

OUR TOWN HALL

External stone repairs and cleaning SPECIFICATION

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REV.	DATE	DESCRIPTION OF CHANGE
-	28/05/2019	First Issue
01	11/07/2019	Clauses added and amended as listed on back of cover sheet
02	15/04/2020	Clauses added and amended as listed on back of cover sheet
03	18/03/2021	Clauses added and amended as listed on back of cover sheet

Issue 01 Revisions

C41 Repairing/ Renovating/ Conserving Masonry

C41.127	Clause amended with additional bullet point added
C41.191	Clause amended
C41.339	Minimum bedding depth increased to 150mm
C41.343	Minimum bedding depth increased to 150mm
C41.351	Clause text amended word 'generally' added after 'not'
C41.676	Clause amended reference to clause 820 removed and replaced with 821
C41.805	Clause amended reference to clause 820 removed and replaced with 821
C41.827	Clause amended reference to clause C40.496 changed to C41.525

Issue 02 Revisions

C40 Cleaning masonry

C40.233	TRIAL SAMPLES CHEMICAL CLEANING - clause omitted
C40.300	COMPATIBILITY OF CHEMICAL PRODUCTS - clause omitted
C40.363	CHEMICAL AGENTS – clause omitted
C40.496	TESTING PH VALUES FOR CHEMICAL CLEANING – clause omitted
C40.502	CHEMICAL CLEANING – clause omitted

C41 Repairing/ Renovating/ Conserving Masonry

C40.216	MATERIAL SAMPLES – Clause amended
C40.242	GRANITE – Clause added
C40.276	REPLACEMENT TERRACOTTA BRICKS – Clause amended
C40.284	DOWELS FOR BALUSTERS, PARAPETS, COLUMNS AND FINIALS – Clause amended
C40.287	WALL TIES TO STEEL FRAME – new clause
C40.288	T SHAPED WALL TIES TO STEEL FRAME – new clause
C40.289	CAVITY WALL TIES – new clause
C40.297	BURNT SAND MASTIC FOR POINTING AROUND WINDOWS – Clause amended
C40.298	POINTING MORTAR FOR GRANITE – new clause
C40.311	ALTERATIONS TO EXISTING WINDOW OPENING TO FORM NEW DOOR LLOYD STREET ENTRANCE EAST ELEVATION – new clause
C40.312	ALTERATIONS TO EXISTING OPENING TO FORM NEW DOOR TO LLOYD STREET ENTRANCE RAMP – new clause
C40.313	ALTERATIONS TO MOAT WALLS TO FORM NEW ENTRANCE RAMP– new clause
C40.314	ALTERATIONS TO EXISTING WINDOW TO FORM NEW DOOR OPENING TO LLOYD STREET GOODS ENTRANCE– new clause
C40.315	ALTERATIONS TO MOAT WALLS TO FORM NEW ENTRANCE BRIDGE TO LLOYDS STREET GOODS ENTRANCE– new clause
C40.316	ALTERATIONS TO FORM NEW DOOR OPENING TO COOPER STREET LOBBY– new clause

- C40.317** NEW STONEWORK TO FORM DOOR OPENINGS TO COOPER STREET ENTRANCE LOBBY– new clause
- C40.318** ALTERATIONS TO PRINCESS STREET ENTRANCE STAIRS– new clause
- C40.319** ALTERATIONS TO MOAT WALLS ON NORTH AND SOUTH SIDES OF ALBERT SQUARE ENTRANCE – new clause
- C40.320** ALTERATIONS TO EXISTING DOOR IN CENTRAL BLOCK LOWER GROUND FLOOR – new clause
- C40.322** ALTERATIONS TO FORM NEW DOOR OPENING TO LLOYD STREET ENTRANCE LOBBY – new clause
- C40.356** INDENT REPAIRS TO GRANITE STEPS – new clause

Issue 03 Revisions

C41 Repairing/ Renovating/ Conserving Masonry

- C40.279** REPLACEMENT FLUE CAPPINGS – new clause
- C40.290** ORDINARY BEDDING AND BACKING MORTAR – clause amended
- C40.285** REPLACEMENT CRAMPS FOR CHIMNEY COPINGS AND FACING STONES – clause added
- C40.291** MORTAR MIX 1 FOR STONE AND BRICK – clause amended
- C41.292** MORTAR MIX 2 FOR STONE AND BRICK – clause amended
- C41.293** MORTAR MIX 3 FOR CHIMNEY FLAUNCHING – clause amended
- C41.299** POINTING MORTAR FOR GLAZED BRICK – new clause
- C41.300** GROUT FOR REPLACEMENT STONE UNITS – new clause
- C41.301** OFF-SITE MIXED ORDINARY BEDDING AND BACKING MORTAR– new clause
- C41.321** DISMANTLING AND REBUILDING CHIMNEYS –
- C41.335** REPLACEMENT OF FACING STONE – clause amended (clause amended mortar references updated)
- C41.336** REPLACEMENT COPINGS – clause amended (mortar references updated)
- C41.337** REPLACEMENT BALUSTERS/ CARVED PARAPET SECTIONS – clause amended (mortar references updated)
- C41.338** REPLACEMENT CORNICE SECTIONS – clause amended (mortar references updated)
- C41.339** REPLACEMENT STRING COURSES AND HOOD MOULDS – clause amended (mortar references updated)
- C41.341** REPLACEMENT COLUMN CAPITALS, SHAFTS AND BASES – clause amended (mortar references updated)
- C41.342** REPLACEMENT CILLS – clause amended (mortar references updated)
- C41.343** REPLACEMENT PIPE COLLARS – clause amended (mortar references updated)
- C41.349** OTHER REPLACEMENT STONE DETAILS – clause amended (mortar references updated)
- C41.456** DESCALING STONE – clause amended
- C41.806** SELECTIVE REPOINTING – clause amended
- C41.823** FILLING DEEPLY RECESSED JOINTS ASHLAR STONE PRIOR TO CLEANING – clause amended

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OUR
TOWN
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PROJECT

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C40

Cleaning masonry

C40 Cleaning masonry

To be read with Preliminaries/ General conditions

GENERAL/ PREPARATION

112 SCOPE OF WORK

- Albert Square, Lloyd Street, Cooper Street and Princess Street Elevations:
 - Removal of paint from window perimeters as clause 525
 - Removal of bird guano as clause 417.
 - Cleaning with Superheated steam as clause 483.
- Cooper St Courtyard, Lloyd Street Courtyard and Princess Street Courtyard including east elevation of Great Hall and large chimneys CS25 and CS32:
 - Removal of bird guano as clause 417.
 - Initial cleaning with superheated steam as clause 483
 - Initial repair works as clause 121
 - Removal of paint from window perimeters as clause 525
 - Chemical cleaning as clause 502

121 RELATED REPAIR AND REMEDIAL WORKS

- Work to be carried out before cleaning work:
 - Descale as clause C41.455
 - Fill open and deeply recessed joints as clause C41.823

143 REMOVAL OF FITTINGS

- Timing: Before commencement of cleaning work.
- Disturbance to surfaces: Minimize.
- Items for disposal:
 - Redundant light fittings, wiring, grilles, fixing bolts and any other items identified on stone repair elevations.
- Items to be kept for reuse:
 - Cast iron rainwater pipes and brackets.

161 PROTECTION

- Surfaces not designated for cleaning: Prevent damage, including marking and staining.
 - Glass and lead cames, lead flashings, timber and metal window frames must be masked and fully protected prior to commencement of work.
- Openings: Prevent ingress of water, cleaning agents and detritus.
 - Vents and grilles: Fully seal.
- Temporary mechanical fastenings:
 - In masonry: Locate in joints.
 - In other surfaces: Seek instructions.
- Additional protection: Leaded glass panels to remain in-situ - submit proposals.

175 CONTROL AND DISPOSAL OF WASH WATER AND DETRITUS

- Disposal: Safely. Obtain approvals from relevant Authority.
- Control of wash water: Collect and divert to prevent ingress and damage to building fabric and adjacent areas.
- Above and below ground drainage systems: Keep free from detritus and maintain normal operation.

180 COLD WEATHER

- Cleaning procedures using water: Do not use when air temperature is at or below 5°C. Protect damp surfaces from frost.
- Chemical cleaning agents: Do not use when surface temperatures are below those recommended by manufacturer.

190 CLEANING GENERALLY

- Operatives: Appropriately trained and experienced for each type of cleaning work.
 - Evidence of training: Submit on request.
- Control of cleaning: Confine cleaning processes and materials to designated areas. Prevent wind drift.
- Detritus: Remove regularly. Dispose of safely.
- Monitoring: Frequently check results of cleaning compared to approved trial samples. If results established by trials are not achieved, seek instructions.
- Modifications to cleaning methods and materials: Seek instructions.

216 RECORD OF CLEANING WORKS

- Written report: Record cleaning methods and procedures used for each type of surface and deposit.
 - Content: Relevant attributes of cleaning methods used including:
 - Equipment and settings.
 - Dwell times.
 - Number of applications.
 - Ambient temperatures.
- Submission: At completion of cleaning works.

232 TRIAL SAMPLES STEAM CLEANING

- Trial sample reference:
 - Surface: Stone
 - Location/ Size: Approximately 4m x 6m.
 - Type of soiling: Surface soiling and algal growth
 - Cleaning methods: As clause 483
- Records: Maintain written records for each trial area, including cleaning methods and conditions, to enable replication of results elsewhere.

234 TRIAL SAMPLE PAINT REMOVAL

- Trial sample reference:
 - Surface: Stone
 - Location/ Size: Window reveal in agreed location
 - Type of soiling: Paint on stone
 - Cleaning methods: As clause 525
- Records: Maintain written records for each trial area, including cleaning methods and conditions, to enable replication of results elsewhere.

PRODUCTS/ EQUIPMENT**354 STEAM CLEANING EQUIPMENT**

- Use: For cleaning stone and brick.
- Approved Systems: Doff or Thermatech:
- Manufacturer/ Supplier: Restorative Techniques, 67a Gloucester Road, Rudgeway, Bristol BS35 3SG
 - web: www.restorative-products.com
 - Product reference: Thermatech
- Manufacturer/ Supplier: Stonehealth G4/5 Draycott Business Park, Dursley GL11 5DQ
 - web: www.stonehealth.com
 - Product reference: Doff

APPLICATION

412 REMOVAL OF LOOSELY ADHERED DEPOSITS

- Timing: Before commencement of other cleaning methods.
- Surfaces: Prevent damage, including abrasion.

