

NBS SPECIFICATION OF WORK

In regard to

COLEFORD CLOCK TOWER

for

COLEFORD TOWN COUNCIL

Dittrich Hudson Vasetti Architects

Studios 12-14

9 Bath Buildings

Montpelier

Bristol

BS6 5PT

ISSUED FOR TENDER

JUNE 2026

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C20 DEMOLISHING STRUCTURES

To be read with Preliminaries/General conditions.

GENERAL REQUIREMENTS

- 110 DESK STUDY/ SURVEY
- **Contractor to be aware of the historic importance of the building, all parts of which are Grade II listed, and all historic fabric, other than shown to be removed is to be carefully protected and retained.**
 - This includes windows, doors, walls floors and roof structures; and the fixtures and fittings that form part of the building.
 - The Contractor is to provide a method statement setting out precautions that will be taken to prevent damage to the internal and external fabric and a copy shall be provided to the CA for approval.
 - Before starting work, examine all available information, carry out a survey of the structure(s) to be deconstructed/ demolished, the site and surrounding area, and submit a survey report and method statement to the CA covering all relevant matters listed below and in the Construction (Design and Management) Regulations 2015, Regulations 19 and 20:
 - Form and condition.
 - Stability of structures.
 - The site and surrounding area.
 - Elements to be deconstructed and dismantled.
- 120 EXTENT OF DEMOLITION: Subject to the retention of features, facades, structures, retaining walls, etc., specified elsewhere, demolish structure(s) as described in the drawings: Drawing refs. 1398 (10)02, (22)01, (22)02, (22)03 and (30)02
- 140 BENCH MARKS: Report to the CA any bench marks and other survey information found on structure(s) to be demolished. Do not remove or destroy unless instructed.
- 150 FEATURE(S) TO BE RETAINED: As described in the Architect's drawings.

SERVICES AFFECTED BY DEMOLITION

- 210 SERVICES REGULATIONS: Any work carried out to or which affects new or existing services must be in accordance with the byelaws or regulations of the relevant statutory authority.
- 220 LOCATION OF SERVICES: Locate and mark the positions of services affected by the work. Arrange with the appropriate authorities for the location and marking of the positions of mains services.
- 230 DISCONNECTION OF SERVICES: Before starting demolition arrange with the appropriate authorities for the disconnection of services and removal of fittings and equipment.
- 240 DISCONNECTION OF DRAINS: Locate and disconnect all disused drain connections. Seal within the site to approval.
- 250 DRAINS IN USE: Protect drains, manholes, gullies, vent pipes and fittings still in use and ensure that they are always kept free of debris. Make good any damage arising from demolition work and leave clean and in working order at completion.
- 260 BYPASS CONNECTIONS: Provide as necessary to maintain continuity of services to occupied areas of the same and adjoining properties. Give a minimum 72 hour's notice to occupiers if shutdown is necessary during changeover.

- 270 SERVICES WHICH ARE TO REMAIN: Notify the CA and service authority or owner of any damage. Make all arrangements for repair to the satisfaction of the CA and service authority or owner. Bear any costs arising.

DECONSTRUCTION/ DEMOLITION WORK

- 310 WORKMANSHIP GENERALLY:
- Demolish structure(s) in accordance with BS 6187:2011 and the Construction (Design and Management) Regulations 2015.
 - Operatives must be appropriately skilled and experienced for the type of work and hold or be training to obtain relevant CITB Certificates of Competence.
 - Site staff responsible for supervision and control of the work are to be experienced in the assessment of the risks involved and in the methods of demolition to be used.
- 330 DUST: Reduce dust by periodically spraying demolition works with water.
- 340 HEALTH HAZARDS: Take adequate precautions to protect site operatives and the general public from health hazards associated with dangerous fumes and dust arising during the course of the Works.
- 360 STRUCTURE(S) TO BE RETAINED:
- Adequately protect parts of existing structure(s) which are to be kept in place.
 - Cut away and strip out the minimum necessary and with care to reduce the amount of making good to a minimum.
 - Prevent debris from overloading any part of the structure which is not to be demolished.
- 370 PARTLY DEMOLISHED STRUCTURE(S):
- Leave partly demolished structure(s) in a stable condition, with adequate temporary support at each stage to prevent risk of uncontrolled collapse.
 - Prevent debris from overloading scaffolding platforms.
 - Prevent access of unauthorised persons to partly demolished structure(s). Leave safe outside working hours.
- 380 DANGEROUS OPENINGS: Illuminate and protect as necessary.
- 390 ASBESTOS BASED MATERIALS:
- Removal is to be carried out by a Contractor licensed by the Health and Safety Executive and prior to any other works starting in these locations.
- 400 ASBESTOS BASED MATERIALS: Report immediately to the CA any suspected asbestos based materials discovered during demolition work. Avoid disturbing such materials. Agree with the CA methods for safe removal.
- 410 UNKNOWN HAZARDS: Inform the CA of any unrecorded voids, tanks, chemicals, etc. discovered during demolition work. Agree with the CA, methods for safe removal, filling, etc.
- 440 COMPLETION: Clear away all debris and leave the site in a tidy condition on completion.

MATERIALS ARISING

- 510 OWNERSHIP: Components and materials arising from the demolition work are to become the property of the Contractor except where otherwise provided. Remove from site as work proceeds.

END OF WORK SECTION

C40 HISTORIC FABRIC CLEANING

To be read with Preliminaries/ General conditions.

