Corner stone	0.1170	
Ea16	POTENTIAL INDENT	1480 x 220 x 350	Corner stone		0.1140
Eb8	INDENT	2170 X 210 X 480	Corner stone	0.2167	
Eb9	HAIRLINE INDENT	430 x 60 x 150	Indent with raked joint	0.0039	
Eb10	INDENT	2345 x 210 x 480		0.2364	
Eb11	HAIRLINE INDENT	400 x 60 x 150	Indent with raked joint	0.0036	
P5	PARTIAL INDENT	500 x 300 x 500	Corner stone, Introduce new vertical joint	0.0750	
P6	POTENTIAL INDENT	1510 x 300 x 480	Corner stone		0.2174
P7	POTENTIAL INDENT	1980 x 300 x 480			0.2851
P8	INDENT	2245 x 300 x 480		0.3233	
P9	POTENTIAL INDENT	2315 x 300 x 480			0.3334
P10	POTENTIAL INDENT	2245 x 300 x 480			0.3233
P12	POTENTIAL INDENT	1520 x 300 x 480	Corner stone		0.2189
P13	POTENTIAL INDENT	2900 x 300 x 480	Corner stone		0.4176
P14	POTENTIAL INDENT	2200 x 300 x 480			0.3168
Q4	INDENT	2900 x 230 x 710	0.4736	0.4736	
Q7	INDENT	1990 x 230 x 710	Corner stone	0.3250	
Q16	INDENT	2000 x 230 x 710	Corner stone	0.3266	
Q18	HAIR LINE INDENT	750 x 60 x 150	Indent with raked joint	0.0068	
R60	PARTIAL INDENT	300 x 80 x 80		0.0019	
AF16a	PARTIAL INDENT	625 x 50 x 180		0.0059	

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AF18a	PARTIAL INDENT	625 x 50 x 180		0.0059	
AF20a	INDENT	625 x 230 x 215		0.0322	
AU1	HAIRLINE INDENT	580 x 100 x 100		0.0058	
AX12	PARTIAL INDENT	1320 x 220 x 350	Window sill	0.1016	
BH25	PARTIAL INDENT	1650 x 220 x 350		0.1271	
BJ3	INDENT	515 x 430 x 830		0.1838	
BJ4	REPLACEMENT	2200 x 430 x 510		0.4825	
BJ5	INDENT	515 x 430 x 830		0.1838	
BK2	PARTIAL INDENT	1560 x 270 x 400		0.1685	
BK15	PARTIAL INDENT	2000 x 270 x 400		0.2160	
BK17	PARTIAL INDENT	2110 x 270 x 500	Corner stone	0.2849	
BK18	HAIR LINE INDENT	400 x 100 x 100		0.0040	
BK20	INDENT	2585 x 270 x 360		0.2513	
BS6	INDENT	1780 x 340 x 160	Corner stone	0.0968	
BV10	HAIR LINE INDENT	650 x 100 x 300		0.0195	
ESTIMATED VOLUME OF PROPOSED STONE FOR REPLACEMENT / INDENT McCAFFREY PYRMONT YELLOW BLOCK, or 200 GEORGE STREET YELLOW BLOCK				6.7207 m3	2.2265 m3
Allow for extra 15% stone replacement/indent for concealed/unknown				1.0081 m3	0.3339 m3
Proposed stone replacement				7.7288 m3	2.5604
SUMMARY: 10.2892 m3					

2. SYNTHETIC STONE SCHEDULE

All dimensions are approximate only. Clarify all dimensions before commencement of works.

Sandstone cracks to be pinned to Structural Engineer 's detail.

Allow for stainless steel mesh reinforcement to synthetic stone patches.

STONE	WORK REQUIRED	NOTE	DIMENSIONS OF PATCHES L x H x B mm	SYNTHETIC STONE SIZE m3	INJECTING: L m / No OF PINS
O9	Pin & Inject				0.400 / 5
P7	Pin & Inject				0.250 / 4
Q4	Pin & Inject				0.250 / 3
S3	Pin & Inject				0.230 / 3
S9	Pin & Inject				0.230 / 3
S6	Pin & Inject				0.230 / 4
S16	Pin & Inject				0.230 / 3
S19	Pin & Inject				0.230 / 3
S19	Pin & Inject				0.230 / 3
T4	Pin & Inject				0.650 / 7
T7	Pin & Inject				0.670 / 9
T20	Pin & Inject				0.650 / 7
U10	Pin & Inject				0.400 / 5
U13	Pin & Inject				0.450 / 6
AX20	Pin & Inject	Window sill - repair to horizontal surface	200 x 30 x 150	0.0009	0.220 / 4
BI14	Repair	Window sill - repair to horizontal surface	400 x 30 x 150	0.0018	
BK10	Pin & Inject				0.200 / 3
					0.200 / 3

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OCTOBER 2019

BU5	Pin & Inject				0.100 / 2
CA4	Pin & Inject				0.400 / 4
CA5	Pin & Inject				0.250 / 3
EXTRA	Pin & Inject				10 X 0.100 / 2
EXTRA	Patch replacement		20 x 50 x 50 x 20	0.0010	
ESTIMATED VOLUME OF PROPOSED SYNTHETIC STONE REPAIRS AND PINNING				0.0037 m3	7.470 m 104 pins

SEE DRAWING
A02



PROPOSED REPAIR WORKS:

Refer to East Exterior Facade Restoration SCHEDULE OF REPAIR WORKS

- ① Wash all sandstone facade
- ② Remove biological growth, treat all stones by biocide
- ③ Desalinate stone as shown on drawings including soffits of cornices and stringcourses
- ④ ⑤ 80% repoint sandstone joints, replace sealant
- ⑥ Replace / indent deteriorated stones as scheduled
- ⑦ Make safe - chisel back loose surface of rockfaced plinth
- ⑧ Provide synthetic stone repairs, pinning and injecting
- ⑨ Keep lead on window hoods
- ⑩ Adjust existing lead weathering (option)

- (11) Install new membrane to balcony floors over existing
- (12) Remove rust from cast iron rosettes, treat against rust, repaint - colour to be specified
- (13) Install bird proofing as shown on drawings
- (14) Restore gold leaf gilding
- (15) Desalinate ceiling, repoint - match existing pointing
- (16) Add new lead leading edge to existing lead weathering (option)
- (17) Provide new overflow through course G to existing sump, reline
- (18) ITEM REMOVED
- (19) Restore original service box with pipe
- (20) Timber / bronze windows and doors to be refinished as per "Window Schedule"

LEGENT

-  Stone Replacement
-  Stone Indent
-  Potential Stone Indent
-  Hairline Indent
-  Pin & inject with synthetic stone
-  Remove biological growth
-  Desalinate, rub back soft surface
-  Desalinate, chisel back soft surface
-  Leadwork
-  Bird proofing

READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION

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PROJECT

SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITIF

SOUTH ELEVATION OVERVIEW

CLIENT REVIEW

SCALE
1 : 200@A3

DRAWN/CHECK

DRAWING NO.

PROJECT NO.
18050

REVISION
F

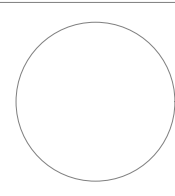
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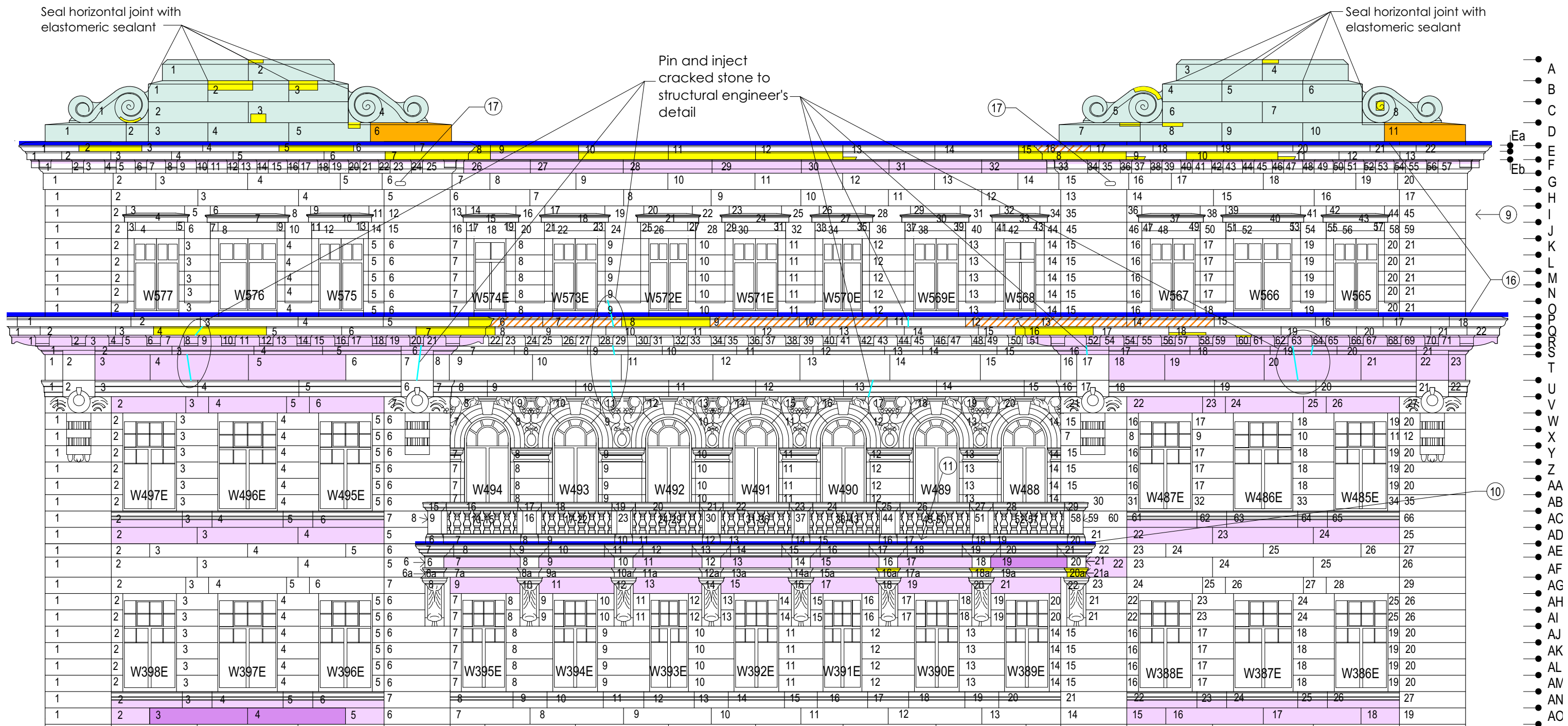
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F	SIXTH ISSUE
E	FIFTH ISSUE
D	FORTH ISSUE
C	THIRD ISSUE
B	SECOND ISSUE
A	FIRST ISSUE
AMEND	DESCRIPTION

10/2019
10/2019
10/2019
10/2019
8/2019
6/2019
DATE





- LEGENT
- Stone Replacement
 - Stone Indent
 - Potential Stone Indent
 - Hairline Indent
 - Pin & inject with synthetic stone
 - Remove biological growth
 - Desalinate, rub back soft surface
 - Desalinate, chisel back soft surface
 - Leadwork
 - Existing elasto. sealant to be replaced with soft mortar

READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION

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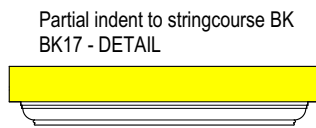
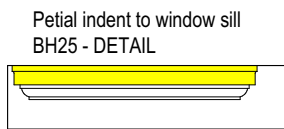
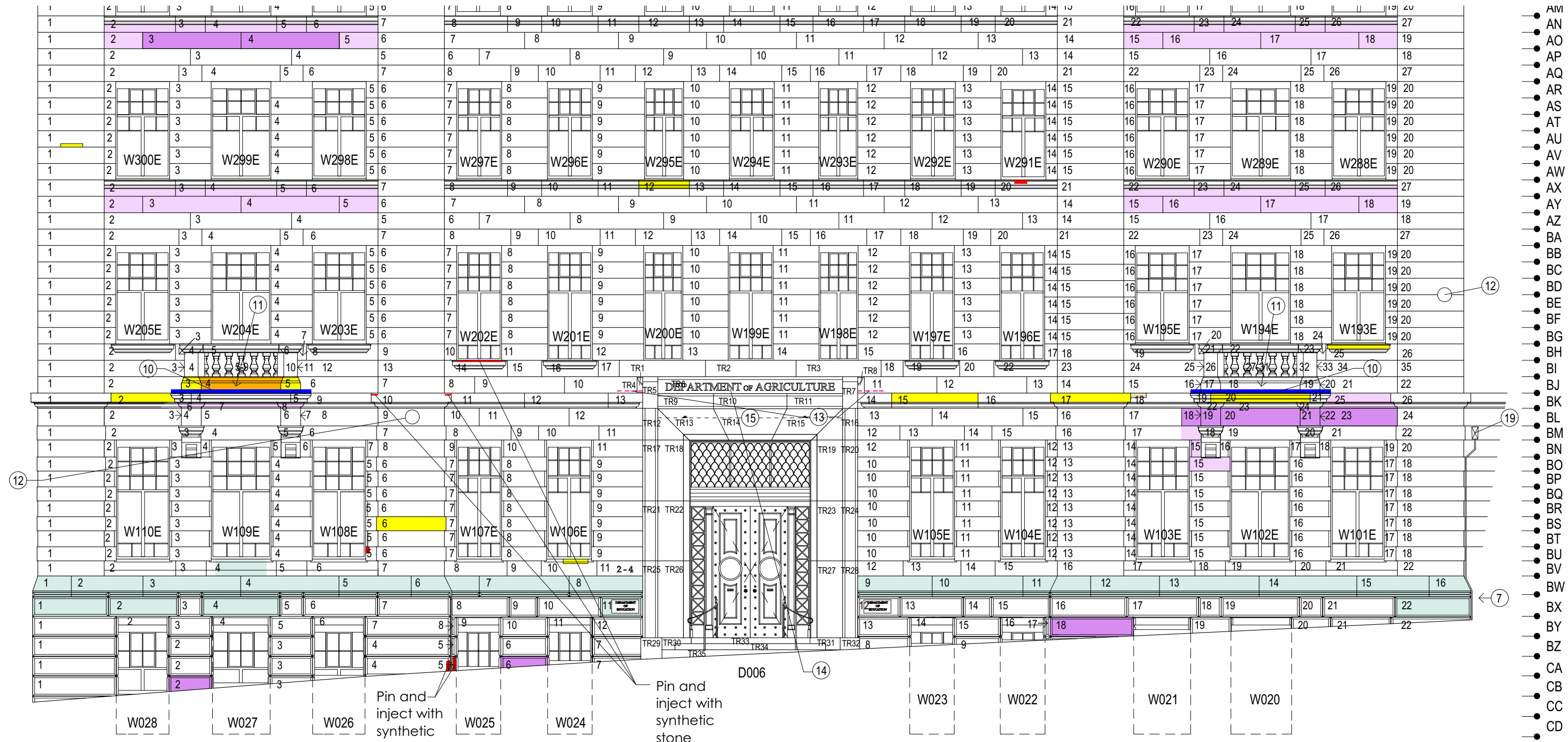
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D	FOURTH ISSUE	10/2019
C	THIRD ISSUE	10/2019
B	SECOND ISSUE	8/2019
A	FIRST ISSUE	6/2019
AMEND	DESCRIPTION	DATE

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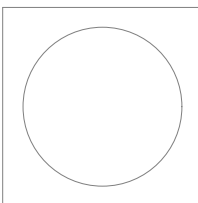
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PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
SOUTH ELEVATION
TOP SECTION

CLIENT REVIEW		
SCALE 1 : 100 @A3	DRAWN/CHECK	DRAWING NO. A02
PROJECT NO. 18050	REVISION E	



- LEGENT
- Stone Replacement
 - Stone Indent
 - Potential Stone Indent
 - Hairline Indent
 - Pin & inject with synthetic stone
 - Remove biological growth
 - Desalinate, rub back soft surface
 - Desalinate, chisel back soft surface
 - Leadwork
 - Existing elasto. sealant to be replaced with soft mortar



READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION

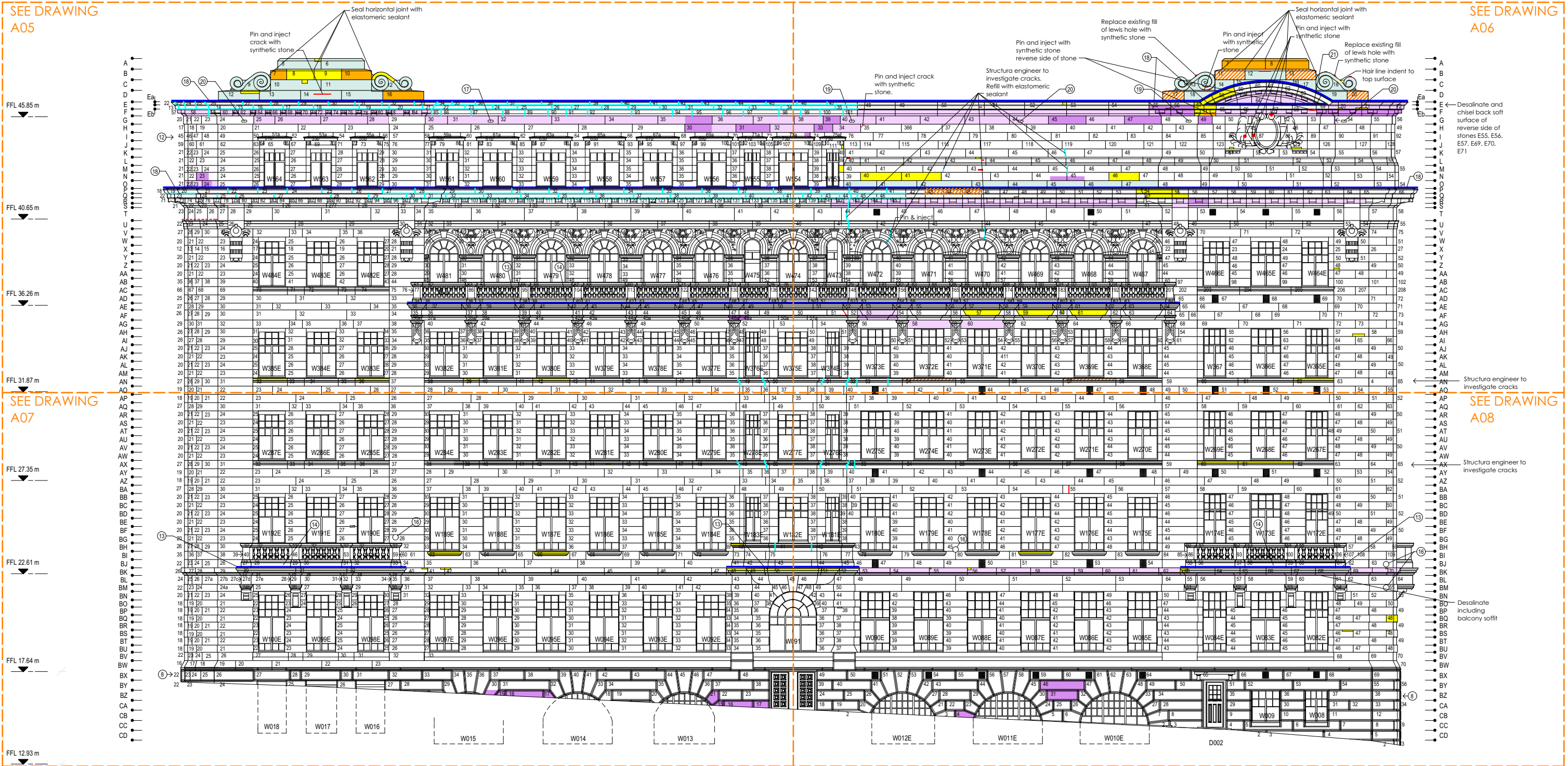
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PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
SOUTH ELEVATION
BOTTOM SECTION

CLIENT REVIEW		
SCALE 1 : 100 @A3	DRAWN/CHECK	DRAWING NO. A03
PROJECT NO. 18050	REVISION E	

SEE DRAWING
A05



SEE DRAWING
A06

SEE DRAWING
A07

SEE DRAWING
A08

- PROPOSED REPAIR WORKS:
Refer to East Exterior Facade Restoration SCHEDULE OF REPAIR WORKS
- 1 Wash all sandstone facade
 - 2 Remove biological growth, treat all stones by biocide
 - 3 Desalinate stone as shown on drawings including soffits of cornices and stringcourses
 - 4 5 6 80% repoint sandstone joints
 - 7 Replace / indent deteriorated stones as scheduled
 - 8 Make safe - chisel back loose surface of rockfaced plinth
 - 9 10 Provide synthetic stone repairs, pinning and injecting
 - 11 Remove existing lead (B, D)
 - 12 Keep lead on window hoods

- 13 Adjust existing lead weathering (option)
- 14 Install new membrane to balcony floors over existing
- 15 Remove existing vents, treat and reinstall (with new stainless steel mesh)
- 16 Remove rust from cast iron rosettes, treat against rust, repaint - colour to be specified
- 17 Provide new overflow through course G to existing sump, reline
- 18 Add new lead leading edge to existing lead weathering (option)
- 19 Reline existing overflow in sandstone course G and existing sump
- 20 Provide new overflow through course G, match existing - refer to hydraulic drawings
- 21 Replace existing lead weathering
- 22 Timber / bronze windows and doors to be refinished as per "Window Schedule"

- LEGEND
- Stone Replacement
 - Stone Indent
 - Potential Stone Indent
 - Hairline Indent
 - Pin & inject with synthetic stone
 - Remove biological growth
 - Desalinate, rub back soft surface
 - Desalinate, chisel back soft surface
 - Leadwork
 - Existing elasto. sealant to be replaced with soft mortar

READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION

CLIENT
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PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE

EAST ELEVATION OVERVIEW

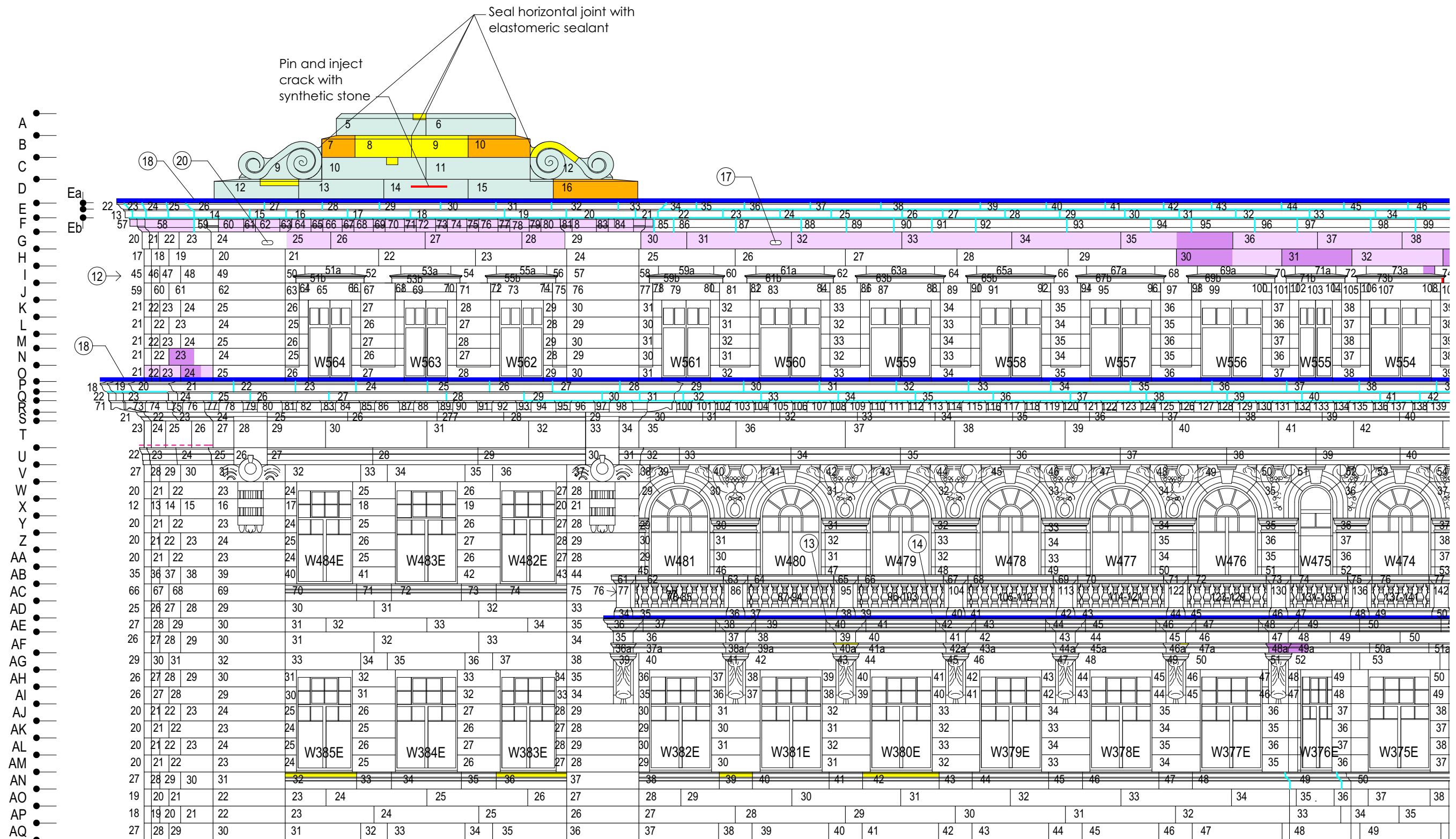
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SCALE	DRAWN/CHECK	DRAWING NO.
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PROJECT NO.	REVISION	
18050	E	

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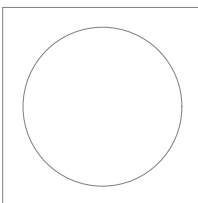
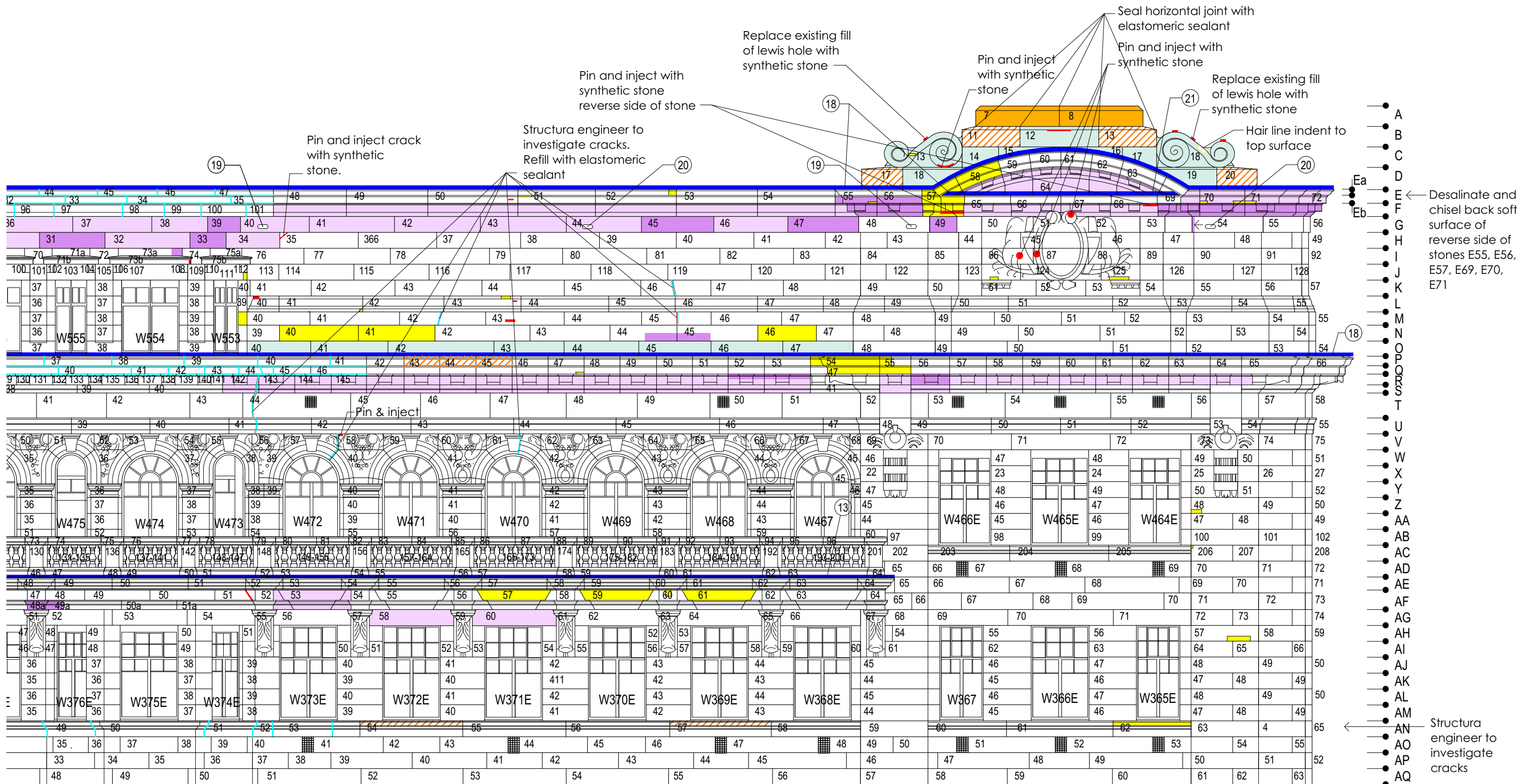
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AMEND	DESCRIPTION	DATE
E	FOURTH ISSUE	10/2019
D	THIRD ISSUE	10/2019
B	SECOND ISSUE	10/2019
A	FIRST ISSUE	8/2019



READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION

CLIENT		PROJECT		CLIENT REVIEW	
Pontiac Land (Australia) Pty Ltd		SANDSTONE PRECINCT FORMER EDUCATION BUILDING SANDSTONE REPAIRS		SCALE 1 : 100@A3	DRAWN/CHECK DRAWING NO. A05
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CLIENT
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PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
EAST ELEVATION
TOP RIGHT SECTION

CLIENT REVIEW

SCALE	DRAWN/CHECK	DRAWING NO.
1 : 100@A3		A06
PROJECT NO.	REVISION	
18050	B	

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CA
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CC
CD



- LEGEND
- Stone Replacement
 - Stone Indent
 - Potential Stone Indent
 - Hairline Indent
 - Pin & inject with synthetic stone
 - Remove biological growth
 - Desalinate, rub back soft surface
 - Desalinate, chisel back soft surface
 - Leadwork
 - Existing elasto. sealant to be replaced with soft mortar

READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION

CLIENT
Pontiac Land (Australia) Pty Ltd

PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
EAST ELEVATION
BOTTOM LEFT SECTION

CLIENT REVIEW

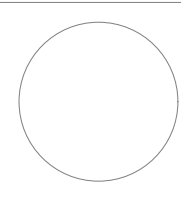
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PROJECT NO.	REVISION	
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8/2019
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READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION

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PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
EAST ELEVATION
BOTTOM RIGHT SECTION

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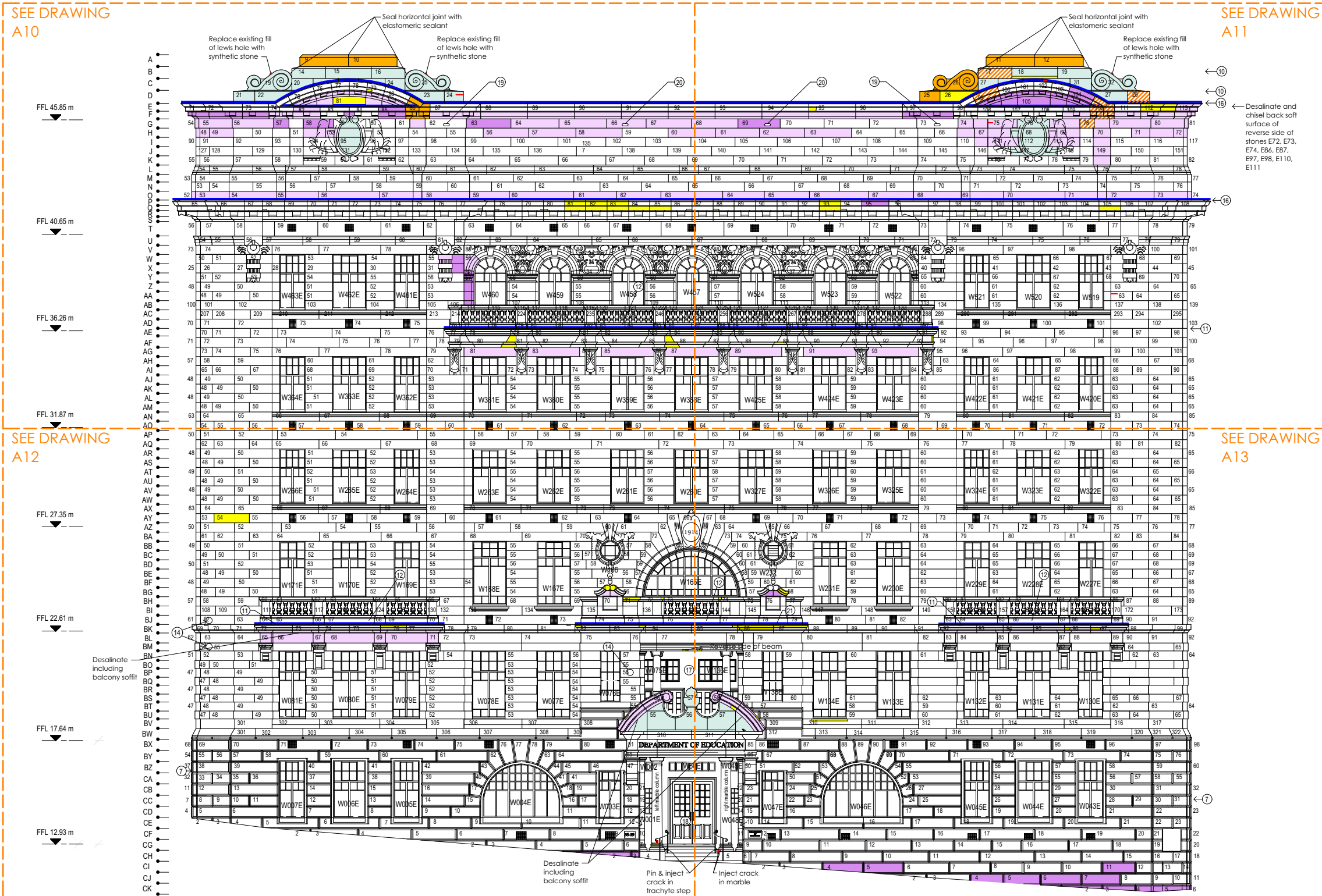
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1 : 100@A3		A08
PROJECT NO.	REVISION	
18050	B	