417 REMOVAL OF BIRD GUANO

- Surfaces to be cleaned: Stone
- Method:
 - Dampen surface using hand held mist spray to loosen deposits.
 - Scrape off thicker deposits using nylon scraper.
 - Apply further water mist and lightly scrub using a nylon brush.

432 TOOLING

- Tooling of surfaces: Not permitted.

442 ABRASIVE BLOCKS

- Types: Suitable grades of carborundum or gritstone.
- Application: Lubricate with water. Remove detritus.
- Abrasive power tools: Prohibited.

483 STEAM CLEANING

- Surfaces to be cleaned: Sandstone and brick.
- Nature of soiling to be removed: Lightly adhered surface soiling and algae.
- Preparation: As clauses 143, 161 and 412.
- Cleaning system: As clause 354.
- Surfaces: Prevent damage, including abrasion.
- Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.

525 PAINT REMOVAL

- Method: Chemical paint removal
 - Description: Non-caustic paint removers formulated without methylene chloride.
- Manufacturer: Dumond Architectural, Industrial and Marine Solutions
- Product: Smart Strip Pro
 - Description: Professional strength paint remover for multiple coats of oil-based, water-based, acrylics, varnishes, epoxies, urethanes, elastomeric and lead paint.
 - It is formulated without methylene chloride, is non-carcinogenic, non-caustic, and non-flammable.
- UK Supplier: Sherwin-Williams Protective and Marine Coatings
 - Web: www.swpaintonline.com
 - Available pack sizes: 18.9 litres
- Application method: Apply paste using a brush or plastic trowel. Use nylon brush to apply paste into mouldings.
 - Dwell time: 3 to 24 hours
 - Removal: Using plastic scrapers and nylon brush. Care should be taken to avoid damage to mouldings and details. Rinse with clean water.
 - Allow for several applications of paint remover. It should not be assumed that all paint will be removed following one application.
 - Accessories: Dumond laminated paper.

C40

Cleaning masonry



C41

Repairing/ Renovating/ Conserving masonry

C41 Repairing/ Renovating/ Conserving masonry

To be read with Preliminaries/ General conditions

GENERALLY/ PREPARATION

111 SCOPE OF WORK

- The external masonry repairs and alterations consist of the following works:
 - Alterations to stonework to existing entrance areas and other features.
 - Rebuilding of sections of displaced or damaged stonework.
 - Dismantling and rebuilding of stone parapets to accommodate new railing details.
 - Dismantling and rebuilding selected chimneys.
 - Replacement of damaged or eroded stone details and facing work.
 - Complete repointing to copings, hood moulds, string courses and cills and selective repointing in other areas.
 - Removal of embedded metal fixings in walls, redundant light fittings and wiring, filling holes and making good other damage.
 - Replacement of missing or damaged cast iron air bricks.
 - In-situ preparation and repainting to cast iron air bricks and cast and wrought iron features.
- Records of masonry to be repaired: Before starting work, use measurements and photographs as appropriate to record bonding patterns, joint widths, special features, etc.
- Identification of masonry units to be removed, replaced or repaired: Mark clearly, but not indelibly, on face of masonry units or parts of units to be cut out and replaced. Transcribe markings to drawings/ photographs.

112 REPAIR PRINCIPLES

- The following broad principles have been followed for specifying proposed masonry repairs to the Town Hall:
 - The use of mortar repairs will be limited to filling holes, fractures and relatively minor damage. They will not be used to build up complex mouldings or repair areas that will be exposed or difficult to access in the future.
 - Where projecting weathering features such as string courses or hood moulds are damaged, the defective elements will be replaced with new matching sections to a sufficient compressive bed depth to allow them to be fitted without the need for additional dowels, cramps or the use of modern adhesives.
 - Where facing stones are very heavily eroded, they will be replaced with new stone components to a sufficient compressive bed depth to allow them to be fitted without the need for new restraint, with the height respecting the original coursing.
 - The width of replacement stones can be varied to reduce the loss of original fabric whilst ensuring logical spacing of vertical joints.
 - Where indent repairs are carried out the size and shape of the repair and position of dowels should avoid reliance on adhesives for retaining the stone.

122 SITE INSPECTION

- Purpose: To confirm type and extent of repair/ renovation/ conservation work shown on drawings and described in survey reports and schedules of work.
- Parties involved: Architect.
- Timing: After steam clean as clause C40.843.
- Purpose of inspection: To verify the extent of repairs

126 REMOVAL AND REFITTING OF CAST IRON RAINWATER PIPES

- Cast iron rainwater pipes and brackets are to be removed, and reinstated on completion of repair work:
 - Identification: Attach durable tags to identify location
 - Treatment following removal: Blast clean and repaint.
 - Storage: Protect against damage, and store until required.

- Storage location: On site.
- Reinstatement: Refit in original locations using original installation methods.
- Damaged or excessively corroded pipes to be replaced with new components matching the originals.
- Masonry fabric and surfaces: Do not damage during removal and replacement of pipes and brackets.

127 RECYCLING/ REUSE OF STONE FROM DAMAGED OR REDUNDANT COMPONENTS

- It is intended to retain sound sections of stone from damaged units that are removed and reuse them for repairs where the stone can be cut to suit a smaller repair sections to reduce the requirement for new stone.
- To accommodate the above requirement stone units to be replaced are to be carefully removed and set aside in a designated area for assessment of potential for reuse.
- Existing stone is to be re-cut in the workshop to an agreed size and profile.
- The requirement to recycle the maximum quantity of existing stone does not override the strict imperative to avoid any damage or disturbance to existing masonry as clause 170.

132 REMOVAL OF PLANT GROWTHS FROM MASONRY

- Plants, root systems and associated soil/ debris: Carefully remove from joints, voids and facework.
- Removal of roots:
 - Root systems must be fully traced and removed in their entirety.
 - Where growths cannot be removed completely without disturbing masonry seek instructions.

WORKMANSHIP GENERALLY

151 POWER TOOLS

- Use of fine bladed multi-tool cutters for removal of mortar will be permitted subject to the following requirements:
 - Method statement for proposed use to be submitted for approval.
 - Specific tools and blades to be agreed before use.
 - Methodology to be demonstrated on site in an agreed sample area.

160 PROTECTION OF MASONRY UNITS AND MASONRY

- Masonry units: Prevent overstressing during transit, storage, handling and fixing. Store on level bearers clear of the ground, separated with resilient spacers. Protect from adverse weather and keep dry. Prevent soiling, chipping and contamination. Lift units at designed lifting points, where provided.
- Masonry: Prevent damage, particularly to arrises, projecting features and delicate, friable surfaces. Prevent mortar/ grout splashes and other staining and marking on facework. Protect using suitable nonstinging slats, boards, tarpaulins, etc. Remove protection on completion of the work.

165 STRUCTURAL STABILITY

- General: Maintain stability of masonry. Report defects, including signs of movement that are exposed or become apparent during the removal of masonry units.

170 DISTURBANCE TO RETAINED MASONRY

- Retained masonry in the vicinity of repair works: Disturb as little as possible.
- Existing retained masonry: Do not cut or adjust to accommodate new or reused units.
- Retained loose masonry units and those vulnerable to movement during repair works: Prop or wedge to be firmly and correctly positioned.

180 WORKMANSHIP

- Skill and experience of site operatives: Appropriate for types of work on which they are employed.
 - Documentary evidence: Submit on request.

185 ADVERSE WEATHER

- General: Do not use frozen materials or lay masonry units on frozen surfaces.
- Air temperature: Do not bed masonry units or repoint:
 - In cement gauged mortars when ambient air temperature is at or below 3°C and falling or unless it is at least 1°C and rising, unless mortar has a minimum temperature of 4°C when laid and the masonry is adequately protected.
 - In hydraulic lime: sand mortars when ambient air temperature is at or below 5°C and falling or unless it is at least 3°C and rising.
 - In nonhydraulic lime: sand mortars in cold weather, unless approval is given.
- Temperature of the work: Maintain above freezing until mortar has fully set.
- Rain, snow and dew: Protect masonry by covering during precipitation, and at all times when work is not proceeding.
- Hot conditions and drying winds: Prevent masonry from drying out rapidly.
- New mortar damaged by frost: Rake out and replace.

191 CONTROL SAMPLES

- General: Complete an area of each of the following types of work, and arrange for inspection before proceeding with the remainder:
 - 321: Rebuilding chimney
 - 322: Rebuilding balustrade
 - 335: Replacement facing stone
 - 339: Replacement stone detail
 - 353: Stone insert
 - 367: Replacement of brick
 - 397 and 398: Repair mosaic tiling
 - 399: Grouting to debonded mosaic
 - 455: Descaling stone
 - 518: Mortar repair
 - 821: Repointing to ashlar stone
 - 822: Repointing to brick
- Location: To be agreed

MATERIALS/ PRODUCTION/ ACCESSORIES**216 MATERIAL SAMPLES**

- Representative samples of designated materials: Submit before placing orders.
- Designated materials:
 - 276: Full brick
 - 278: Replacement mosaic tiles all colours
 - 291: Mortar mix for stone
 - 291: Mortar mix for brick
 - 299: Mortar mix for glazed brick
 - 294: Mortar mix for tiles
 - 298: Mortar mix for granite
- Retention of samples: Unless instructed otherwise, retain samples on site for reference. Protect from damage and contamination.

220 RECORDING PROFILES

- Profiles: Take measurements from existing masonry units, as instructed, to allow accurate matching of replacements.
- Recording in situ: If there are no suitable joints to allow use of inserts, seek instructions.
- Drawings and templates: Prepare as necessary. Templates must be clearly and indelibly marked to identify use and location.