105 SUMMARY OBJECTIVES FOR CLEANING TREATMENTS:

- **A – Painted internal Forest of Dean Pennant stone to the ground floor stairs:**
Remove heavy gloss paint films using a steam cleaning method. The aim should be to remove the majority of the paint area, although small areas of deeply embedded paint can remain, where they do not impact on the overall appearance. Sample area to be agreed with the Architect before commencement and to establish a cost of rates for cleaning where a provisional sum is allocated.
- **B – Painted modern infill blockwork to the ground floor doorways where retained:**
Remove modern acrylic paint films using a steam cleaning method to the facing concrete blockwork. The aim should be to remove the majority of the paint area, although small areas of deeply embedded paint can remain, where the blockwork is to be plaster rendered as section M20. Sample area to be agreed with the Architect before commencement and to establish a cost of rates for cleaning where a provisional sum is allocated.
- **C – Unpainted internal exposed coursed and rubble stone to the first floor and internal stair:**
Generally unpainted rubble walls do not require any treatment apart from a dry clean using a vacuum cleaner to remove loose surface material.
- **D – Brickwork to the internal clock dial reveals:**
Generally unpainted isolated brick surfaces do not require any specialist treatment apart from a dry clean using a vacuum cleaner to remove loose surface material in preparation of repointing. Remove vegetation, moss and algal growth to the clock reveal bases with a soft wire brush. Steam clean as necessary following the removal of staining and vegetation.
- **E – Existing timber floors below modern OSB coverings:**
Existing timber boards will be retained in their current condition, unless heavily soiled. Vacuum clean prior to preparation of new floor finishes as section K20 and M60.
- **F – Existing timber floors where stained by bird guano and detritus:**
Bird guano to be gently scraped and cleaned by a specialist contractor. Remaining detritus and staining to be removed by cleaning with a damp cloth to allow the floor to be prepared and sanded.
- Work and rub shelter coat into pores in stones. Wipe off excess from surface to allow the colour and tonal variations of each stone to show through.
- Do not carry out shelter coating during cold weather. Fully protect recently coated stonework from frost damage and from drying out too quickly.

120 RELATED REPAIR AND REMEDIAL WORKS

- To be carried out before cleaning work: Asbestos removal as necessary.

142 REMOVAL OF FITTINGS:

- Timing: Before commencement of cleaning work.
- Disturbance to surfaces: Minimise.
- Items for disposal: As the Architect's drawings.

- 160 PROTECTION
- Surfaces not designated for cleaning: Prevent damage, including marking and staining.
 - Openings: Prevent ingress of water, cleaning agents and detritus.
 - Temporary mechanical fastenings:
 - In masonry: Locate in joints.
 - In other surfaces: Seek instructions.
 - Additional protection: Ensure timber floors are protected from any chemical used where proposed.
- 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 deg C. Protect damp surfaces from frost.
 - Chemical cleaning agents: Do not use when surface temperatures are below those recommended by the 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 area and 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.
- 215 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.
 - Additional documentation: Before and after photographs of all affected areas.
 - Submission: At completion of cleaning works and a copy to be provided with the Operation and Maintenance Manuals.
- 230 TRIAL SAMPLES
- Internal gloss paint on ground floor stair stringer removal**
- Trial sample reference: T1.
 - Surface: Existing gloss paint on Forest of Dean Pennant ashlar.
 - Location/ Size: Single stone tread at low level in each of the stair flights.
 - Type of soiling: Paint films – possibly containing lead constituents.
 - Cleaning methods: High temperature steam cleaning/ chemical softening as clause 352.
 - Records: Maintain written/ photographic records of each trial area, including cleaning methods and conditions, to enable replication of results elsewhere.

Internal acrylic paint on ground floor infill facing concrete blockwork

- Trial sample reference: T2.
- Surface: Existing acrylic paint on facing concrete blockwork.
- Location/ Size: 1 x 1m.
- Type of soiling: Paint films – possibly containing lead constituents.
- Cleaning methods: High temperature steam cleaning/ chemical softening as clause 352.
- Records: Maintain written/ photographic records of each trial area, including cleaning methods and conditions, to enable replication of results elsewhere.

PRODUCTS/ EQUIPMENT**300 COMPATABILITY OF CHEMICAL PRODUCTS**

- Products: Compatible and produced by the same manufacturer.

312 SURFACE BIOCIDES

- Types: Registered by the Health and Safety Executive (HSE) and listed on the HSE website under non-agricultural pesticides.
- Compatibility with surface: Free from staining or other harmful effects

352 STEAM CLEANING OF MASONRY WALLS

- Process: High temperature steam cleaning with recovery, in conjunction with chemical softening where required. NOTE: GREAT CARE IS REQUIRED DUE TO SOFT POROUS NATURE OF FOREST OF DEAN PENNANT STONE.
- Product reference: Thermatech high temperature steam system with ThermaVac recovery system or Equal Approved. Suggested Subcontractors:

Jamie Fairchild
 Restorative Techniques
 67a Gloucester Road
 Rudgeway
 Bristol BS35 3SG
 Tel: 01454 417831.
 Email: info@restorativetechniques.co.uk.
 Website: www.restorative-products.com.

Alan Giles
 Alberny Restorations Ltd.
 Unit 4
 Great Western Road
 Martock
 Somerset
 TA12 6HB
 Tel: 01460 73038/ 07831 777203.
 Email: enquiries@alberny.co.uk.
 Website: www.alberny.co.uk.

- Pre softening system:
 - Use additional chemical softening only where required to ensure removal of existing paint layers on internal walls. Product reference: TBC by specialist contractor and submit proposals.
 - Restorative Polyurethane Softener – A thixotropic cream for softening polyurethane and oil-based paints. Water-soluble. Brush, roller or spray application and to be applied in accordance with manufacturer's recommendations.
- Alternatively, Contractor may propose an alternative DOFF or other manufacturer based steam removal and recovery system subject to approval of sample areas.