SEE DRAWING
A10

SEE DRAWING
A12

SEE DRAWING
A11

SEE DRAWING
A13



- PROPOSED REPAIR WORKS:
Refer to North Exterior Facade Restoration SCHEDULE OF REPAIR WORKS
- 1 Wash all sandstone facade
 - 2 Remove biological growth, treat all stones by biocide
 - 3 Desalinate stone as shown on drawings including soffits of cornices and stringcourses
 - 4 5 80% repoint sandstone joints
 - 6 Replace / indent deteriorated stones as scheduled
 - 7 Make safe - chisel back loose surface of rockfaced plinth
 - 8 9 Provide synthetic stone repairs, pinning and injecting
 - 10 Remove existing lead (B, D, K)
 - 11 Adjust existing lead weathering (option)

- 12 Install new membrane to balcony floors over existing
- 13 Remove existing vents, treat and reinstall (with new stainless steel mesh)
- 14 Remove rust from cast iron rosettes, treat against rust, repaint - colour to be specified
- 16 Add new lead leading edge to existing lead weathering (option)
- 17 First floor balcony interior: wash sandstone, repoint approx. 20%, replace 2 broken vents
- 18 Ground floor entry interior: wash sandstone, repoint approx. 20%
- 19 Reline existing overflow in sandstone course G and existing sump
- 20 Provide new overflow through course G, match existing - refer to hydraulic drawings
- 21 Replace existing lead weathering
- 22 Timber / bronze windows and doors to be refinished as per "Window Schedule"

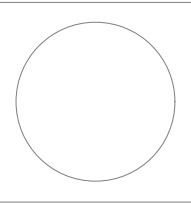
- LEGEND
- Stone Replacement
 - Stone Indent
 - Potential Stone Indent
 - Hairline Indent
 - Pin & inject with synthetic stone
 - Remove biological growth
 - Desalinate, rub back soft surface
 - Desalinate, chisel back soft surface
 - Leadwork
 - Existing elasto. sealant to be replaced with soft mortar

READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION

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AMEND	DESCRIPTION	DATE

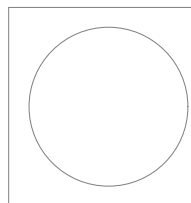
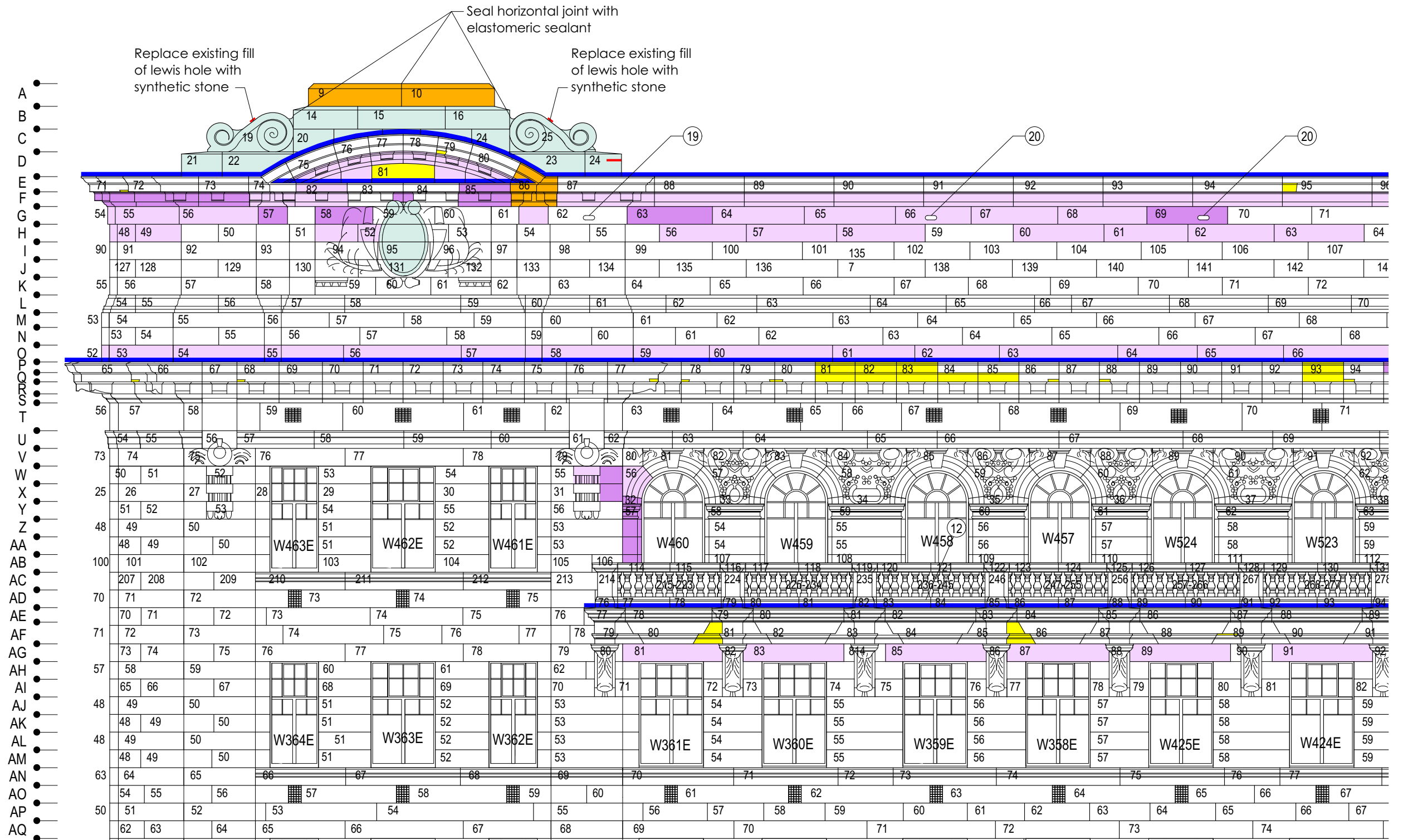


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PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
NORTH ELEVATION OVERVIEW

CLIENT REVIEW		
SCALE 1 : 200@A3	DRAWN/CHECK	DRAWING NO. A09
PROJECT NO. 18050	REVISION E	



READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION

CLIENT
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PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
NORTH ELEVATION
TOP LEFT SECTION

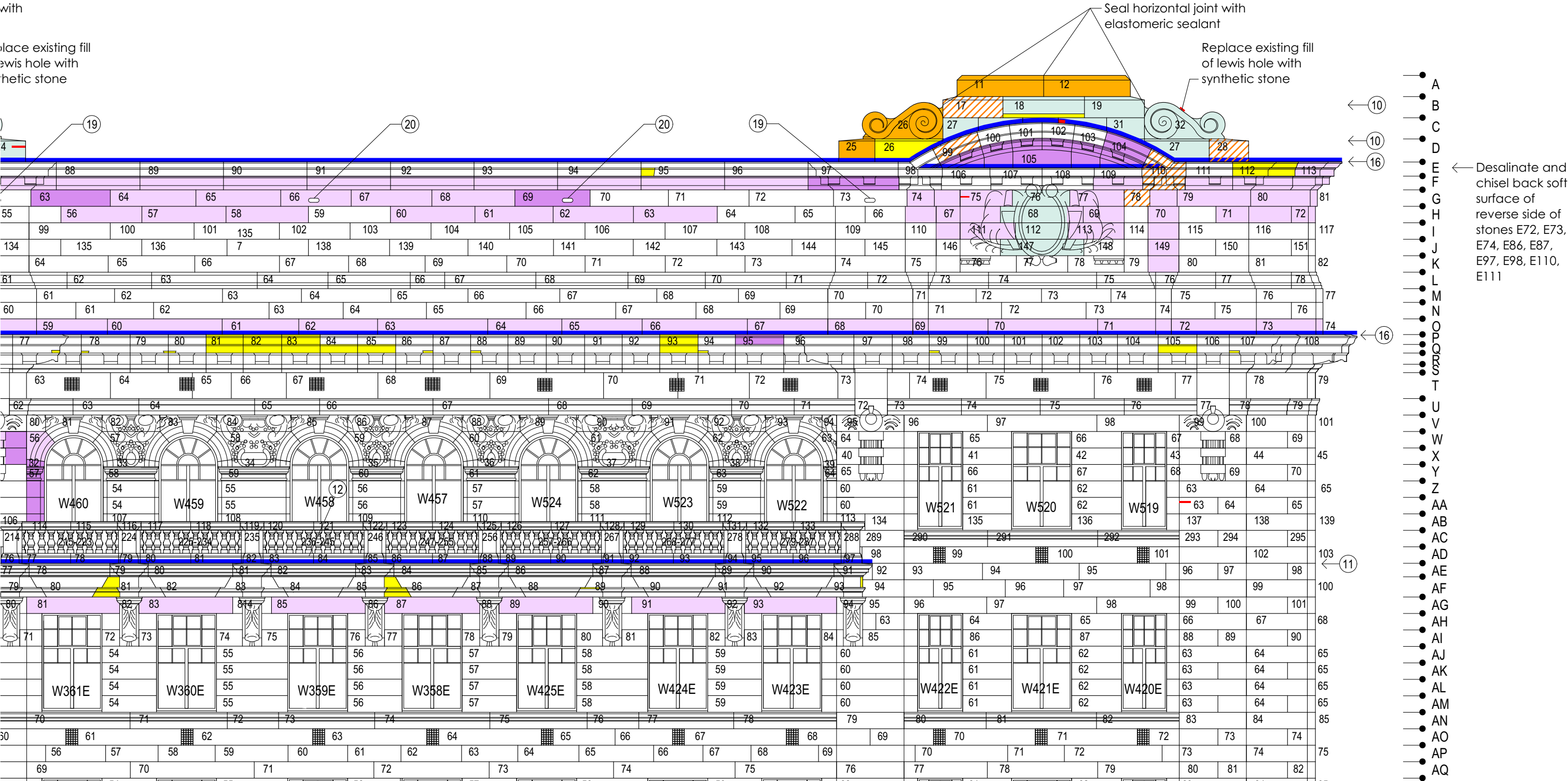
CLIENT REVIEW

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PROJECT NO. 18050	REVISION C	

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- LEGENT
- Stone Replacement
 - Stone Indent
 - Potential Stone Indent
 - Hairline Indent
 - Pin & inject with synthetic stone
 - Remove biological growth
 - Desalinate, rub back soft surface
 - Desalinate, chisel back soft surface
 - Leadwork
 - Existing elasto. sealant to be replaced with soft mortar