225 STONE MASON'S DRAWINGS AND SCHEDULES

- Accurately record profiles of all units to be replaced.
- Ensure unique references for each unit to be replaced are marked on drawings.
- Prepare schedule recording the following information:
 - Unique stone reference based on Architect's repair drawings.
 - Drawing reference and detail number showing profile.
 - Overall length, course height and bed depth of stone unit.
 - Stone finish: Boasted or plain rubbed.

230 INSPECTION OF DRAWINGS, TEMPLATES, CASTS, ETC

- Timing: Before starting production of masonry units associated with the following items: Profiles for all stone features.
- Period of notice (minimum): Two weeks prior to commencement of manufacture of components.

232 INSPECTION OF DRAWINGS, TEMPLATES, CASTS, ETC

- Timing: Before starting production of masonry units.
 - Period of notice (minimum): Two weeks prior to commencement of manufacture of components.

241 SANDSTONE

- Supplier:
- Johnsons Wellfield, Crossland Hill Quarry, Huddersfield, West Yorkshire HD4 7AB
- 01484 652311
- Email. sales@johnsons-wellfield.co.uk
- Type: Crossland Hill Sandstone.
- Quality: Free from vents, cracks, fissures, discolouration, or other defects that may adversely affect strength, durability or appearance. Thoroughly seasoned, dressed and worked in accordance with shop drawings prepared by the supplier.
- Finish:
 - Facing stones: Boasted
 - Carved details: Plain rubbed or Boasted depending on detail and location.

242 GRANITE

- Supplier: To be agreed subject to samples
- Type: Dark grey granite to match original
- Quality: Free from vents, cracks, fissures, discolouration, or other defects that may adversely affect strength, durability or appearance. Thoroughly seasoned, dressed and worked in accordance with shop drawings prepared by the supplier.
- Finish: Plain rubbed

245 REPLACEMENT STONE UNITS

- Sizes and profiles: To match existing masonry. Maintain existing joint widths.
- Sinkings for fixings, joggles and lifting devices: Accurately aligned and positioned in relation to existing masonry.
- Marking: Mark each block/ dressing clearly and indelibly on a concealed face to indicate the natural bed and position in the finished work.

247 DRESSING AND FINISHING REPLACEMENT STONE UNITS

- Replacement stone is to be finished to match the original as closely as possible.
- All machined stones are to be left with an allowance for hand finishing by complete removal of the mechanical surface.
- Stone to be free of snips, spalling or other defects.

250 STONE ORIENTATION

- Orientation of natural bed:
 - In plain walling: Horizontal.
 - In projecting stones and copings: Vertical and perpendicular to wall face.
 - In arches: Perpendicular to line of thrust.

255 ASHLAR BLOCKS/ DRESSINGS

- Cutting and dressing stone: To true and regular surfaces, free from hollow or rough areas.

270 REPLACEMENT CAST IRON AIR BRICKS

- Manufacturer: J & JW Longbottom Ltd, Bridge Foundry, Holmfirth, Nr Huddersfield HD9 7AW
- Tel: 01484 682 141
- Type: 974 School board pattern
- Size: Varies as shown on drawings.

276 REPLACEMENT TERRACOTTA BRICKS

- Manufacturer/ Supplier: Hathern Terracotta, Michelmersh Brick UK Ltd, Freshfield Lane, Danehill, Haywards Heath, Sussex RH17 7HH
 - Web: www.Mbhpld.co.uk
- Quality: Free from imperfections that will adversely affect durability.
- Finish: Fireskin.
- Colour/ Texture: To match submitted samples.
- Dimensions: 225 x 110 x 75mm to match existing units.

278 REPLACEMENT MOSAIC TILES

- Manufacturer/ Supplier: Craven Dunnhill Jackfield
 - Web: www.cdjackfield.com
- Finish: Unglazed
- Colour/ Texture: To match submitted samples.
- Dimensions: Imperial 1 1/2" x 1 1/2" x 1/4" approximately 38 x 38 x 12mm to match existing units.

279 REPLACEMENT FLUE CAPPINGS

- Purpose: To replace damaged flue capping tile
- Supplier: Contractor's choice
- Type: Reclaimed plain angled clay ridge tiles
 - Sizes:
 - Length: 18" / 450mm long
 - Overall width and angle: To match existing sizes and suit width of flue/ gap between separating stones.
- Colour: Terracotta

282 REPLACEMENT CRAMPS FOR COPINGS AND CHIMNEY STRING COURSES

- Material: Phosphor bronze
- Size: To match originals approx 1" wide x 1/4" thick x 6 1/2" long with 1" turn down at each end.

283 REPLACEMENT CRAMPS ACROSS CHIMNEY FEATHERS

- Material: Phosphor bronze
- Size: To match originals approx 1" wide x 1/4" thick x chimney width less 8" with 1" turn down at each end.

284 DOWELS FOR BALUSTERS, PARAPETS, COLUMNS AND FINIALS

- Material: Phosphor bronze
- Sizes
 - $\frac{3}{8}$ " / 9.5mm diameter
- Length:
 - 300mm for finials (150mm embedment above and below)
 - 150mm for balusters and parapets (75mm embedment above and below)
 - 100mm for columns (50mm embedment above and below)

285 REPLACEMENT CRAMPS FOR CHIMNEY COPINGS AND FACING STONES

- Material: Phosphor bronze
- Size: To match 25mm wide x 6mm thick x 175mm long with 50mm turn down at each end.

286 REPLACEMENTS FOR CRAMPS DISCOVERED DURING COURSE OF REPAIR WORK

- Currently unidentified cramps:
 - Record location found.
 - Tag and retain cramps for records.
 - Confirm details to Architect.
- Replacement cramps:
 - Material: Phosphor bronze
 - Size: To match original in every respect.

287 WALL TIES TO STEEL FRAME

- Manufacturer/ Supplier: Ancon Ltd, President Way, President Park, Sheffield S4 7UR
 - Web: www.ancon.co.uk
- Material: Stainless steel
- Description:
 - Tail: 6mm diameter x 60mm long welded stainless steel dowel
 - Shank: Plain
 - Head: 90 degree bend to end with 8 x 30mm slot for fixing
- Dimensions: 75mm and 100mm long depending on location.

288 T-SHAPED WALL TIES TO STEEL FRAME

- Manufacturer/ Supplier: Ancon Ltd, President Way, President Park, Sheffield S4 7UR
 - Web: www.ancon.co.uk
- Material: Stainless steel
- Description:
 - Tail: Double tail (75mm and 100mm long with 6mm diameter x 60mm long welded stainless steel dowels at each end)
 - Shank: Plain
 - Head: 90 degree bend to end with 8 x 30mm slot for fixing
- Dimensions: 125mm and 150mm long depending on location.

289 CAVITY WALL TIES

- Manufacturer/ Supplier: Ancon Ltd, President Way, President Park, Sheffield S4 7UR
 - Web: www.ancon.co.uk
- Material: Stainless steel
- Description:
 - Tail: 6mm diameter x 60mm long welded stainless steel dowel
 - Shank: Plain
 - Head: 6mm diameter x 60mm long welded stainless steel dowel
- Dimension: 250mm long

290 SITE MIXED ORDINARY BEDDING AND BACKING MORTAR

- Type: Site prepared, non-hydraulic lime sand mortar with pozzolan
- Bedding mortar: As section Z21
 - Mix 1: 2 Lime putty : Aggregate
 - Lime: Mature lime putty
 - Aggregate: Washed sharp sand
 - Sand source/ type: Contractor's choice
- Pozzolan: Metokaolin
 - Gauging: 500ml Metokaolin to 5 litres of mixed mortar (10% by volume).

291 MORTAR MIX 1 FOR STONE AND BRICK

- Type: Off-site prepared, hot mixed non-hydraulic lime sand mortar with site gauged pozzolan
- Supplier: Womersley's Ltd, Ravensthorpe Industrial Estate, Low Mill Lane, Ravensthorpe, West Yorkshire WF13 3LN
 - Tel: 01924 400651
 - Email: info@womersleys.co.uk
- Mix 1 : 3 Calcium Oxide (Quicklime) : Aggregate
- Lime: Unslaked calcium oxide (quicklime) 90 microns
- Aggregate: 2 parts sand : 1 part Horton Brown stone dust
 - Sand source/ type: Leighton Buzzard sharp sand
 - Crushed stone: Horton brown crushed sieved limestone 2.5mm down.
 - Crushed stone supplier: Limebase, Walronds Park Isle Brewers, Taunton Somerset TA3 6QP
- Pozzolan: Trass added to mix on site prior to use
 - Gauging: 125ml trass to 5 litres of mixed mortar.

292 MORTAR MIX 2 FOR STONE AND BRICK

- Type: Site mixed natural hydraulic lime/ sand mortar
- Mix 1 : 2 NHL 3.5 Natural Hydraulic Lime : Aggregate
- Lime: St Astier NHL 3.5
- Aggregate: 2 parts sand : 1 part fine crushed stone
 - Sand source/ type: Leighton Buzzard sharp sand
 - Crushed stone: Horton brown crushed sieved limestone 2.5mm down.
 - Crushed stone supplier: Limebase, Walronds Park Isle Brewers, Taunton Somerset TA3 6QP

293 MORTAR MIX 3 FOR CHIMNEY FLAUNCHING

- Type: Site mixed natural hydraulic lime/ sand mortar
- Mix 1 : 2 NHL 3.5 Natural Hydraulic Lime : Aggregate
- Lime: St Astier NHL 3.5
- Aggregate: 2 parts sand : 0.5 parts crushed stone
 - Sand source/ type: Washed sharp sand
 - Crushed stone: Horton brown crushed sieved limestone 2.5mm down.
 - Crushed stone supplier: Limebase, Walronds Park Isle Brewers, Taunton Somerset TA3 6QP

294 POINTING MORTAR FOR MOSAIC AND CERAMIC TILES

- Type: Off site prepared, hot mixed non-hydraulic lime sand mortar with site gauged pozzolan
- Supplier: Womersley's Ltd, Ravensthorpe Industrial Estate, Low Mill Lane, Ravensthorpe, West Yorkshire WF13 3LN
 - Tel: 01924 400651
 - Email: info@womersleys.co.uk
- Mix 1 : 3 Calcium Oxide (Quicklime) : Aggregate
- Lime: Unslaked calcium oxide (quicklime) 90 microns
- Aggregate: 2 parts sand : 1 part Horton Brown stone dust
 - Sand source/ type: Leighton Buzzard sharp sand
 - Crushed stone: Horton brown crushed sieved limestone 2.5mm down.