APPLICATION

- 412 **REMOVAL OF LOOSELY ADHERED DEPOSITS**
- Timing: Before commencement of other cleaning methods.
 - Surfaces: Prevent damage, including abrasion.
- 422 **BIOCIDE APPLICATION**
- Preparation: Remove loose material by abrasion.
 - Surfaces: Prevent damage, including abrasion.
 - Biocide treatment: Appropriate solutions to kill growths and inhibit further growths.
 - Dead growths: Remove.
- 442 **ABRASIVE BLOCKS**
- Types: Suitable grades of carborundum or gritstone.
 - Application: Lubricate with water. Remove detritus.
 - Abrasive power tools: Prohibited.
- 452 **ABRASIVE CLEANING**
- Surfaces: Minimise abrasion.
 - Ingrained deposits: Seek instructions.
 - Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.
 - Detritus: Remove with clean water.
- 462 **WATER SPRAY CLEANING (MOUNTED NOZZLES)**
- Surfaces: Minimise water run-off. Prevent damage.
 - Adjustment of washing cycle and nozzle positions: Regularly to achieve optimum cleaning performance.
- 482 **STEAM CLEANING**
- Surfaces: Prevent damage, including abrasion.
 - Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.
- 495 **TESTING PH VALUES FOR CHEMICAL CLEANING**
- pH indicator; To distinguish pH values between 1-14.
 - Testing before cleaning:
 - Clean rinsing water, wetted surfaces and joints: test for pH. Record as 'control' values.
 - Testing after water rinsing and neutralisation:
 - Wetted surfaces and joints: Record pH values.
- 500 **CHEMICAL CLEANING**
- Surfaces: Prevent damage, including discolouration, bleaching and efflorescence.
 - Product variables (including concentrations, dwell times and number of applications): Adjust for each surface to achieve optimum cleaning performance.
 - Application: To wetted surfaces.
 - Drying out: Prevent, unless recommended otherwise by cleaning product manufacturer.
 - Removal of chemicals and neutralisation: As recommended by product manufacturer, including rinsing with clean water.
 - Additional treatment: Where water rinsing is insufficient to neutralise surface, apply compatible neutralising agent.
 - Surfaces and joints: Minimise absorption of chemicals. Prevent damage, including abrasion.

END OF WORKS SECTION

C41 STONE CONSERVATION AND REPAIRS

To be read with Preliminaries/ General conditions & Z21.

- 540 SHELTER COATING:
- To be applied where specified to external stone surfaces as a thin, sacrificial coating after all other repairs have been carried out.
 - Add casein and formalin to lime, fine aggregate and Forest of Dean Pennant sandstone dust mixes to achieve the approved colour. Mix to be agreed with the appointed conservation contractor.
 - Make proposals for and samples of shelter coat mixes. Produce 3 no. 1m² sample panels showing different colour variations for each stone to be matched.
 - Agree with the Architect stone types to be matched.
 - Agree exact extent of shelter coating to be carried out before starting work.
 - Pre-spray stone with water.
 - Work and rub shelter coat into pores in stones. Wipe off excess from surface to allow the colour and tonal variations of each stone to show through.
 - Do not carry out shelter coating during cold weather. Fully protect recently coated stonework from frost damage and from drying out too quickly.
- 560 REDRESSING:
- To be undertaken only as a last resort to badly spalled stones, as directed in the repair schedule and by the Architect.
 - Take off all loose and friable material with a wire brush back to firm stone.
 - Re-chisel a flat surface in-situ by hand to match adjacent stone finishes. Angle grinding will not be acceptable.
- 570 PINNING:
- Where specified by the Architect, face bedded or vertically fracturing stone is to be resin pinned.
 - Carefully cut out stone plug with a diamond coring tool.
 - Drill hole through fractured planes back to firm stone, angled downwards.
 - Flush hole clear of dust with water or solvent, then fill with low viscosity epoxy resin until hole is two-thirds full.
 - Clay plugs and film are to be used to cover and protect visible stonework from the epoxy resin.
 - Insert metal pins as 575 into hole and leave until cured. Plug core hole with stone plug, adhered with resin & pointed with a lime mortar of matching colour.
- 575 METAL FOR PINS & CRAMPS
- As specified on the repair schedule: to be either grade 316 stainless steel or phosphor bronze as directed. Where unspecified assume stainless steel.
 - Pins are to be crossed where possible.
 - All new sections of stone and piecing-in repairs are to be pinned and cramped unless agreed otherwise with the Architect.
- 580 REPLACEMENT:
- Only to be undertaken on the direct instruction of the Architect. Where possible indent replacement pieces rather than replacing entire stone.
 - Samples of suitable Forest of Dean Pennant sandstone as F21 are to be presented for agreement.
 - Bedding is to be approved by the CA prior to carving. Any replacements incorrectly bedded will be rejected, unless agreed beforehand with the CA.
 - Indented stones are to be placed at least 100mm on bed (depending on size), and secured from the rear with resin or stainless steel ties.
 - Replacement stones are to be hand tooled to match original or adjacent stones.
 - All piecing-in repairs are to be secured with dowels as 575. Cavities are to be undercut to provide an adequate, gravity-proof key.