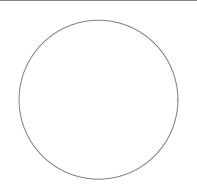
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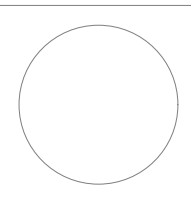
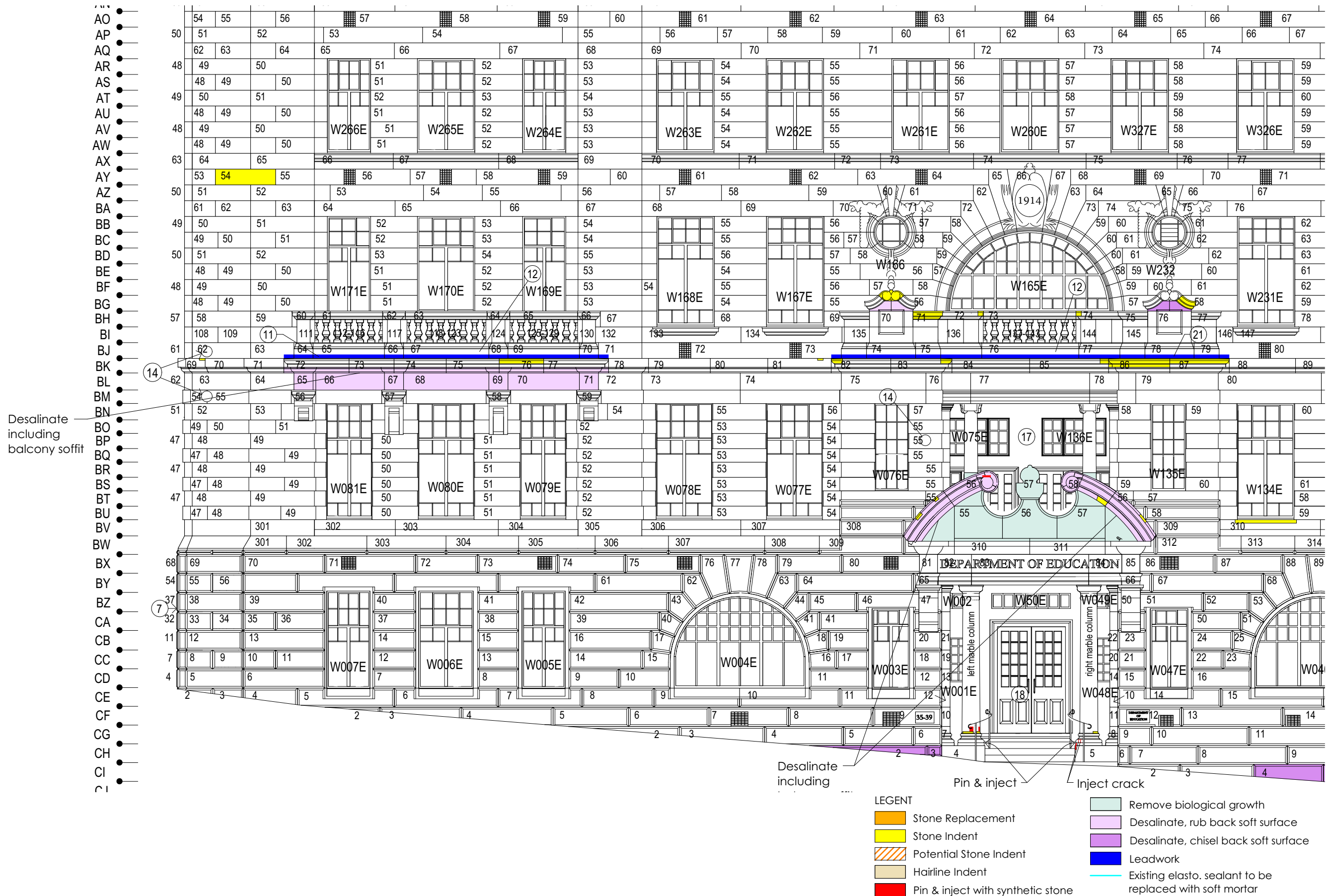


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PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
NORTH ELEVATION
TOP RIGHT SECTION

CLIENT REVIEW

SCALE	DRAWN/CHECK	DRAWING NO.
1 : 100@A3		A11
PROJECT NO.	REVISION	
18050	C	



READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION

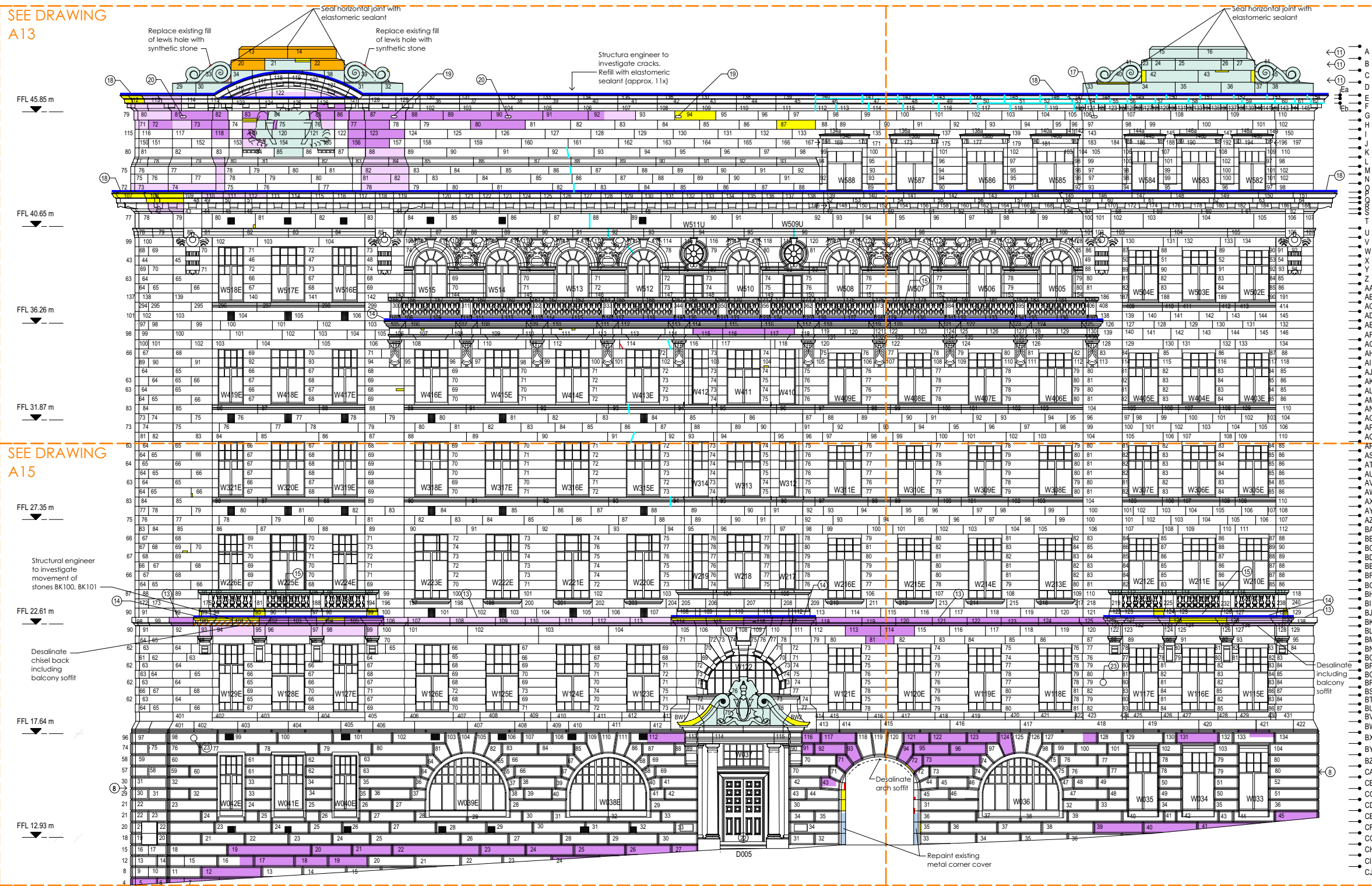
CLIENT
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PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
NORTH ELEVATION
BOTTOM LEFT SECTION

CLIENT REVIEW

SCALE	DRAWN/CHECK	DRAWING NO.
1 : 100@A3		A12
PROJECT NO.	REVISION	
18050	C	

SEE DRAWING
A13



SEE DRAWING
A15

SEE DRAWING
A14



SEE DRAWING
A16

PROPOSED REPAIR WORKS:

Refer to West Exterior Facade Restoration SCHEDULE OF REPAIR WORKS

- 1 Wash all sandstone facade
- 2 Remove biological growth, treat all stones by biocide
- 3 Desalinate stone as shown on drawings including soffits of cornices and stringcourses
- 4 5 6 80% repoint sandstone joints
- 7 Replace / indent deteriorated stones as scheduled
- 8 Make safe - chisel back loose surface of rockfaced plinth where necessary
- 9 10 Provide synthetic stone repairs, pinning and injecting
- 11 13 Remove existing lead (A, B, D, stringcourse BK between balcony cornices)
- 14 Replace existing lead weathering

- 15 Install new membrane to balcony floors over existing
- 16 Remove existing vents, treat and reinstall (with new stainless steel mesh)
- 17 Provide new overflow through course G to existing sump, reline
- 18 Add new lead leading edge to existing lead weathering (option)
- 19 Reline existing overflow in sandstone course G and existing sump
- 20 Provide new overflow through course G, match existing - refer to hydraulic drawings
- 21 Keep existing lead weatherings on window sills
- 22 Ground floor entry interior: wash sandstone, repoint approx. 20%
- 23 Remove rust from cast iron rosesets, treat against rust, repaint - colour to be specified
- 24 Timber / bronze windows and doors to be refinished as per "Window Schedule"

LEGEND

- Stone Replacement
- Stone Indent
- Potential Stone Indent
- Hairline Indent
- Pin & inject with synthetic stone
- Remove biological growth
- Desalinate, rub back soft surface
- Desalinate, chisel back soft surface
- Leadwork
- Existing elasto. sealant to be replaced with soft mortar

READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION

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PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE

WEST ELEVATION OVERVIEW

CLIENT REVIEW

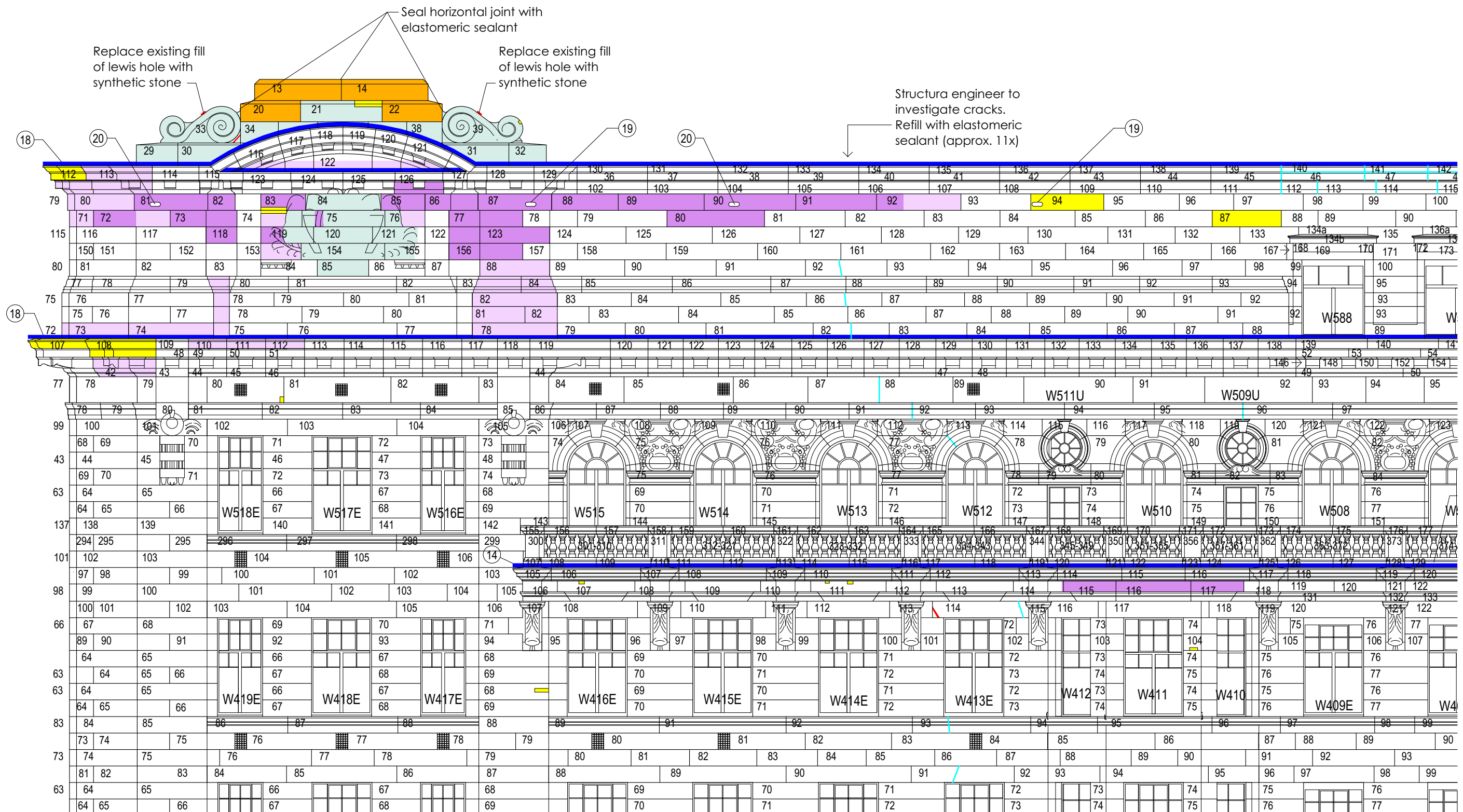
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PROJECT NO.	REVISION	
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A	FIRST ISSUE	8/2019