- Crushed stone supplier: Limebase, Walronds Park Isle Brewers, Taunton Somerset TA3 6QP
- Pozzolan: Trass added to mix on site prior to use
 - Gauging: 125 ml trass to 5 litres of mixed mortar.

295 GROUT FOR DEBONDED TILE BACKING

- Mix 1 : 2 NHL 2 Natural Hydraulic Lime : Aggregate
- Lime: St Astier NHL 2
- Aggregate: 2 parts sand : 2 Low sulphate pulverised fuel ash
 - Sand source/ type: Fine silver sand

296 BEDDING AND BACKING FOR MOSAIC TILES

- Bedding mix 1 : 2.5 NHL 2 Natural Hydraulic Lime : Aggregate
 - Lime: St Astier NHL 2
- Aggregate: Well graded sharp sand
- Backing mix 1 : 2.5 NHL 3.5 Natural Hydraulic Lime : Aggregate
 - Lime: St Astier NHL 3.5
- Aggregate: Well graded sharp sand

297 BURNT SAND MASTIC FOR POINTING AROUND WINDOWS

- Use: For pointing between windows frames and stone rebates
- Supplier: Womersley's Ltd, Ravensthorpe Industrial Estate, Low Mill Lane, Ravensthorpe, West Yorkshire WF13 3LN
 - Tel: 01924 400651
 - Email: info@womersleys.co.uk
 - Colour: Stone

298 POINTING MORTAR FOR GRANITE

- Mix 1 : 2.5 NHL 3.5 Natural Hydraulic Lime : Aggregate
- Lime : St Astier NHL 3.5
- Aggregate: 2 parts sand with 5% natural iron oxide pigment
 - Sand source/ type: Leighton Buzzard sharp sand
- Iron Oxide pigment:
 - Supplier: Coloured Earth Pigments
 - web: www.colouredearth.co.uk
 - Type: India black - 145 natural iron oxide
 - Particle size: 50 micros (325 mesh)
 - Gauging: 9.5 parts aggregate to 0.5 iron oxide by volume.

299 POINTING MORTAR FOR GLAZED BRICK

- Type: Off-site prepared, hot mixed non-hydraulic lime sand mortar with site gauged pozzolan
- Supplier: Womersley's Ltd, Ravensthorpe Industrial Estate, Low Mill Lane, Ravensthorpe, West Yorkshire WF13 3LN
 - Tel: 01924 400651
 - Email: info@womersleys.co.uk
- Mix 1 : 3 Calcium Oxide (Quicklime) : Aggregate
- Lime: Unslaked calcium oxide (quicklime) 90 microns
- Aggregate: Leighton Buzzard sharp sand
- Pozzolan: Trass added to mix on site prior to use
 - Gauging: 125 ml trass to 5 litres of mixed mortar.

300 GROUT FOR REPLACEMENT STONE UNITS

- Mix 1 : 2 NHL 2 Natural Hydraulic Lime : Aggregate
- Lime: St Astier NHL 2
- Aggregate: 2 parts sand : 2 Low sulphate pulverised fuel ash
 - Sand source/ type: Fine silver sand

301 OFF-SITE MIXED ORDINARY BEDDING AND BACKING MORTAR

- Type: Off-site prepared, hot mixed non-hydraulic lime sand mortar with site gauged pozzolan
- Supplier: Womersley's Ltd, Ravensthorpe Industrial Estate, Low Mill Lane, Ravensthorpe, West Yorkshire WF13 3LN
 - Tel: 01924 400651
 - Email: info@womersleys.co.uk
- Mix 1 : 3 Calcium Oxide (Quicklime) : Aggregate
- Lime: Unslaked calcium oxide (quicklime) 90 microns
 - Aggregate: Washed sharp sand
 - Sand source/ type: Contractor's choice
- Pozzolan: Metokaolin
 - Gauging: 500ml Metokaolin to 5 litres of mixed mortar (10% by volume).

DISMANTLING/ REBUILDING**310 DISMANTLING MASONRY FOR REUSE**

- Masonry units to be reused: Remove carefully and in one piece.
 - Treatment: Clean off old mortar, organic growths and dirt, and leave units in a suitable condition for rebuilding.
 - Identification: Mark each unit clearly and indelibly on a concealed face, indicating its original position in the construction. Transcribe makings to drawings/ photographs.

311 ALTERATIONS TO EXISTING WINDOW OPENING TO FORM NEW DOOR, LLOYD STREET ENTRANCE EAST ELEVATION

- Site survey: Carry out site survey to check the following:
 - Overall dimensions of the area where the return will be formed.
 - Details, levels and profiles of plinth and strings.
 - Profiles of voussoirs.
 - Stone coursing levels.
- Transfer references from detail design drawings onto survey drawing.
 - Submit drawings to Architect.
- Preparation:
 - Agree method of temporary support for masonry above opening including extent of any additional disturbance of masonry that may be required to fit supports.
 - Adequately support masonry before commencement of any dismantling.
 - Mark numbers in chalk on face of each masonry unit to correspond with references on drawings.
 - Photograph the inside and outside of the opening, carefully noting any damage to existing masonry units.
- Dismantling:
 - Leaded glass and saddle bars
 - To be carefully removed from opening by specialist sub-contractor.
 - To be packed and removed to sub-contractor's workshop for dismantling
 - Glass to be reused for repairs elsewhere in the building.
 - Stone tracery
 - Use suitable metal detector to identify presence of cramps or dowels
 - Carefully remove each component in one piece
 - Mark units clearly and indelibly on a concealed face with references corresponding to drawings.
 - Place units in agreed storage location for reuse.

- Other stone components
 - Carefully remove each stone unit in one piece.
 - Clean off old mortar, organic growths and dirt.
 - Check dimensions of each component recording length, width and bed height.
 - Record dimensions on a schedule with references corresponding to drawings and copy to Architect.
 - Mark each unit, including those to be replaced, clearly and indelibly on a concealed face with references corresponding to drawings.
- Brick:
 - Dismantle brickwork forming inner section of wall.
 - Remove plaster and old mortar.
 - Remove to agreed storage area for reuse elsewhere on site. Stone units to be replaced: Carefully check size and profile. Retain for reuse as clause 127
- New key stone, voussoirs and hood moulds above opening
 - Profile of new components to match originals in every respect.
 - Carefully set out new arch opening matching original springing level and key stone height with radii adjusted to suit wider opening.
 - Submit drawings showing general setting out for approval before proceeding with detail drawings for each component.
 - Agree precise setting out for new opening width on site before proceeding with detail drawings for new and adjusted stone components.
- Replacement materials:
 - Stone as clause 241
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 291
- Rebuilding: To match previous face and joint lines, joint widths and bonding.
 - Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

312 ALTERATIONS TO EXISTING OPENING TO FORM NEW DOOR TO LLOYD STREET ENTRANCE RAMP

- Preparation:
 - Mark numbers in chalk on face of each masonry unit to correspond with references on drawings.
 - Photograph the inside and outside of the opening carefully noting any damage to existing masonry units.
- Dismantling:
 - Existing window frame
 - To be carefully removed from opening by specialist sub-contractor.
 - To be removed to agreed storage area.
 - Stone components:
 - Carefully remove each stone unit in one piece.
 - Clean off old mortar, organic growths and dirt.
 - Check dimensions of each component recording length, width and bed height.
 - Record dimensions on a schedule with references corresponding to drawings and copy to Architect.
 - Mark each unit, including those to be replaced, clearly and indelibly on a concealed face with references corresponding to drawings.
 - Brick:
 - Dismantle brickwork forming inner section of wall.
 - Remove plaster and old mortar.
 - Remove to agreed storage area for reuse elsewhere on site.
- Redundant stone components: Retain for reuse as clause 127
- Stone units to be replaced:
 - Carefully check size and profile.

- Retain for reuse as clause 127
- New stone components:
 - Profile of moulded elements of new components to match originals in every respect.
- Replacement materials:
 - Stone as clause 241
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 291
- Rebuilding: To match previous face and joint lines, joint widths and bonding.
 - Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

313 ALTERATIONS TO FORM NEW ENTRANCE RAMP

- Coordination: Removal of existing stonework to moat wall and central wall to the entrance ramp, insertion of new padstones in moat retaining wall and lower ground floor external wall, and laying new stone paving to ramp is to be closely coordinated with the contractor who will be installing the new steel supporting beams and concrete deck for the ramp.
- Preparation:
 - Mark unique reference numbers in chalk on the face of each stone component to be removed.
 - Photograph moat walls and external walls around the existing entrance ramp on the outside, and from within the lower ground floor area below the ramp noting any damage to existing masonry units and the configuration of supporting structure for the existing ramp.
- Dismantling and removing existing stonework:
 - Carefully remove each stone unit in one piece.
 - Clean off old mortar, organic growths and dirt.
 - Check dimensions of each component recording length, width and bed height.
 - Mark each unit clearly and indelibly on a concealed face with the reference number.
 - Record dimensions on a schedule with references corresponding to drawings and copy to Architect.
- Redundant stone components: Retain for reuse as clause 127
- Stone units to be replaced:
 - Carefully check size and profile.
 - Retain for reuse as clause 127
- New stone components:
 - Profile of moulded elements of new components to match originals in every respect.
 - Sizes of new components as detail drawings
- New and replacement materials:
 - Stone for walling and paving as clause 241
 - Bedding mortar for stone walling: As clause 290
 - Pointing mortar for stone walling: As clause 291
 - Padstones for new steel beams:
 - Material: Concrete
 - Minimum sizes as shown on Structural Engineer's schedule OTH-RAM-TH-XX-SCH-S-0015 with minimum size adjusted to suit stone coursing
 - Bedding, priming and pointing mortar for stone paving: Steintec Tuffbed bedding mortar and Steintec Tufftop jointing mortar as clause Q25.442 of Landscape Architect's specification reference: OTH-PLA-EE-ES-SPE-L-0004 - Specification for External Works: Hard landscape, street furniture and metalwork
- Rebuilding: To match previous face and joint lines, joint widths and bonding.
 - Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