MORTAR (PLASTIC) REPAIRS TO ASHLAR STONE

- 600 SCOPE OF WORK:
- Areas as identified on the drawings and confirmed on site.
- 610 SAMPLES:
- The mix proportions and colour match are to be agreed with the use of dry samples, and the preparation of around a dozen samples must be allowed for. If available, samples are to be undertaken on un-used stone identified for removal. An example of a larger repair will be required to assess the standard of workmanship.
- 620 REPAIR MIX:
- A starting point for the repair mix is likely to be a ratio of lime as Z21, well graded sharp sand (below 600µm) and Forest of Dean Pennant sandstone dust. The mix may have to be adjusted for filling fine cracks.
- 630 REPAIR METHOD:
- Previous repairs are to be carefully chiselled from the face of the repair until the mortar falls out. Mechanical tools are not to be used under any circumstances.
 - Defective stonework to be repaired is to be cut back to sound stone. Stone is to be cut in such a way as to provide an adequate key.
 - For small repairs and infilling of cracks an adhesive admixture of cellulose nitrate or an epoxy putty may be used to form a bond with the substrate, subject to agreement with the CA.
 - For larger areas of repair in prominent positions, the hole should be cut square then neatly excavating with a masonry drill. Edges are to be undercut to form a good key. The cavities are then to be washed and sterilized with water & formalin.
 - Cavities exceeding 50mm in depth or over 50mm square surface area are to be packed with broken tiles & mortar or with clay (NimT or similar), 4mm phosphor bronze or grade 316 M4 stainless steel rod armatures, inserted in drilled cavities grouted with mortar (after first flushing hole with white spirit). A minimum of 20mm cover is required to armatures. Feather edged repairs will not be permitted.
 - Cavities are to be fully saturated with hand sprays before applying mortar.
 - Successive layers not exceeding 10mm in thickness are to be built up. Each layer must be left to carbonate, then dampened down before applying the next. Each layer is to be keyed to the last. Layers are to be protected from rain and/ or drying out in the same manner specified for lime mortar.
 - The repair should be finished flush to match the adjacent stone finish.

STONE CLEANING

- 700 REMOVAL OF MOSS:
- Moss and vegetation is to be carefully removed by hand with a spatula or timber blade, washed down with water and neutral PH detergent, with brushes and elbow grease.
- 800 STONE CLEANING: SCOPE OF WORK:
- Heavy encrustations of dirt and soot as identified on the drawings.
 - Cleaning is not to be undertaken to restore the building to an 'as-new' state, but is to be used to homogenise very badly stained areas with adjacent surfaces.
- 810 SAMPLE:
- A small sample panel to a stone which is not in a visually prominent area is to be undertaken and agreed prior to cleaning of large areas.
- 820 WATER CLEANING METHOD:
- Water cleaning must not be undertaken if the temperature is below 5°C.
 - Water cleaning method: Spray with a fine mist of hot water before gently

scrubbing surfaces with compact bristle heads or plastic pot scourers with warm water & neutral pH soap.

- Abrasive powders and powder-based detergents are not to be used.

830

POULTICES:

Stubborn patches of soot encrustation may be removed using a methyl chloroform poultice, subject to prior agreement with the CA. Ensure good ventilation and/or use respiratory apparatus when using poultices, and do not bring into contact with bare skin.

END OF WORKS SECTION

C51 REPAIRING/ RENOVATING/ CONSERVING TIMBER**GENERAL****110 INSPECTION**

- Purpose: To confirm nature and extent of repair/ renovation/ conservation work shown on drawings and described in survey reports and schedule of work.
- Parties involved:
 - Conservation Architect/ Contract administrator;
 - Contractor's representative;
 - Foreman carpenter;
 - Structural engineer (as required).
- Timing: At least five days before starting each section of work.
- Instructions issued during inspection: Confirm in writing, with drawings and schedules as required, before commencing work

135 OPENING UP

- Purpose: To reveal previously concealed areas of structure or fabric not recorded during initial surveys.
- Extent: To be agreed.
- Timing: Give notice before starting opening up.
 - Period of notice: At least two working days.
- Retained building structure/ fabric: Do not damage or destabilise. Seek instruction from the Structural Engineer for stabilisation requirements of a particular element.

150 TIMBER PROCUREMENT

- Timber (including timber for wood-based products): Obtained from well managed forests and/ or plantations in accordance with:
 - The laws governing forest management in the producer country or countries.
 - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
 - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
 - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood-based products.
- Certification scheme: UK Timber Procurement Policy Category A evidence certification scheme.
- Other evidence: None.

160 TIMBER SUPPLIER

- Supplier: Submit proposals for approval.

PRODUCTS**360 SOFTWOOD FOR JOINERY REPAIRS - GENERALLY**

- Species: Softwood generally to be of normal carcassing quality Scandinavian Redwood or Whitewood of fifth quality or equivalent. Free from all drying defects, evidence of insect or fungal attack, twist, rap or indication of shrinkage.
- Quality: Generally to BS EN 942:2007; free from decay and insect attack (except pinhole borers).
- Appearance class: Class J10.
- Treatment: To section Z12 and Wood Protection Association Commodity Specification C8.
- Moisture content on delivery: 13-19%.

370 HARDWOOD FOR JOINERY REPAIRS - GENERALLY

- Species: oak to match the existing as follows:
 - From winter felled oak.
 - Free of heart defects and sapwood unless otherwise agreed.
 - Fine sawn generally but planed for internal work where necessary to match existing.
- Quality: Generally to BS EN 942:2007; free from decay and insect attack (except pinhole borers).
- Appearance class: Class J10.
- Treatment: To section Z12 and Wood Protection Association Commodity Specification C8.
- Moisture content on delivery: 13-19%.

470 NAILS FOR GENERAL USE

- Standard: As section Z20.
- Type: Round wire nails to BS 1202-1:2002, not less than twice the thickness of the material to be fixed or greater than the total thickness of the sections being joined less 5mm.
- Material: Steel.
- Finish as delivered: Sheradized.

480 SCREWS FOR GENERAL USE

- Standard: As section Z20.
- Material: To BS 1210, not less than twice the thickness of the material to be fixed or greater than the total thickness of the sections being joined less 5mm.
- Finish as delivered: Sheradized.

EXECUTION

600 WORKMANSHIP

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

610 TEMPORARY SUPPORTS/ PROPPING

- General: Provide adequate temporary support at each stage of repair work to prevent damage, overstressing or uncontrolled collapse of any part of the structure.
- Bearing for temporary supports/ propping: Suitable to carry loads throughout repair operations.