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- LEGENT
- Stone Replacement
 - Stone Indent
 - Potential Stone Indent
 - Hairline Indent
 - Pin & inject with synthetic stone
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READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION

CLIENT
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PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
WEST ELEVATION
TOP LEFT SECTION

CLIENT REVIEW

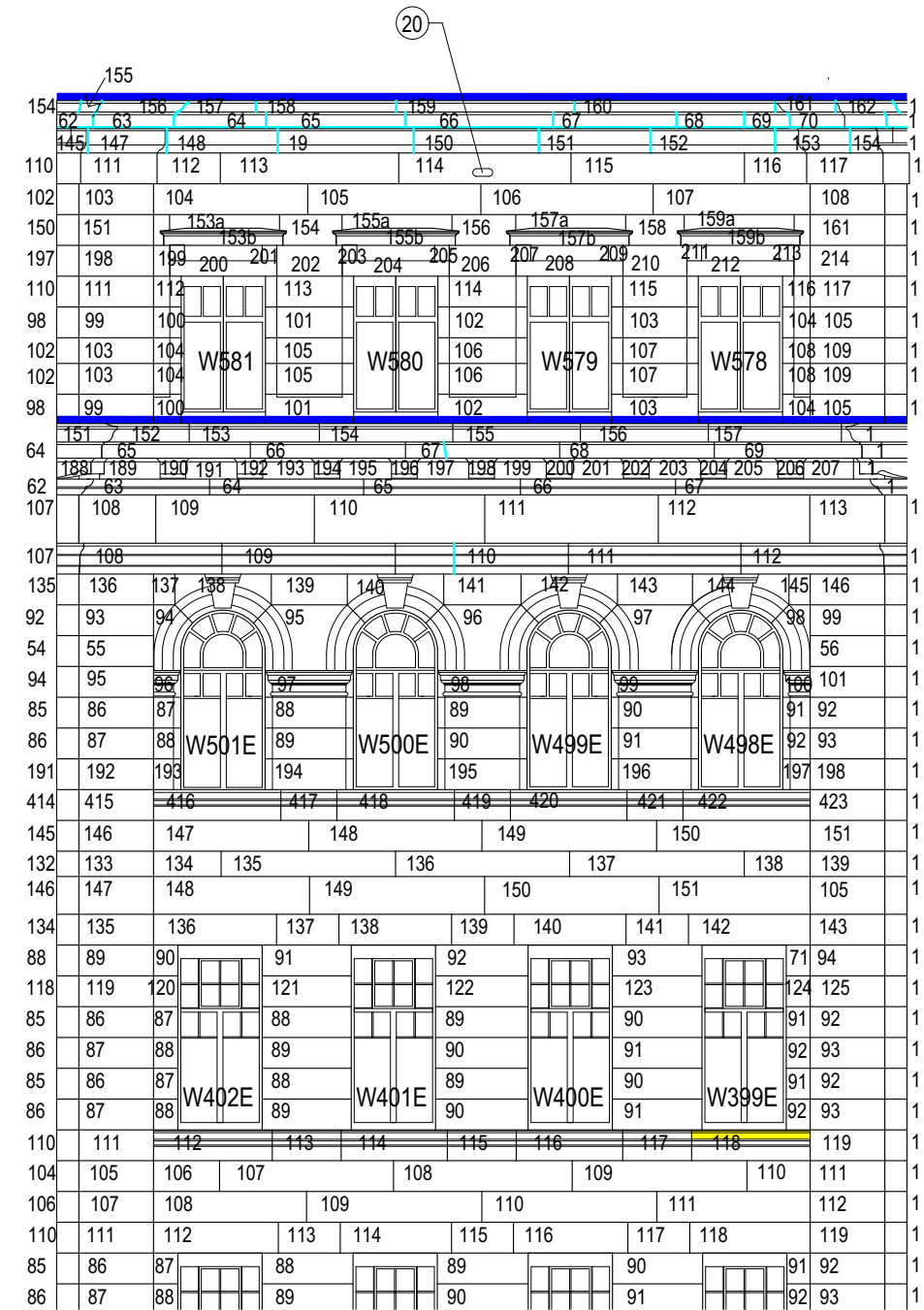
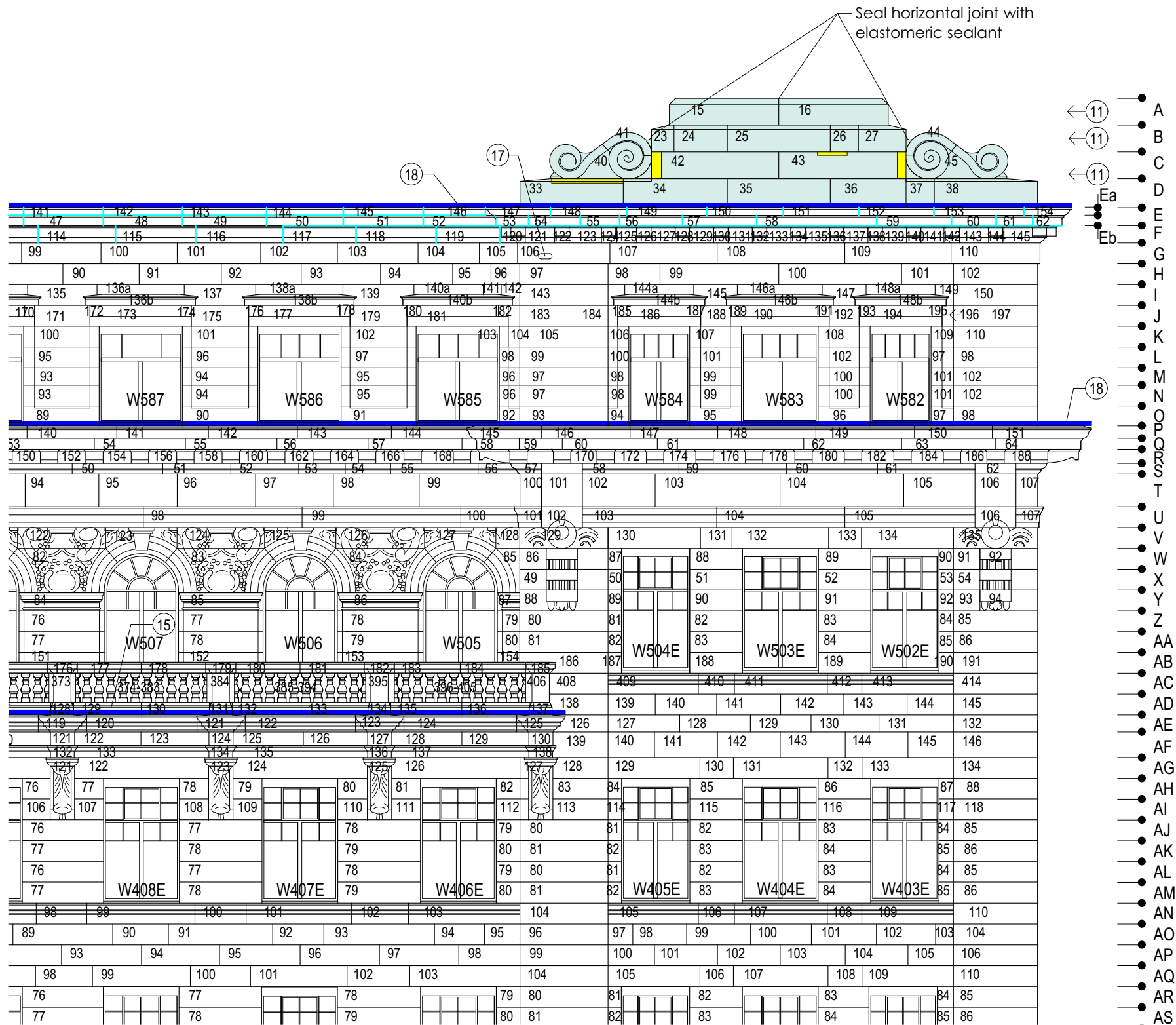
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1 : 100@A3		A15
PROJECT NO.	REVISION	
18050	C	

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9/09/19
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DATE



LEGENT	
	Stone Replacement
	Stone Indent
	Potential Stone Indent
	Hairline Indent
	Pin & inject with synthetic stone
	Remove biological growth
	Desalinate, rub back soft surface
	Desalinate, chisel back soft surface
	Leadwork
	Existing elasto. sealant to be replaced with soft mortar