314 ALTERATIONS TO EXISTING WINDOW TO FORM NEW DOOR OPENING TO LLOYD STREET GOODS ENTRANCE

- Preparation:
 - Mark numbers in chalk on face of each masonry unit to correspond with references on drawings.
 - Photograph the inside and outside of the opening carefully noting any damage to existing masonry units.
- Dismantling:
 - Existing window frame
 - To be carefully removed from opening by specialist sub-contractor.
 - To be removed to agreed storage area.
 - Stone components:
 - Carefully remove each stone unit in one piece.
 - Clean off old mortar, organic growths and dirt.
 - Check dimensions of each component recording length, width and bed height.
 - Record dimensions on a schedule with references corresponding to drawings and copy to Architect.
 - Mark each unit, including those to be replaced, clearly and indelibly on a concealed face with references corresponding to drawings.
 - Brick:
 - Dismantle brickwork forming inner section of wall.
 - Remove plaster and old mortar.
 - Remove to agreed storage area for reuse elsewhere on site.
- Redundant stone components: Retain for reuse as clause 127
- Stone units to be replaced:
 - Carefully check size and profile.
 - Retain for reuse as clause 127
- New stone components:
 - Profile of moulded elements of new components to match originals in every respect.
- Replacement materials:
 - Stone as clause 241
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 291
- Rebuilding: To match previous face and joint lines, joint widths and bonding.
 - Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

315 ALTERATIONS FORM NEW BRIDGE TO LLOYD STREET GOODS ENTRANCE

- Coordination: Dismantling of the existing section of the moat wall, re-building in new location and construction of new section wall to form parapets to sides of new bridge spanning across the moat is to be closely coordinated with the contractor who will be installing the new steel supporting beams and concrete deck for the new bridge.
- Site survey: Carry out site survey to check the following:
 - Overall width of existing section of stone parapet to be removed.
 - Overall width of moat.
 - Details, levels and profiles of copings, plinth and any other relevant components and features.
- Transfer references from detail design drawings onto survey drawing.
 - Submit drawings to Architect.
- Preparation:
 - Mark references in chalk on face of each masonry unit to correspond with references on drawings.
 - Photograph the inside and outside of the wall noting any damage to existing masonry units.
- Dismantling:
 - Carefully remove each stone unit in one piece.

- Clean off old mortar, organic growths and dirt.
- Mark references of each masonry unit on concealed face.
- Check dimensions of each component recording length, width and bed height.
- Record dimensions on a schedule with references corresponding to drawings and copy to Architect.
- Redundant stone components: Retain for reuse as clause 127
- Stone units to be replaced:
 - Carefully check size and profile.
 - Retain for reuse as clause 127
- New stone components:
 - Profile of moulded elements of new components to match originals in every respect.
- New/ replacement materials:
 - Stone for new walling and paving as clause 241
 - Bedding mortar for walling: As clause 290
 - Pointing mortar for walling: As clause 291
 - Bedding, priming and pointing mortar for stone paving: Steintec Tuffbed bedding mortar and Steintec Tufftop jointing mortar as clause Q25.442 of Landscape Architect's specification reference: OTH-PLA-EE-ES-SPE-L-0004 - Specification for External Works: Hard landscape, street furniture and metalwork
- Re-building:
 - Existing section of moat wall to be rebuilt to form new parapet wall on east side of goods entrance bridge.
 - Joint widths and bonding to match original
 - Holes for dowels: 12mm diameter x 85mm long
 - New dowels: As clause 284
 - Joint surfaces: Dampen, as necessary, to control suction.
- New parapet wall:
 - New section of wall to be built to form new parapet wall on west side of goods entrance bridge.
 - Joint widths to match existing walls, bonding as shown on drawing
 - Holes for dowels: 12mm diameter x 85mm long
 - Dowels: As clause 284
 - Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

316 ALTERATIONS TO ADJUST EXISTING STAIR AND FORM NEW DOOR OPENING TO COOPER STREET LOBBY

- Coordination: Construction of new walls and alterations to stairs is to be closely coordinated with the contractors who will be installing new sections of concrete floor and stair and the new steel frame to support to the wall.
- Site survey: Carry out site survey to check the following:
 - Overall dimensions of the area where the new stone wall and steps are to be installed.
 - Details, levels and profiles of strings and other details that the new wall will intersect.
 - Details and levels and centres of ribs to vaulting.
- Transfer references from detail design drawings onto survey drawing.
 - Submit drawings to Architect.
- Preparation:
 - Agree sequence of works and method of temporary support for floors and walls where stairs are to be removed.
 - Adequately support masonry before commencement of any dismantling.
 - Mark numbers in chalk on face of each masonry unit to correspond with references on drawings.
 - Photograph existing steps and surrounding masonry carefully noting any damage.
- Dismantling:
 - Steps:
 - Carefully remove each step in one piece.

- Mark each unit clearly and indelibly on a concealed face with references corresponding to drawings.
- Remove to agreed storage area for reuse elsewhere on site.
- Stonework:
 - Carefully remove stone and brick to accommodate pad stones for new steel beams to support concrete stairs and floors.
- New/ replacement materials:
 - Stone for walling as clause 241
 - Stone for new steps as clause 242
 - Wall ties as clauses 287, 288 and 289
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 291
- New wall setting out: New stone coursing and joint widths to match existing.
- New components:
 - Roundel profile to be formed to corners of voussoirs and stone reveals to each opening.
 - Submit drawings showing general setting out for the new wall and arched door openings for approval before proceeding with detail drawings for each component.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

317 NEW STONEMWORK TO FORM DOOR OPENINGS TO COOPER STREET ENTRANCE LOBBY

- Site survey: Carry out site survey to check the following:
 - Overall dimensions of the recess where the new opening is to be formed.
 - Details and profile of all decorative elements.
 - Stone coursing heights.
- Transfer references from detail design drawings onto survey drawing.
 - Submit drawings to Architect.
- Preparation:
 - Agree method of temporary support for masonry above opening including extent of any additional disturbance of masonry that may be required to fit supports.
 - Adequately support masonry before commencement of any dismantling.
 - Mark numbers in chalk on face of each masonry unit to correspond with references on drawings.
 - Photograph the area where the new opening is to be formed noting any damage to existing masonry units.
- Dismantling:
 - Stone components
 - Carefully remove each stone unit in one piece.
 - Clean off old mortar.
 - Check dimensions of each component recording length, width and bed height.
 - Record dimensions on a schedule with references corresponding to drawings and copy to Architect.
 - Mark each unit, including those to be replaced, clearly and indelibly on a concealed face with references corresponding to drawings.
 - Brick:
 - Dismantle brickwork forming inner section of wall.
 - Remove plaster and old mortar.
 - Remove to agreed storage area for reuse elsewhere on site.
 - Insert new lintels to support brickwork as soon as reasonably practicable.
- Stone units to be replaced: Carefully check size and profile. Retain for reuse as clause 127
- New stone lintel above opening
 - Overall depth of lintel to suit existing stone coursing.
 - Profile of central boss at arch intersections to match original detail in every respect.

- Submit drawings showing general setting out of opening for approval before proceeding with detail drawings for each component.
- Replacement materials:
 - Stone as clause 241
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 291
- Rebuilding: To match previous face and joint lines, joint widths and bonding.
 - Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

318 ALTERATIONS TO PRINCESS STREET ENTRANCE STAIRS

- Preparation:
 - Adequately support masonry before commencement of any dismantling.
 - Mark numbers in chalk on face of each masonry unit to correspond with references on drawings.
 - Photograph existing steps and surrounding masonry carefully noting any damage.
- Dismantling:
 - Steps:
 - Carefully remove each step in one piece.
 - Mark each unit clearly and indelibly on a concealed face with references corresponding to drawings.
 - Remove to agreed storage area for reuse elsewhere on site.
- New/ replacement materials:
 - Stone for walling as clause 241
 - Stone for new steps as clause 242
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 291
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

319 ALTERATIONS TO MOAT WALLS ON NORTH AND SOUTH SIDES OF ALBERT SQUARE ENTRANCE

- Site survey: Carry out site survey to check the following:
 - Overall width of existing sections of stone parapet to be adjusted.
 - Details, levels and profiles of copings, plinth and any other relevant components and features.
- Transfer references from detail design drawings onto survey drawing.
 - Submit drawings to Architect.
- Preparation:
 - Mark numbers in chalk on face of each masonry unit to correspond with references on drawings.
 - Photograph the inside and outside of the wall noting any damage to existing masonry units.
- Dismantling:
 - Carefully remove each stone unit in one piece.
 - Clean off old mortar, organic growths and dirt.
 - Check dimensions of each component recording length, width and bed height.
 - Record dimensions on a schedule with references corresponding to drawings and copy to Architect.
- Redundant stone components: Retain for reuse as clause 127
- Stone units to be replaced:
 - Carefully check size and profile.
 - Retain for reuse as clause 127
- New stone components:

- Profile of moulded elements of new components to match originals in every respect.
- Replacement materials:
 - Stone as clause 241
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 291
- Rebuilding: To match previous face and joint lines, joint widths and bonding.
 - Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

320 ALTERATIONS TO EXISTING DOOR IN CENTRAL BLOCK LOWER GROUND FLOOR

- Preparation:
 - Agree method of temporary support for masonry above opening including extent of any additional disturbance of masonry that may be required to fit supports.
 - Adequately support masonry before commencement of any dismantling.
 - Mark numbers in chalk on face of each masonry unit to correspond with references on drawings.
 - Photograph the inside and outside of the opening carefully noting any damage to existing masonry units.
- Dismantling:
 - Existing door and frame:
 - To be carefully removed from opening by specialist sub-contractor.
 - To be removed to agreed storage area.
 - Stone components:
 - Carefully remove each stone unit in one piece.
 - Clean off old mortar, organic growths and dirt.
 - Check dimensions of each component recording length, width and bed height.
 - Record dimensions on a schedule with references corresponding to drawings and copy to Architect.
 - Mark each unit, including those to be replaced, clearly and indelibly on a concealed face with references corresponding to drawings.
 - Brick:
 - Dismantle brickwork forming inner section of wall.
 - Remove plaster and old mortar.
 - Remove to agreed storage area for reuse elsewhere on site.
- Redundant stone components: Retain for reuse as clause 127
- Stone units to be replaced:
 - Carefully check size and profile.
 - Retain for reuse as clause 127
- New stone components:
 - Profile of lintel to match combined profile of original lintel and coving above.
 - Agree precise setting out for new opening width on site before proceeding with detail drawings for new and adjusted stone components.
- Replacement materials:
 - Stone as clause 241
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 291
- Rebuilding: To match previous face and joint lines, joint widths and bonding.
 - Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