620 PROTECTION OF TIMBER AND WOOD COMPONENTS BEFORE AND DURING INSTALLATION

- Storage: Keep dry, under cover, clear of the ground and good ventilation. Support sections/ components on regularly spaced, level bearers on a dry, firm base.
- Handling: Do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.

650 DIMENSIONS GENERALLY

- Site dimensions: Take as necessary before starting fabrication.
- Discrepancies with drawings: Report without delay and obtain instructions before proceeding.

- 660 CROSS SECTION DIMENSIONS OF STRUCTURAL SOFTWOOD AND HARDWOOD
- Dimensions: Dimensions in this specification and shown on drawings are target sizes as defined in BS EN 336:2013.
 - Tolerances: The tolerance indicators (T1) and (t2) specify the maximum permitted deviations from target sizes as stated in BS EN 336:2013:
 - Tolerance class 1 (T1) for sawn surfaces.
 - Tolerance class 2 (T2) for further processed surfaces.
- 670 CROSS SECTION DIMENSIONS OF NON-STRUCTURAL HARDWOOD
- Dimensions: Dimensions in this specification and shown on drawings are finished sizes.
 - Maximum permitted deviations from finished sizes: As stated in BS EN 1313-2:1999:
 - Clause 6 for saen sections.
 - Clause NA.3 for further processed sections.
- 680 WARPING OF TIMBER
- Bow, spring, twist and cup: Not greater than the limits set down in BS 4978:2007+A2:2017 or BS EN 14081-1:2016 for softwood, or BS 5756:2007+A2:2017 for hardwood.
- 690 PROCESSING TREATED TIMBER
- Cutting and machining: carry out as much as possible before treatment.
 - Extensively processed timber: Retreat timber sawn lengthways, thickened, planed, ploughed, etc.
 - Surfaces exposed by minor cutting and/ or drilling: Treat with two flood coats of a solution recommended by main traetment solution manufacturer.
- 720 TEMPORARY REMOVAL AND REINSTATEMENT OF FITTINGS/ FIXTURES
- Items to be removed and reinstated on completion of repair work:
 - Identification: Attach labels or otherwise mark items using durable, non-permanent means, to identify location and refixing instructions, where applicable.
 - Treatment following removal: Refurbish and repair as agreed with the Architect.
 - Storage: Protect against damage, and store until required.
 - Storage location: On site.
 - Reinstatement: Refit in original locations using original installation methods.
 - Items unsuitable or not required for reuse: Obtain instructions regarding disposal.
- 750 CLEANING DIRTY OR STAINED WOOD
- Generally: Scrub with neutral pH soap and clean, warm water.
 - Old varnish: Remove using mixture of turpentine (not turpentine substitute) and acetone in proportions determined by experiment, followed by washing down.
- 760 REPAIR OF MEMBERS – CUTTING OUT MEMBERS
- Extent of timber removal: Cut out full cross section of member where wood is defective or decayed, plus 100mm of sound wood.
 - Distance from face of support to cut end of existing timber: Obtain instructions if dimension exceeds 300mm.
 - Joint profile: Plain scarf joint at 1 in 12 to grain with single 25mm step.
- 860 MOISTURE CONTENT CHECKING
- Procedure: Check moisture content of timber sections with an approved electrical moisture meter.
 - Test results: Keep records of all tests. If moisture content falls outside specified range obtain instructions.

COMPLETION

- 910 MECHANICALLY FASTENED JOINTS
- General: Insepect accessible bolted, coach screwed and timber pegged joints and tighten fasteners if necessary.
 - Timing: On completion and at end of Defects Liability Period or Rectification Period.

END OF WORKS SECTION

F20 NATURAL STONE RUBBLE WALLING

To be read with Preliminaries/General conditions.

TYPE(S) OF WALLING

- 110 INTERNAL COURSED FOREST OF DEAN RANDOM RUBBLE STONE WALLING:
- Drawing reference(s): As Architect's drawings.
 - Stone: To BS EN 771-6.
 - Petrological family: Forest of Dean Pennant sandstone to match the existing.
 - Quality: Thoroughly seasoned and free from cracks, vents, fissures or other defects which may adversely affect appearance, strength or durability. Range of sizes to be agreed.
 - Sample: As clause 240. Stone samples to be provided for CA approval prior to commencement of work.
Supplier: Birch Hill Quarry, Fetter Hill, Parkend, Nr. Coleford, Forest of Dean, Gloucestershire, GL16 7LU. Tel: 01594 372023. Email: enquiries@stonequarries.co.uk.
Website: www.birchhillpennantquarry.co.uk.
 - Mortar: As section Z21.
Sand: Graded crushed stone, colour matched to approval as Z21.
Mix: As section Z21.
 - Joints: Flush and finished as clause 390, and to match the existing.
 - Inspection: All stones from the quarry are to be individually inspected by the stonemason. Any found to contain soft clay beds (which can be raked out with a sharp point) are to be rejected. Any stone found to be installed with clay beds apparent will be rejected and will have to be re-worked and re-fixed.
 - Other requirements: Allowance is to be made for all joggle joints, dowels, cramps and fixings necessary for the adequate and safe securing of stonework, in accordance with good masonry practice. The position of all fixings are to be agreed with the Architect and all fixings are to be in grade 316 stainless steel. The appointed stonemasonry contractor must be proficient in Forest of Dean Pennant sandstone masonry *and* conservation work.

GENERAL REQUIREMENTS

- 220 ADVANCE REGISTRATION: Obtain stone registered in advance by the Employer from the supplier(s) specified above. Supersede the Employer's registration and take over responsibility by an order to the supplier covering price, supply and delivery to suit the progress of the work.
- 230 OPERATIVES: Cutting, dressing, laying and jointing of stone to be carried out by skilled masons. Provide evidence of previous experience and details of work previously carried out.
- 240 APPEARANCE: Make arrangements for the CA to inspect samples of dressed stone which represent the range of variation in appearance. Obtain approval of appearance before placing orders with suppliers or proceeding with production.