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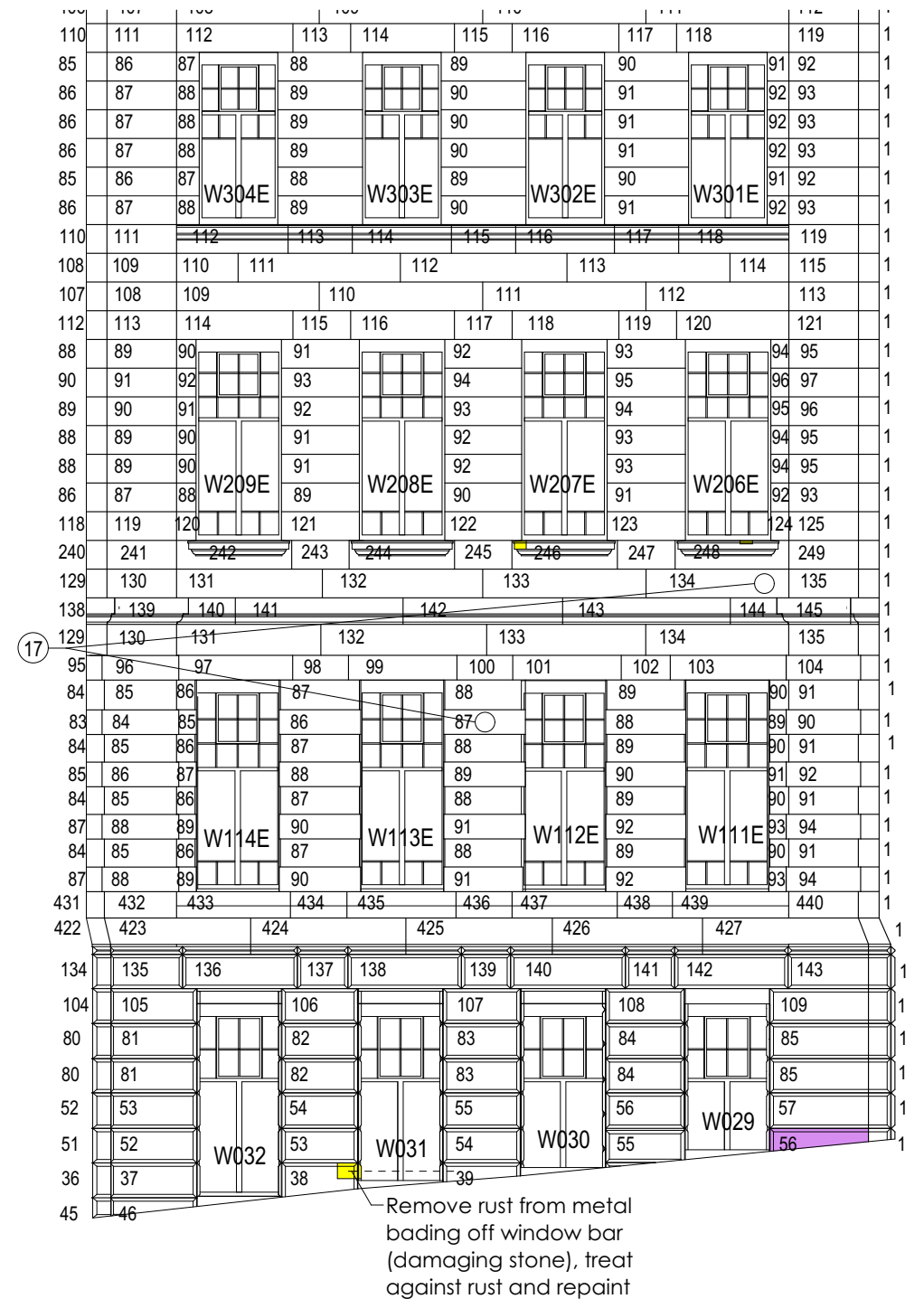
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SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
WEST ELEVATION
TOP RIGHT SECTION

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PROJECT NO. 18050	REVISION C	



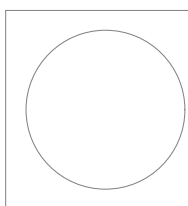
LEGENT	
	Stone Replacement
	Stone Indent
	Potential Stone Indent
	Hairline Indent
	Pin & inject with synthetic stone
	Remove biological growth
	Desalinate, rub back soft surface
	Desalinate, chisel back soft surface
	Leadwork
	Existing elasto. sealant to be replaced with soft mortar



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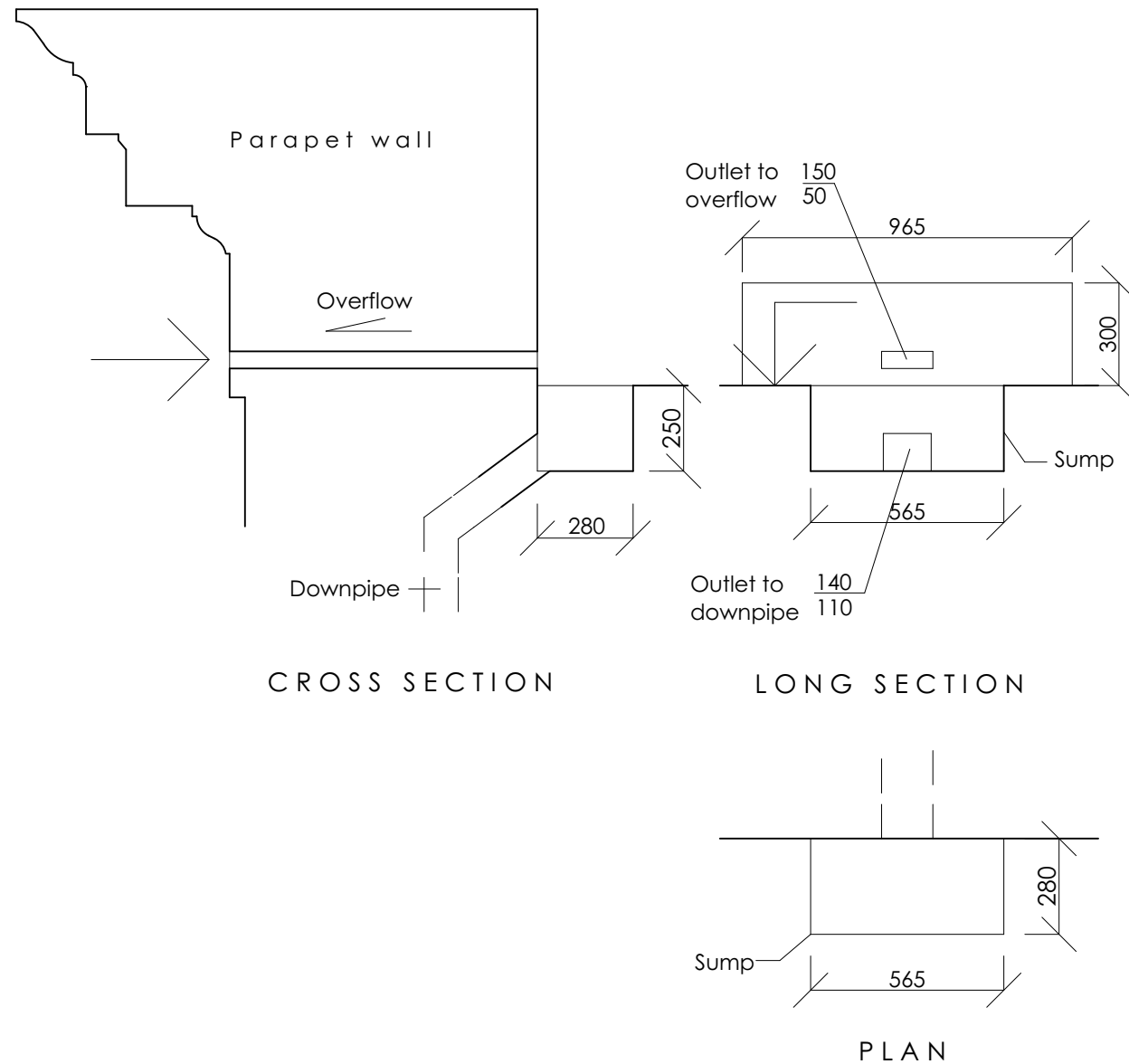
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PROJECT
SANDSTONE PRECINCT
FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
WEST ELEVATION
BOTTOM RIGHT SECTION

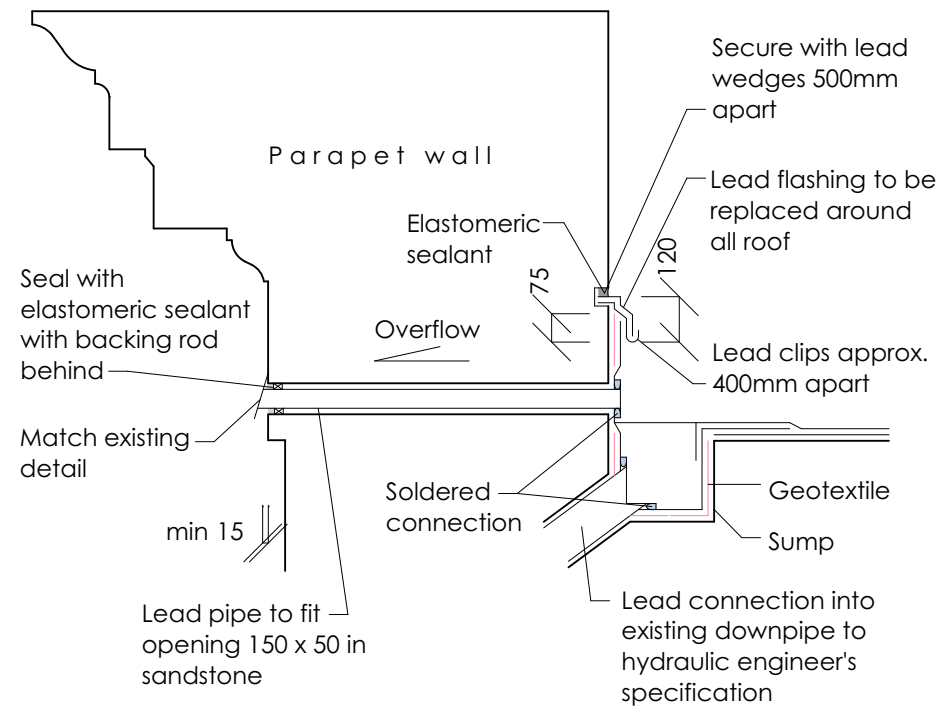
CLIENT REVIEW

SCALE	DRAWN/CHECK	DRAWING NO.
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PROJECT NO.	REVISION	
18050	C	

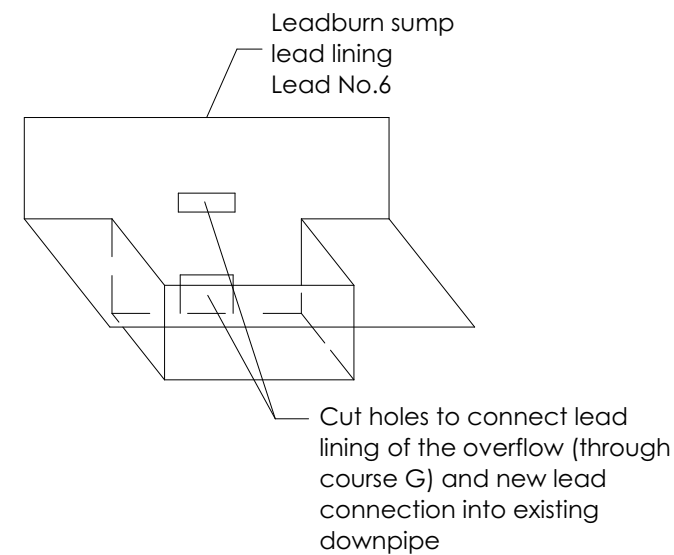


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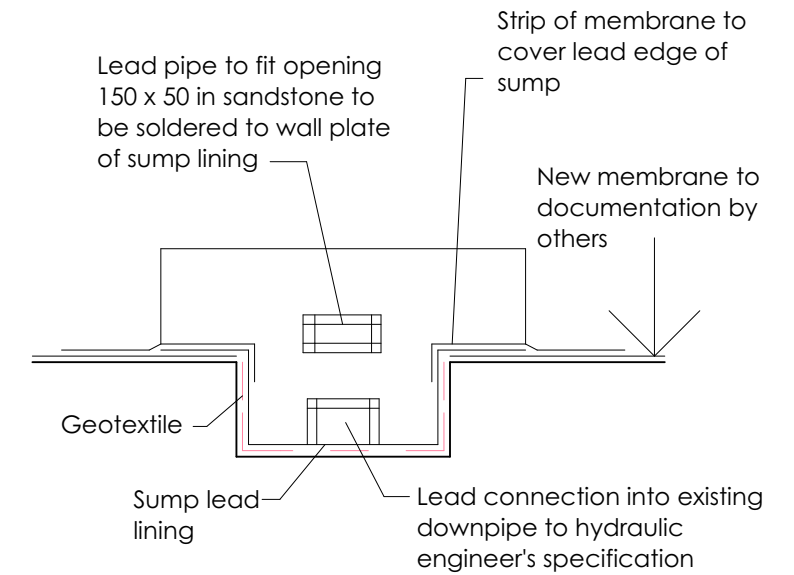
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COMENCEMENT OF WORK