321 DISMANTLING AND REBUILDING CHIMNEYS

- Preparation:
 - Agree extent of dismantling prior to commencement of work.
 - Mark numbers in chalk on face of each masonry unit to correspond with references on drawings.
 - Photograph each elevation of chimney.
- Dismantling:
 - Carefully remove existing flaunching taking care not to damage ridge tiles capping flues
 - Carefully remove concrete ridge tiles capping flues, remove remnants of mortar and set aside for reuse
 - Carefully remove existing cramps avoiding damage to stone units.
 - Carefully remove each stone unit in one piece.
 - Clean off old mortar, organic growths and dirt.
 - Mark each unit, including those to be replaced, clearly and indelibly on a concealed face with references corresponding to drawings.
 - Stone units to be replaced: Carefully check size and profile. Retain for reuse as clause 127
- Replacement materials:
 - Stone: As clause 241
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 291
 - Flaunching mortar: As clause 294
 - Cramps to copings and facing stones: As clause 285
 - Cramps to string courses: As clause 282
 - Cramps across feathers: As clause 283
 - Replacement capping tiles: As clause 279
- Rebuilding: To match previous face and joint lines, joint widths and bonding.
 - Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.
- Capping and flaunching:
 - Refit concrete ridge tile capping across the top of the chimney flues with outside edges packed up with slate if required and bedded in mortar flaunching.
 - Lay new mortar flaunching to weathered angle, minimum thickness at edge approximately 20mm, form smooth rounded top edge to perimeter. Flaunching to increase in thickness to approximately 50mm at junction with edge of flue separating stone/ chimney pot. Mortar to be neatly finished and profiled around the end of capping tile to maintain a ventilation opening on both sides. Flaunching to continue over the top of the capping tile to form at ridge with a smooth rounded profile in the middle of the chimney width.

322 ALTERATIONS TO FORM NEW DOOR OPENING TO LLOYD STREET ENTRANCE LOBBY

- Site survey: Carry out side survey to check the following:
 - Details and profile of all decorative elements.
 - Stone coursing heights.
- Transfer references from detail design drawings onto survey drawing.
 - Submit drawings to Architect.
- Preparation:
 - Agree method of temporary support for masonry above opening including extent of any additional disturbance of masonry that may be required to fit supports.
 - Adequately support masonry before commencement of any dismantling.
 - Mark numbers in chalk on face of each masonry unit to correspond with references on drawings.
 - Photograph the area where the new opening is to be formed noting any damage to existing masonry units.
- Dismantling:
 - Stone components

- Carefully remove each stone unit in one piece.
- Clean off old mortar.
- Check dimensions of each component recording length, width and bed height.
- Record dimensions on a schedule with references corresponding to drawings and copy to Architect.
- Mark each unit, including those to be replaced, clearly and indelibly on a concealed face with references corresponding to drawings.
- Brick:
 - Dismantle brickwork forming inner section of wall.
 - Remove plaster and old mortar.
 - Remove to agreed storage area for reuse elsewhere on site.
 - Insert new lintel to support brickwork as soon as reasonably practicable.
- Replacement materials:
 - Stone as clause 241
 - New fabricated steel lintel: As Structural Engineer's detail
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 291
- Rebuilding: To match previous face and joint lines, joint widths and bonding.
 - Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

327 DISMANTLING AND REBUILDING STONE PARAPET BALUSTRADE TO COOPER STREET COURTYARD

- Preparation:
 - Number each baluster and coping in sequence from left to right (viewed from courtyard side).
 - Mark components that are to be replaced.
 - Photograph the balustrade.
- Dismantling:
 - Carefully remove existing cramps avoiding damage to stone units.
 - Carefully dismantle balusters removing and tagging dowels (if present) to correspond with baluster references.
 - Clean off old mortar, organic growths and dirt.
 - Mark each unit, including those to be replaced, clearly and indelibly on a concealed face with references.
 - Stone units to be replaced: Carefully check size and profile. Retain for reuse as clause 127
- Replacement materials:
 - Stone as clause 241
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 291
 - Cramps to copings: As clause 282
 - Dowels: As clause 284
- Rebuilding: To match previous face and joint lines, joint widths and bonding.
 - Joint surfaces: Dampen, as necessary, to control suction.
- Insert new lead weatherings as work proceeds.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

328 DISMANTLING AND REBUILDING SECTIONS OF STONE PARAPET

- Preparation:
 - Number each coping carved parapet stone in sequence from left to right (viewed from outside).
 - Mark components that are to be replaced.
 - Record numbers on drawing.
 - Photograph the section of parapet to be removed.
- Dismantling:
 - Carefully remove existing cramps avoiding damage to stone units.
 - Clean off old mortar, organic growths and dirt.
 - Mark each unit, including those to be replaced, clearly and indelibly on a concealed face with references.
 - Stone units to be replaced: Carefully check size and profile. Retain for reuse as clause 127
- Replacement materials:
 - Stone as clause 241
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 291
 - Cramps to copings: As clause 282
 - Rebuilding: To match previous face and joint lines, joint widths and bonding.
 - Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Rake back joints by 15mm to receive pointing mortar.
- Joints: Flush.

329 REPLACING BRICK FACING TO WEST GABLE OF GREAT HALL

- Extent of replacement:
- All existing terracotta facing bricks to Flemish bonded gable.
 - 230mm depth full brick to headers.
 - 110mm depth half brick to stretchers.
- Preparation:
 - Number each coping sequence from north to south.
 - Record numbers on drawing.
- Dismantling:
 - Carefully remove existing copings and set aside for reuse.
 - Clean off old mortar, organic growths and dirt.
 - Carefully remove existing facing brick to full extend of gable.
 - Face of masonry after removal of facing: Remove loose material and leave surface in a suitable condition to receive replacement facing. Protect from adverse weather.
- Replacement materials:
 - Brick as clause 276
 - Bedding mortar: As clause 290
 - Pointing mortar: As clause 292
 - Rebuilding: To match previous face and joint lines, joint widths and bonding.
 - Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Joints: Flush.

REPLACEMENTS AND INSERTIONS

330 PREPARATION FOR REPLACEMENT MASONRY

- Defective material: Carefully remove to the extent agreed. Do not disturb, damage or mark adjacent retained masonry.
- Existing metal fixings, frame members, etc: Report when exposed.
- Redundant metal fixings: Remove.
- Recesses: Remove projections and loose material; leave joint surfaces in a suitable condition to receive replacement units. Protect from adverse weather if units are not to be placed immediately.

331 STONE UNIT REPLACEMENT PRINCIPLES

- Size of units/ extent of replacement as indicated on drawings.
- Replacement principles:
- Facing stone:
 - To match coursing depth of original stone.
 - Length of replacement may vary with minimum 100mm offset between perp joints above and below.
 - Depth of bed: 125mm minimum.
 - Fixing: Grouted and pointed.
 - Cramps and dowels to replace existing where originally used.
- Copings:
 - To match original height and width.
 - Length of unit may vary from original with minimum offset of 200mm to perp joint below.
 - Fixing: Bedded and pointed with phosphor bronze cramps to between coping units.
- String courses and hood moulds: To complete moulding profile.
 - Length of replacement may vary from original. Minimum length 300mm.
 - Depth of bed: 125mm
 - Fixing: Fully grouted and pointed.
- Column capitals and bases: To full moulding profile excluding any larger stone component from which the original was formed.
 - Fixing: New 6mm stainless steel dowels.
- Cills:
 - Full height and length of original unit.
 - Depth to extend below window cill or stone above by 100mm minimum.
 - Fixing: Grouted and pointed.
- Tracery:
 - Full extent of existing stone component.
 - Fixing: Dowels to match original if fitted with joints fully pointed.
- Finials:
 - Full extent of existing component.
 - Fixing: 10mm diameter phosphor bronze dowels.
- Other details not described above:
 - Generally assumed to be matching the full size of the original components.
 - Fixing: Grouted and pointed with phosphor bronze cramps and dowels to match original size and profile if fitted.

335 REPLACEMENT OF FACING STONE

- Stone: As clause 241
- Finish: Boasted to match angle of adjacent stone
- Sizes:
 - Coursing: To match original
 - Bedding depths: 125mm minimum
 - Length: May vary from original as shown on drawings and confirmed by mark up of stone on site.
- Fixing: Grouted and pointed.
- Bedding and backing mortar:

- As clause 301 generally or 290 for small quantities.
- Grouting mortar
 - As clause 300.
 - Rake back 15mm for pointing mortar
- Pointing mortar:
 - As clause 291
 - Joints: Flush

336 REPLACEMENT COPINGS

- Stone: As clause 241
- Finish:
 - Boasted or plain depending on detail and location.
 - Finish to match existing.
- Profile:
 - To match original.
 - Site recording as clause 220.
 - Drawings and templates as clause 230.
- Length: As shown on drawings and confirmed by mark up of stone on site.
- Fixing:
 - Bedded and pointed.
 - Cramps as clause 282 where originally fitted.
- Bedding mortar:
 - As clause 301 generally or 290 for small quantities.
- Rake back 15mm for pointing mortar
- Pointing mortar:
 - As clause 291
 - Joints: Flush

337 REPLACEMENT BALUSTERS/ CARVED PARAPET SECTIONS

- Stone: As clause 241
- Finish:
 - Carved and plain rubbed.
 - Finish to match existing.
- Size and profile:
 - To match original.
 - Site recording as clause 220.
 - Drawings and templates as clause 230.
- Fixing:
 - Dowels as clause 284.
 - Cramps as clause 286 where originally fitted.
 - Grouted and pointed.
- Bedding mortar:
 - As clause 301 generally or 290 for small quantities.
- Grouting mortar
 - As clause 300.
 - Rake back 15mm for pointing mortar
- Pointing mortar:
 - As clause 291
 - Joints: Flush

338 REPLACEMENT CORNICE SECTIONS

- Stone: As clause 241
- Finish:
 - Carved and plain rubbed.