LAYING AND JOINTING

- 305 PROTECTION:
- Store stone clear of the ground, protect from inclement weather and keep dry. Prevent soiling, chipping and contamination by salts and other deleterious substances.
 - Prevent timber bearers, protective boards, etc. from staining facings in wet conditions by wrapping with polyethylene.
 - Prevent damage and disfigurement to stonework during the course of the works. Ensure that arrises and projecting features are protected using securely fixed slats, boards, etc. Remove at Practical Completion.
- 315 ADVERSE WEATHER:

- Do not use frozen materials and do not lay on frozen surfaces.
- Do not lay stones when air temperature is at or below 3 degC. unless mortar has a minimum temperature of 4 degC when laid and walling is protected.
- Maintain temperature of the work above freezing until mortar has fully set.
- Adequately protect newly erected walling against rain and snow by covering when precipitation occurs and at the completion of each days work.
- Rake out and replace mortar damaged by frost and where instructed, rebuild damaged work.

325 LAYING:

- Lay stones on their natural bed on a full even bed of mortar with all joints filled and between 12-18 mm wide. Evenly distribute different shapes, sizes and colours throughout the face of the wall to give a consistent overall appearance and good bond with no long continuous vertical joints.
- Accurately plumb all wall faces, angles and features. Set out carefully to ensure satisfactory junctions and joints with adjoining or built-in elements and components.
- Keep stonework clean during construction and until Practical Completion. Ensure that no mortar encroaches on face when laying. Turn back scaffolding boards at night and during heavy rain. Rubbing to remove marks or stains will not be permitted.

334 HEIGHT OF LIFTS: Carry up work with no portion more than 1.2 m above another at any time, racking back between levels. Do not carry up work higher than 1.5 m in one day.

340 PUTLOG SCAFFOLDING will not be permitted.

370 BONDERS: In walls which are faced both sides build in bonding stones of a length two thirds the thickness of the wall, one to every square metre of each side of the wall and staggered.

380 COURSED WORK: Keep courses true to line and level.

390 JOINTING: Finish exposed joints neatly and consistently as the work proceeds. After the initial set has taken place, stipple joints with a stiff brush to remove laitance and give a coarse texture.

410 SUPPORT OF EXISTING WORK: Where walling is to support existing structure, completely fill top joint with semidry mortar, hard packed and well rammed to ensure full load transfer after removal of temporary supports.

END OF WORKS SECTION

F21 NATURAL STONE ASHLAR WALLING/DRESSINGS

To be read with Preliminaries/General conditions.

TYPE(S) OF WALLING/DRESSINGS**110 FOREST OF DEAN PENNNANT SANDSTONE ASHLAR**

- Stone: To BS EN 771-6.
- Petrological family: Forest of Dean Pennant sandstone to match the existing.
- Quality: Thoroughly seasoned, free from vents, cracks, fissures, discolouration, or other defects which may adversely affect strength, durability or appearance. To be dressed and worked before delivery to site and all stones to be individually inspected and selected by the stone mason.
Finish: Hand tooled and dragged to match the existing stone. Visible saw marks will not be acceptable. A swan six sides sample stone approximately 300 x 200 x 300mm is to be provided for agreement with the Architect, prior to the commencement of work.
Supplier: Birch Hill Quarry, Fetter Hill, Park End, Coleford GL16 7LU
Tel: 01386 584384. Email: enquiries@stonequarries.co.uk. Website: www.birchhillpennantquarry.co.uk.
- Mortar: As section Z21.
- Joints: Flush, approximately 3-5mm wide and to match the existing.
- Inspection: All stones from the quarry are to be individually inspected by the stonemason. Any found to contain soft clay beds (which can be raked out with a sharp point) are to be rejected. Any stone found to be installed with clay beds apparent will be rejected and will have to be re-worked and re-fixed.
- Other requirements: Allowance is to be made for all joggle joints, dowels, cramps and fixings necessary for the adequate and safe securing of the stonework, in accordance with good masonry practice. The position of all fixings are to be agreed with the Architect and all fixings are to be in grade 316 stainless steel. The appointed stonemasonry contractor must be proficient in Forest of Dean Pennant sandstone masonry *and* conservation work.

GENERAL REQUIREMENTS/PRODUCTION

- 230 OPERATIVES: Cutting, dressing, laying and jointing of stone to be carried out by skilled masons. Provide evidence of previous experience and details of work previously carried out.
- 240 APPEARANCE OF STONE: Make arrangements for the CA to inspect samples of dressed stone which represent the range of variation in appearance. Obtain approval of appearance before placing orders with suppliers or proceeding with production.
- 250 PRODUCTION: Stone to be cut and dressed:
- After seasoning but before delivery to site, including shaping, finish(es) and all sinkings for fixing and lifting devices.
 - So that exposed and joint surfaces are square, true planes free from hollow or rough areas.
 - With minimal deviation from specified dimensions to ensure that specified joint widths are maintained.
 - So that natural bed is horizontal in plain walling, vertical and at right angles to wall face in projecting stones and at right angles to line of thrust in arches.
- 260 IDENTIFICATION: Mark each block/dressing clearly to indicate the natural bed and position in the finished work.
- 270 INSPECTION OF STONE: All completed blocks/dressings must be carefully inspected and checked by the stone producer for match with approved sample(s) and compliance with drawings and specification before despatch to site. Inform the CA at appropriate stages in production so that he may inspect blocks/dressings before delivery to site. All laid stones are to be recorded by photographs and elevational drawings, and to be submitted in the O&M manual as clause 280.