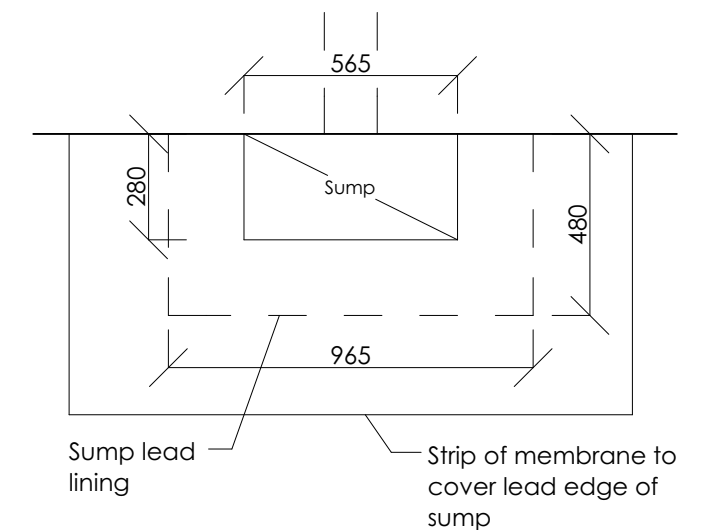
CROSS SECTION



SUMP LINING 3D



LONG SECTION



PLAN

PROPOSED LEADWORK - LEAD No.6
DIMENSIONS TO BE CLARIFIED BEFORE
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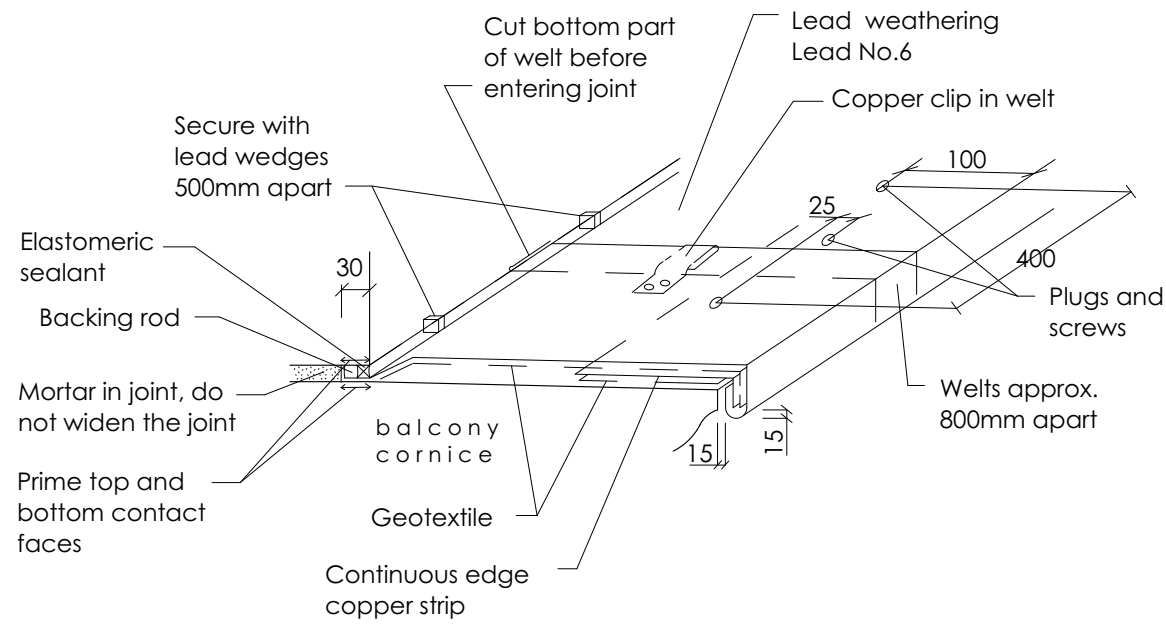
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FORMER EDUCATION BUILDING
SANDSTONE REPAIRS
TITLE
SUMP - LEAD DETAIL

CLIENT REVIEW

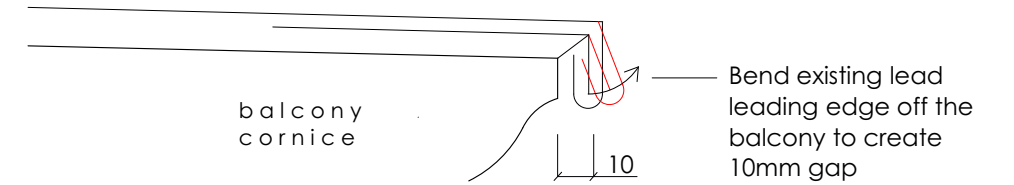
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PROJECT NO. 18050	REVISION	

AMEND DESCRIPTION

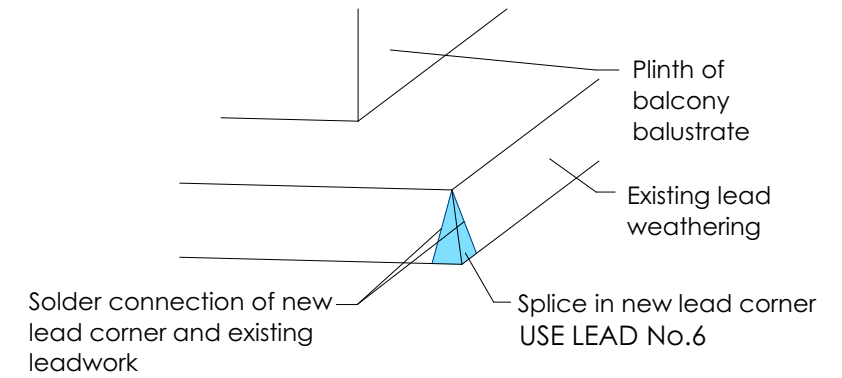
DATE



BALCONY CORNICE SECTION



BALCONY CORNICE SECTION

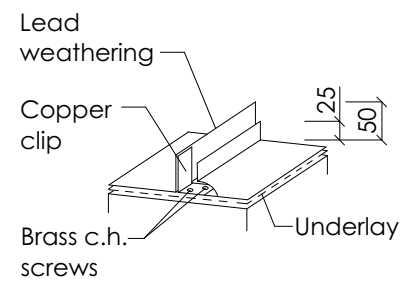


REBUILD CORNER OF EXISTING WEATHERING

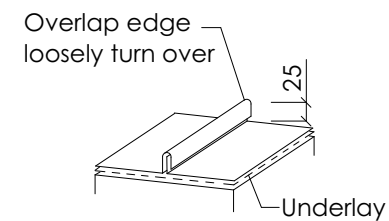
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NOTE:

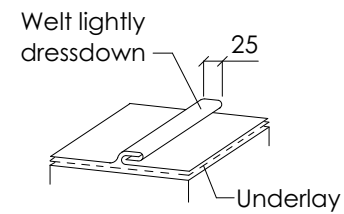
This option is preferably to be undertaken in current works or to be part of future maintenance chosen, then provide separate cost to assist in allocation of relevant funding for future maintenance.



FIRST STAGE



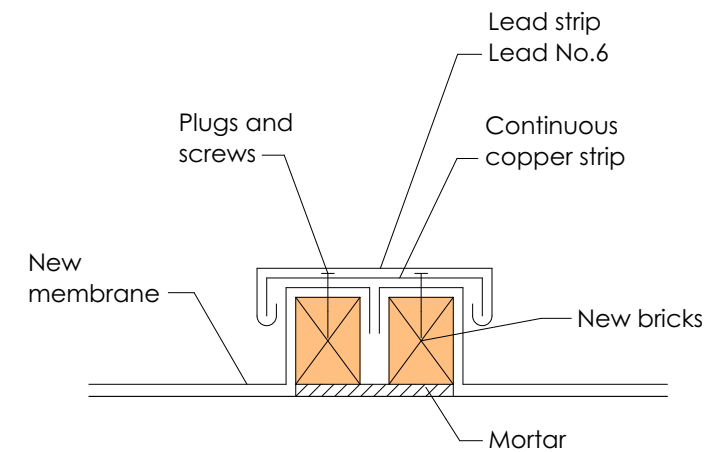
SECOND STAGE



THIRD STAGE

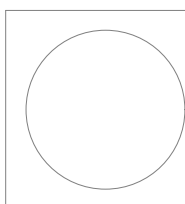
WELT DETAILS

NEW LEAD WEATHERING TO BALCONY CORNICE USE LEAD No.6

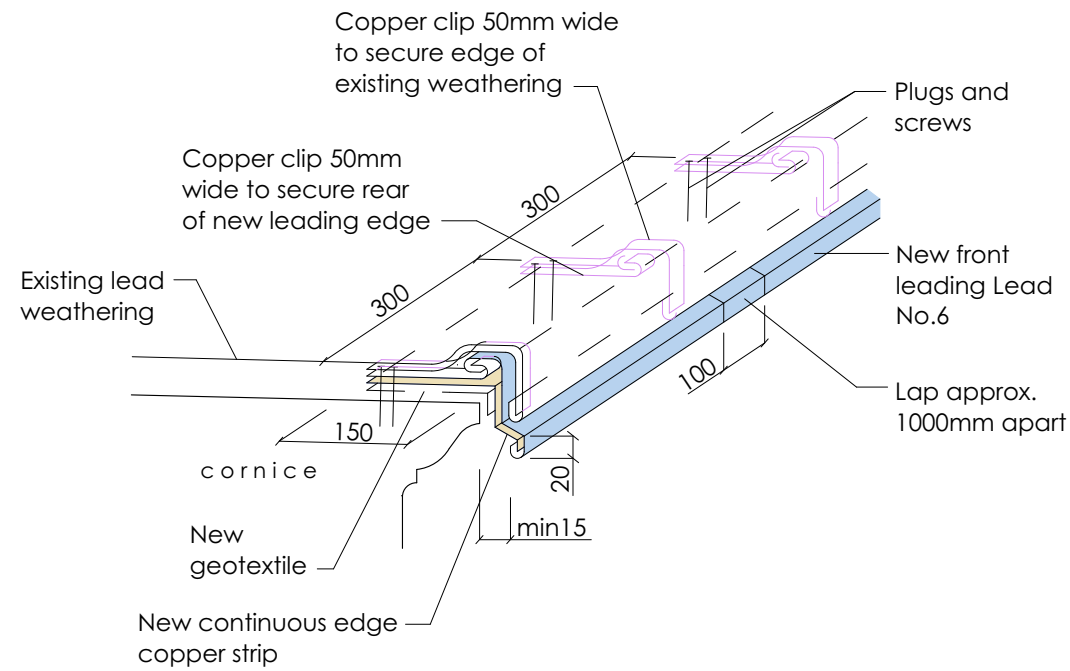


EXPANSION JOINT IN NEW BALCONY MEMBRANE (Membrane to documentation by others)

READ DRAWINGS IN CONJUNCTION WITH SCHEDULES OF REPAIR WORKS AND SPECIFICATION



CLIENT REVIEW



ADDITIONAL LEADING LEAD EDGE TO
EXISTING LEAD WEATHERING
COURSES E, P

HOLD POINT:
PROVIDE 2m LONG TRIAL SAMPLE TO BE APPROVED BY HERITAGE
ARCHITECT AND SUPERINTENDANT

NOTE:
This option is preferably to be undertaken in current works or to be part of future maintenance works. If later option is
chosen, then provide separate cost to assist in allocation of relevant funding for future Maintenance Plan.