- Finish to match existing.
- Profile:
 - To match original.
 - Site recording as clause 220.
 - Drawings and templates as clause 230.
- Sizes:
- Bedding depth: To match original
- Length: As shown on drawings and confirmed by mark up of stone on site.
- Fixing:
 - Cramps as clause 286 where originally fitted.
 - Grouted and pointed.
- Bedding and backing mortar:
 - As clause 301 generally or 290 for small quantities.
- Grouting mortar
 - As clause 300.
 - Rake back 15mm for pointing mortar
- Pointing mortar:
 - As clause 291
 - Joints: Flush

339 REPLACEMENT STRING COURSES AND HOOD MOULDS

- Stone: As clause 241
- Finish:
 - Boasted or plain rubbed depending on detail and location.
 - Finish to match existing.
- Profile:
 - To match original.
 - Site recording as clause 220.
 - Drawings and templates as clause 230.
- Sizes:
- Bedding depth: minimum 150mm
- Length: As shown on drawings and confirmed by mark up of stone on site.
- Fixing:
 - Grouted and pointed.
- Bedding and backing mortar:
 - As clause 301 generally or 290 for small quantities.
- Grouting mortar
 - As clause 300.
- Rake back 15mm for pointing mortar
- Pointing mortar:
 - As clause 291
 - Joints: Flush

341 REPLACEMENT COLUMN CAPITALS, SHAFTS AND BASES

- Stone: As clause 241
- Finish:
 - Plain rubbed.
- Size and Profile:
 - To full moulding profile excluding any larger stone component from which the original was formed.
 - Site recording as clause 220.
 - Drawings and templates as clause 230
- Fixing:
 - Dowels as clause 284.
 - Grouted and pointed.

- Bedding and backing mortar:
 - As clause 301 generally or 290 for small quantities.
- Grouting mortar
 - As clause 300.
 - Rake back 15mm for pointing mortar
- Pointing mortar:
 - As clause 291
 - Joints: Flush

342 REPLACEMENT CILLS

- Stone: As clause 241
- Finish:
 - Boasted or plain depending on detail and location.
 - Finish to match existing.
- Profile:
 - To match original.
 - Site recording as clause 220.
 - Drawings and templates as clause 230.
- Sizes
 - Length: To match original
 - Depth: To extend a minimum below window frame or leading edge of stone above.
- Fixing
 - Grouted and pointed.
- Bedding and backing mortar:
 - As clause 301 generally or 290 for small quantities.
- Grouting mortar
 - As clause 300.
 - Rake back 15mm for pointing mortar
- Pointing mortar:
 - As clause 291
 - Joints: Flush

343 REPLACEMENT PIPE COLLARS

- Stone: As clause 241
- Finish:
 - Boasted or plain rubbed depending on detail and location.
 - Finish to match existing.
- Profile:
 - To match original.
 - Site recording as clause 220.
 - Drawings and templates as clause 230.
- Sizes:
- Bedding depth: Minimum 150mm
- Length: As shown on drawings and confirmed by mark up of stone on site.
- Fixing:
 - Grouted and pointed.
- Bedding and backing mortar:
 - As clause 301 generally or 290 for small quantities.
- Grouting mortar
 - As clause 300.
- Rake back 15mm for pointing mortar
- Pointing mortar:
 - As clause 291
 - Joints: Flush

349 OTHER REPLACEMENT STONE DETAILS

- Stone: As clause 241
- Finish:
 - Boasted or plain depending on detail and location.
 - Finish to match existing.
- Size and Profile:
 - To match original in every respect.
 - Site recording as clause 220.
 - Drawings and templates as clause 230
- Fixings:
 - Dowels as clause 284 if required.
 - Cramps as clause 286 if required
- Bedding and backing mortar:
 - As clause 301 generally or 290 for small quantities.
- Grouting mortar
 - As clause 300.
- Rake back 15mm for pointing mortar
- Pointing mortar:
 - As clause 291
 - Joints: Flush

351 USE OF STONE INDENTS/ INSERTS

- Indents and inserts are not generally to be used for the repair of the following components:
 - Facing stone units, copings, hood moulds, string courses and finials.
- Size and extent of indents as shown on drawings:

352 STONE INSERTS TO CILLS

- Stone:
 - Finish: Flush and to match existing.
- Site recording as clause 220.
- Drawings and templates as clause 230
- Preparation and insertion:
- Pockets to receive inserts:
 - Cut out accurately.
 - Damaged or eroded stone to be removed to form horizontal bed joint and vertical perp joint.
 - Depth to extend minimum of 50mm below edge of masonry unit above or 50mm below window cill.
 - Adjust depth so that insert stands proud of existing stone for finishing in situ.
 - Minimum depth of replacement section: 75mm.
 - Fixing: Grouted and pointed without use of adhesive.
- Mortar:
 - As clause 291
 - Joints: Very fine.

353 STONE INSERTS TO OTHER DETAILS

- Stone:
 - Finish: Flush and to match existing.
- Site recording as clause 220.
- Drawings and templates as clause 230
- Preparation and insertion:
- Pockets to receive inserts:
 - Cut out accurately.
 - Damaged and eroded stone to be cut out to appropriate corner or inset section of moulding where appropriate.
 - Adjust depth so that insert stands proud of existing stone for finishing in situ

- Approximate size: As shown on drawings.
- Final size: To be agreed and marked on component on site before cutting out.
- End fixing profile: Dovetail profile to be formed at ends of indents to vertical or soffit details.
- Joints between existing masonry and repair sections: 1-2mm
- Fixing: Dovetailed into existing moulding with epoxy resin adhesive to back face only and other joints grouted and pointed.
- Mortar:
 - As clause 291
 - Joints: Very fine.

356 INDENT REPAIRS TO GRANITE STEPS

- Stone: Re-used from steps removed during alterations to Cooper Street entrance
- Mortar: As clause 298
- Joints: Flush

367 REPLACEMENT OF BRICKS

- Bricks: As clause 276
- Mortar: As clause 292
- Joints: Flush

386 LAYING REPLACEMENT MASONRY UNITS

- Bed depth for new masonry units: Minimum 125mm
- Exposed faces of new material: Keep to agreed face lines.
- Faces, angles and features: Align accurately. Set out carefully to ensure satisfactory junctions with existing masonry and maintain existing joint widths.
- Joint surfaces: Dampen to control suction as necessary.
- Laying units: On a full bed of mortar, all joints filled.
- Exposed faces: Keep clear of mortar and grout.

390 GROUTING JOINTS

- Grout mix: As clause 300.
- Joints that cannot be fully filled with bedding mortar: Grout thoroughly around replacement masonry units.
- Grouting: Keep grout back from exposed face to allow for the depth of pointing, using an approved temporary sealing material. Prevent grout staining exposed face.

EXTERNAL WALL MOSAIC REPAIRS**397 REMOVING LOOSE AND DEBONDED MOSAIC TILING AND RENDER BACKING IN COURTYARDS**

- Recording pattern: Record pattern of mosaic on durable clear acetate sheet. Mark record with reference of mosaic panel.
 - Record quantity, location and colour of missing tiles.
 - Check area of loose or debonded mosaic and mark with contrasting chalk line before commencing work.
- Carefully remove pointing to mosaic along line between tiling to be removed and tiling to be retained using suitable sharp tool taking care not to damage mosaic tiles.
 - Carefully prise off loose or debonded tiles up to joint line.
 - Place tiles in a container marked with bay reference and place in a secure storage location. Do not mix with tiles from other bays.
- Mortar bedding and backing removal:
- Remove mortar that is detached, hollow, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.
- Cut out to regular rectangular areas with straight edges.

- Horizontal and vertical edges: Square cut or slightly undercut.
- Bottom edges to external render: Do not undercut.
- Dust and loose material: Remove from exposed substrates and edges.

398 REPAIRS TO MOSAIC WALL TILING IN COURTYARDS

- Mortar backing and bedding: As clause 296
- Preparation:
 - Dampen joints and surrounding stone to control suction.
- Backing coat application:
 - Firmly and in one continuous operation
 - Achieve good adhesion.
 - Rule to an even surface.
 - Comb to provide a key for the backing coat, do not penetrate the coat.
- Curing and drying:
 - Prevent premature setting and uneven drying of each coat.
 - Keep each coat damp by covering with polyethylene sheet and/ or spraying with water.
 - Protect from frost and rain.
 - Allow backing to dry thoroughly, with drying shrinkage substantially complete before applying next coat or fixing mosaic.
- New tiles to replace missing sections: As clause 278
- Fixing mosaic:
 - By floated coat to background as clause 296 with wood float finish.
 - Before tiling allow to stiffen slightly.
 - Without delay apply 5mm thick coat of bedding mortar to backs of tiles.
 - Press tiles firmly onto float coat.
 - Tap firmly into position.
- Pointing mortar: As clause 294
 - Apply with wood float or nylon filling tool.
 - Press firmly into joints
 - Polish surface to remove excess.

399 GROUTING VOID TO DEBONDED MOSAIC BACKING

- Preparation:
 - Carefully remove individual mosaic tiles at 200mm centres above and below debonded area.
 - Drill 10mm diameter holes in locations where tiles have been removed.
 - Clear dust from holes.
 - Flush out cavity using a solution of 4 parts water to 1 part ethanol or isopropyl alcohol.
 - Plug bottom holes with clay to prevent grout seepage.
- Grout mix as clause 295.
- Application:
 - Inject grout into void through holes at the top using a low pressure grouting syringe or mortar pointing gun.
 - Unblock bottom holes to check void has been fully filled.
 - Ensure grout has set before making good holes and refixing mosaic tiles.
 - Mosaic tile bedding: As clause 296

401 GROUTING/ POINTING EXISTING MOSAIC WALL TILING

- Preparation: Carefully rake out existing joints to a minimum depth of 6mm using a suitable fine bladed tool.
- Pointing mortar: As clause 294
 - Apply with wood float or nylon filling tool.
 - Press firmly into joints
 - Polish surface to remove excess.