280 RECORDING:

All removed stones are to be photographed straight-on and clearly labelled before dismantling. All new stone sections are to be similarly photographed and labelled for recording.

LAYING AND JOINTING

305 PROTECTION:

- Store dressed stone clear of the ground, separate with resilient spacers, protect from inclement weather and keep dry. Prevent soiling, chipping and contamination by salts and other deleterious substances.
- Prevent timber bearers, protective boards, etc. from staining facings in wet conditions by wrapping with polyethylene.
- Prevent damage and disfigurement to stonework during the course of the works. Ensure that arrises and projecting features are protected using securely fixed slats, boards, etc. Remove at Practical Completion.

315 ADVERSE WEATHER:

- Do not use frozen materials and do not lay on frozen surfaces.
- Do not lay blocks/dressings when air temperature is at or below 3 deg C unless mortar has a minimum temperature of 4 deg C when laid and walling is protected.
- Maintain temperature of the work above freezing until mortar has fully set.
- Adequately protect newly erected walling against rain and snow by covering when precipitation occurs and at the completion of each days work.
- Rake out and replace mortar damaged by frost and where instructed, rebuild damaged work.

325 LAYING:

- Dampen stones and lay on a full even bed of mortar with all joints filled. Use temporary lead or stainless steel distance pieces to ensure consistent joint width; remove when mortar is sufficiently strong.
- Keep courses level and in line, and accurately plumb all wall faces, angles and features. Set out carefully to ensure satisfactory junctions and joints with adjoining or built-in elements and components.
- Keep stonework clean during construction and until Practical Completion. Ensure that no mortar encroaches on face when laying. Turn back scaffolding boards at night and during heavy rain. Rubbing to remove marks or stains will not be permitted.

370 JOGGLE JOINTS: Fill with 1:3 lime:sand mortar and tamp to expel air.

375 CRAMPS: To be grade 316 stainless steel. Cramp cavities are to be filled flush with mortar repair as section C41.

380 JOINTING: Finish exposed joints neatly as the work proceeds.

390 POINTING: Carefully rake out exposed joints to a depth of 7-10 mm as work proceeds, then dust, lightly wet and neatly point in a continuous operation working from the top of the wall downwards.

420 REPAIRS to damaged components must not be undertaken without approval. Such approval will not be given where components are badly damaged or where the proposed repair will impair appearance or performance.

END OF WORKS SECTION

H62 NATURAL SLATING

To be read with Preliminaries/General conditions.

TYPE(S) OF SLATING

- 110 ROOF SLATING: To the main roof areas.
- Base: New battens and underlay over existing rafters.
Pitch: 30 degrees.
 - Underlay: To BS 5250 and BS 5534.
Supplier: Permavent Ltd., 11 Cumberland Drive, Granby Industrial Estate, Weymouth, Dorset DT4 9TB. Tel: 01305 766703. Email: enquiries@permavent.co.uk. Website: www.permavent.co.uk.
Product reference: Permavent Dry+
Lay as clause 240, directly over the rafters.
Minimum horizontal lap: 150 mm for a non-fully supported roof and as the manufacturer's fitting instructions.
 - Battens: As clause 245, size 50 x 25mm.
Fixing: As clause 265, using sherardised ring shank nails to BS 1202-2:2002.
 - Slates: To BS EN 12326-1:2014 and produced by a company with ISO 9001:2015 accreditation and BS Kitemark.
Supplier: Welsh Slate, Penrhyn Quarry, Bethesda, Bangor, Gwynedd, LL57 4YG. Tel: 01248 600656. Email: sales@welshslate.com. Website: www.welshslate.com.
Reference: Welsh Penrhyn Heather Blue
Type: Penrhyn County.
Grade: 7mm nominal thickness.
Size: 600 x 300 mm (24" x 12") subject to availability.
Fixing: As clause 275.
Minimum headlap: 100 mm.
 - Other requirements: **Before commencing, allow for samples of Welsh Slate to be delivered to site for comparison with existing slates and details to be agreed with the Architect.** Slates are to be sorted and stored for reuse for final inspection by the Architect. The slates are to be stripped early on to determine their condition prior to new slates being ordered if required and where new slates will have a long lead-in period. **The Contractor should allow for ordering new slates as part of their tender submission.** Working from the top down, the existing slates are to be carefully de-nailed using hand tools to free them and taking care not to damage them. The slates are to be stored on the scaffolding at roof level to avoid double-handling and to reduce the risk of damage. The scaffolding will need to be designed to accommodate the additional weight and quantities of slates being stored. Slates are to be inspected for damage, including cracking, mineral staining, delamination, moss and lichen growth, and sagging to identify and potential issues before carefully being stored and staked on the scaffolding. Slates should be stacked to a safe height to avoid instability and reduce the risk of toppling or damage. A sensible height for stacking is recommended. For the large quantities of slates, they must be stacked vertically on their edges as they are packaged to avoid their breakage. Protective measures will be used in their storage to prevent the risk of further damage when stacking. Polystyrene sheets will be used under the slate stacks to protect exposed edges etc.

SLATING GENERALLY

- 210 BASIC WORKMANSHIP:
- Slating works to be undertaken in accordance with BS 5534:2014 (code of practice for slating and tiling for pitched roof and vertical cladding) & BS 8000-6:2003 (code of practice for workmanship on construction sites – slating and tiling of roofs and walls)
 - Keep slates clean and dry until laid.
 - Slates are to be sorted into 3 or 4 sub-grades of thickness to provide an even overall appearance.