REMOVING REDUNDANT FIXTURES AND FITTINGS

411 REMOVAL OF BOLTS, SCREWS, NAILS, THREADED SLEEVES AND OTHER METAL FIXINGS

- Removal: Cut out carefully, causing the least possible disturbance to surrounding masonry.
 - Remove any associated rust debris.
- Making good: As clause 518.

412 REMOVAL OF REDUNDANT LIGHT FITTINGS, WIRING, PIPES, DUCTWORK AND GRILLES

- Removal: Carefully remove causing the least possible disturbance to masonry.
 - Remove all associated fixing brackets, screws, nails and nylon plugs.
 - Remove any associated rust debris.
- Making good: As clause 518.

420 TEMPORARY DISTANCE PIECES FOR JOINTS IN ASHLAR STONEMWORK

- Material: Lead or stainless steel.
- Removal: When mortar/ grout is sufficiently strong to take loading without compression.

TOOLING/ DRESSING STONE IN SITU

456 DESCALING STONE

- Requirement: Carefully remove loose scaling and powdering from stones to the extent agreed.
- Method: Suitable bristle brushes or timber spatulas. Do not use wire brushes.

459 REDRESSING STONE

- Requirements: Dress back stone to create a level even surface to vertical or angled planes as original details without steps or water traps. It may be necessary to extend redressing to areas of undamaged stone within the zone designated for redressing to achieve this.
- Extent: As indicated on drawings and agreed on site.
- Method: Suitably graded carborundum blocks or tooling as appropriate.
- Finish: All flat faces to receive a boasted finish.

MORTAR REPAIRS

509 MORTAR REPAIR PRINCIPLES

- Mortar repairs are to be confined to the following types of defect:
 - Filling relatively minor erosion, damage and recesses on top face of cills.
 - Filling holes where bolts, screws, timber plugs or scaffolding tie sleeves have been removed.
 - Filling natural fissures in face of stone.
 - Filling other small holes not exceeding 20mm diameter.
- Filling cracks and widened mortar joints where ties, pinning or other remedial work is considered unnecessary.

516 MORTAR REPAIRS GENERALLY

- Preparation:
 - Repair area: Scribe area of masonry to be removed using straight horizontal and vertical lines parallel to joints. Where repair area abuts joints, maintain existing joint widths and do not bridge joints.
 - Decayed masonry: Cut back carefully to a minimum depth of 20 mm to a sound background. Where the depth of removal exceeds 50 mm, seek instructions.
 - Precautions: Do not weaken masonry by removing excessive material. Do not damage adjacent masonry.
 - Top and vertical reveals of repair area: Undercut.
- Repair:

- Dampen inside of hole and surrounding stone to control suction.
- Mortar: As clause 291.
- Finish: Flush with surrounding stone as clause 555

518 MORTAR REPAIRS

- For repairs to holes and fissures.
 - Remove redundant fixings, bolts and metal sleeves as clause 812.
 - Dampen inside of hole and surrounding stone to control suction.
 - Mortar: As clause 291.
- Finish: Flush with surrounding stone as clause 555

542 APPLYING MORTAR

- Surfaces to receive mortar: Clean, and free from dust and debris. Dampen to control suction.
- Applying mortar: Apply mortar firmly, ensuring good adhesion with no voids.
- Finishing mortar coat: Flush with adjacent masonry.
- Protect completed repairs from adverse weather until mortar has set.

555 FLOAT FINISH TO MORTAR REPAIRS

- Finish: Use a wood float and/ or a felt faced float to give an even overall texture. Do not use steel floats.

CRACK REPAIRS/ TIES/ REINFORCEMENT**611 MORTAR REPAIR OF CRACKS**

- Mortar: As clause 291.
- Preparation: Clean out cracks to remove debris, dust and dirt. Dampen recesses, as necessary, to control suction.
- Applying mortar: Press well into cracks so that they are fully filled. Ensure that mortar does not encroach upon exposed faces. Finish mortar flush with masonry face.

642 PINNING ACROSS CRACKS IN ASHLAR STONE

- Manufacturer: Helifix
 - Web: www.helifix.co.uk
- Ties/ Pins:
 - Type: 316 grade stainless steel helical bar
 - Diameter: 8mm
- Installation:
 - Carefully drill 5mm diameter pilot hole diagonally across crack to be stitched.
 - Fit special DryFix PDA insertion tool to an electric hammer drill.
 - Load the DryFix tie into the insertion tool.
 - Power-drive the tie into position until its outer end is recessed below the face of the stone.
 - Make good hole: As clause 693.

676 JOINT REINFORCEMENT

- Existing construction: Ashlar stone facing with brick backing
 - Joint width: 3mm approx.
- Reinforcement:
 - Type: 2.5mm diameter 316 grade stainless steel threaded bar.
- Installation: Remove existing mortar without damaging adjacent masonry or widening joints. Form recess to depth recommended by reinforcement manufacturer. Remove dust and debris. Install reinforcement using methods recommended by manufacturer.
- Joints: Repoint as clause 821.

693 MAKING GOOD TO INJECTION AND INSERTION HOLES

- Preparation: Clean out holes thoroughly.
 - Dampen inside of hole and surrounding stone to control suction.
 - Mortar: As clause 291.
- Finish: Flush with surrounding stone

POINTING/ REPOINTING**805 COMPLETE REPOINTING**

- Where complete repointing is indicated the whole area is to be prepared and repointed in accordance with clauses 812, 813, 821 and 822.

806 SELECTIVE REPOINTING

- Areas where selective pointing has been indicated generally contain a large proportion of eroded, cracked or otherwise defective or unsuitable mortar.
- Where selective repointing is indicated, sound flush mortar joints should be retained. The remainder are to be prepared and repointed in accordance with clauses 812, 813, 821 and 822.
- For tender/ pricing purposes it should be assumed that all joints in the areas shown as selective repointing will require raking out and repointing and this should be allowed for in the tender price.
- The final extent of selective repointing will be confirmed following cleaning as clause C40.843 and inspection as clause C41.122 and further clarification and guidance will be provided on site in discussion with the person in charge of the site operatives carrying out the work.

812 PREPARATION FOR REPOINTING ASHLAR STONE

- Existing mortar:
 - Working from top of wall downwards, remove mortar carefully to a minimum depth of 15mm without damaging adjacent masonry or widening joints.
 - Mortar is loose or missing from some perp joints to a depth of 40 to 50mm. Ensure deeply recessed perps are identified and all loose material is removed.
 - Raked joints: Remove dust and debris.

813 PREPARATION FOR REPOINTING BRICKWORK

- Existing mortar: Working from top of wall downwards, remove mortar carefully, without damaging adjacent masonry or widening joints, to a minimum depth of 25mm
 - Loose or friable mortar: Seek instructions when mortar beyond specified recess depth is loose or friable and/ or if cavities are found.
- Raked joints: Remove dust and debris.

821 POINTING ASHLAR STONE

- Preparation of joints:
 - Remove mortar as clause 812.
 - Dampen joints and surrounding stone to control suction.
 - Ensure deeply recessed joints are fully packed with mortar.
- Mortar: As clause 291.
- Joints profile/ finish: Flush

822 POINTING BRICK

- Preparation of joints:
 - Remove mortar as clause 813.
 - Dampen joints and surrounding stone to control suction.
- Mortar: As clause 291.
- Joints profile/ finish: Flush.

823 FILLING DEEPLY RECESSED JOINTS ASHLAR STONE PRIOR TO CLEANING

- Preparation of joints:
 - Remove mortar as clause 812.
 - Dampen joints and surrounding stone to control suction.
 - Fully pack deeply recessed joints with mortar.
- Mortar: As clause 291.
- Joints profile/ finish: Rake out 15mm for pointing.

827 POINTING BETWEEN WINDOW FRAMES AND STONE REVEALS

- Preparation of joints:
 - Remove all existing mortar.
 - Remove paint from stone perimeter as clause C40.525
- Mortar: As clause 297.
Joints profile/ finish: Set into joint flush with stone.

840 POINTING WITH TOOLS/ IRONS

- General: Press mortar well into joints using pointing tools/ irons that fit into the joints, so that they are fully filled.
- Face of masonry: Keep clear of mortar. Use suitable temporary adhesive tape on each side of joints where necessary. Finish joints neatly.

862 FINISH TO JOINTS

- Timing: After initial mortar set has taken place remove laitance and excess fines by light brushing across joints. Do not compact mortar.

Z21

Mortars

Z21 Mortars

To be read with Preliminaries/ General conditions

LIME: SAND MORTARS

310 LIME: SAND MORTAR MIXES

- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

320 SAND FOR LIME: SAND MASONRY MORTARS

- Type: Sharp, well graded.
 - Quality, sampling and testing: To BS EN 13139.
 - Grading/ Source: As specified elsewhere in relevant mortar mix items.

350 STORAGE OF LIME: SAND MORTAR MATERIALS

- Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases.
- Ready prepared nonhydraulic lime putty: Prevent drying out and protect from frost.
- Nonhydraulic lime:sand mortar: Store on clean bases or in clean containers that allow free drainage. Prevent drying out or wetting and protect from frost.
- Bagged hydrated hydraulic lime: Store off the ground in dry conditions.

360 MAKING LIME: SAND MORTARS GENERALLY

- Batching: By volume. Use clean and accurate gauge boxes or buckets.
- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
- Contamination: Prevent intermixing with other materials, including cement.

390 KNOCKING UP NONHYDRAULIC LIME: SAND MORTARS

- Knocking up before and during use: Achieve and maintain a workable consistency by compressing, beating and chopping. Do not add water.
 - Equipment: Roller pan mixer or submit proposals.

400 MAKING HYDRAULIC LIME: SAND MORTARS

- Mixing hydrated hydraulic lime : sand: Follow the lime manufacturer's recommendations for each stage of the mix.
 - Water quantity: Only sufficient to produce a workable mix.
- Working time: Within limits recommended by the hydraulic lime manufacturer.