- Set out to give true lines and regular appearance, fitting neatly at all edges, junctions and features.
 - Fix slate roofing to make the whole sound and weathertight at the earliest opportunity.
 - Repair any defects as quickly as practicable to minimise damage and nuisance.
 - Keep gutters and pipes free of debris and clean out at completion.
 - Adjacent slates should be laid in equal thicknesses.
 - Slates should be holed with a holing machine from the underside to the specified minimum gauge from the tail and 25mm from each side. Welsh slate can supply slates pre-holed, but the Contractor is to take responsibility for this.
 - Slates should be laid with tails aligned and in courses of equal thickness, thickest at eave and thinnest at ridge. All delivered slates are to be sorted and graded on site.
 - Verge slates are to be slate-and-a-half wide (contact architect if not available).
 - Slates should be laid with vertical gaps of approximately 5mm placed centrally over the slate below. A 75mm sidelap should be maintained.
 - Use slate-and-a-half slates where cut at gable abutments.
- 220 EXISTING NATURAL SLATE
- All existing broken slates are to be disposed of in accordance with the Site Waste Management Plan.
 - Salvageable slates are to be reused following an instruction from the Architect. If insufficient quantities exist, slates are to be sorted, crated and removed from site with the client credited for the salvage value of the slate as negotiated.
- 225 SUITABILITY OF STRUCTURE/BASE: Before commencement of slating, survey supporting structure/ base, checking line, level and fixing points. Report immediately to the CA if the structure/base is unsuitable to receive slating.
- 245 BATTENS:
- All existing battens and bituminous felt underlay are to be removed and replaced to allow protective underlay to be laid to avoid rain ingress during re-slating.
 - 50x25mm sawn softwood species type A or B to BS 5534:2014+A2:2018. Permissible characteristics and defects must not exceed the limits given in BS 5534:2014+A2:2018. Generally battens are to be free from any splits and shakes, wain permissible on one arris only to be no more than one third of any sound surface occupancy
 - Preservative treatment: CCA vacuum pressure or organic solvent double vacuum as section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C8.
- 265 BATTEN FIXING:
- In straight horizontal lines, aligned on adjacent areas, with no batten less than 1200mm long.
 - The batten gauge is to be calculated in accordance with the slate suppliers guidelines for the headlap as specified.
 - Joints to be square cut, butted centrally on supports and must not occur more than once in any group of four battens on any one support.
 - Provide an additional batten where an unsupported lap in the underlay occurs between battens.
 - Fix each batten to each support, with splay fixings at joints.
- 275 SLATE FIXING:
- Lay with an even overall appearance, with slightly open butt joints and tails of slates aligned.
 - Use slates of consistent thickness in any one course laid with thicker end as tail.
 - Do not use slates or cut slates less than 150 mm wide.
 - Centre fix each slate through countersunk holes 20-25 mm from side edges, with two copper nails to BS 1202-1:2002, of 3.35 mm shank diameter and length to provide adequate withdrawal resistance and not less than 18 mm penetration into batten (38mm nominal length).

290 MORTAR BEDDING/POINTING:

- Mortar: As section Z21, 1:3 lime:sand, using Natural Hydraulic Lime (NHL 3.5). Bond strength to provide resistance to uplift must be to BS 5534:2014+A2:2018.
- Do not use in wet or frosty weather or when imminent.
- Concrete and clay tile accessories to be bedded must be wetted and surface water allowed to drain before fixing.
- Finish neatly as work proceeds and remove any residue.

ROOF SLATING EDGES/JUNCTIONS/FEATURES

305 GENERALLY:

- Form details using the specified fittings and accessories; do not improvise without approval.
- Cut slates only where necessary, with an appropriate tool, to give neat, close fitting joints and straight, clean edges.
- Fix edge slates and fittings securely to neat, true lines.
- Ensure that all flashings and soakers (see specification for lead sheet coverings and slashing as section H71) are fixed with or immediately after the slating, and are neatly dressed down.

365 EAVES:

- Dress underlay or underlay carrier down into gutter.
- Fix slates with tails projecting 50 mm over lead upstand.
- Eaves ventilator: Continuous eaves ventilator to provide 25mm clear airgap equivalent. Supplier: Nicholson Aitrack, Unit 13 Wireless Station Park, Chestnut Lane, Bassingbourn SG8 5JH. Tel: 01763 295828. Email: info@nicholsonsts.com. Website: www.nicholsonsts.com. Product Reference: Aitrack LB30-E (Grade 316 stainless steel) Layboard Ventilator for slated roofs from pitch 30-44 degrees.
- The ventilator should be installed in a straight line which remains parallel to the slating battens. Any deviation will cause the slates or tiles to sit unevenly. The ventilator can be mitred at corners and trimmed to length with a large pair of tin snips. The LB30 should be covered with a code 5 lead flashing as section H71, which is nailed to the batten and welted around the bottom edge of the ventilator. It is important that the minimum lap dimension is achieved. The roofing membrane should be routed over the ventilator before the slating is commenced. Some support for the roofing membrane may be required to prevent back fall and ponding occurring. Ensure that a minimum of 25mm airflow is achieved throughout the detail. Ideally for slating, the use of a sprocket on the rafters for the lowest three battens will avoid the slates being unsupported and will render them less susceptible to damage. As a guide, the sprocket will go from 25mm to 0mm over this distance, but site conditions will dictate the actual measurements.

740 MORTAR BEDDED TILE RIDGE:

- Lay top course of underlay from one side of ridge over apex to overlap top course of underlay at other side by not less than 150 mm.
- Finish slating with head-nailed short course to maintain headlap.
- Ridge tiles: Capped angle interlocking ridge as existing to be set aside, lightly cleaned and reused. Make weathertight with edges continuously bedded and joints solidly bedded in mortar as clause 290.
- Where rigid masonry walls support or abut ridge, all ridge tiles within 900 mm of such walls must be mechanically secured. Fix to supplementary ridge tile fixing batten with nails/wire ties or screws recommended by tile manufacturer.
- Ridge terminals: Continuous ridge ventilator to provide 5mm clear airgap on both sides. Supplier: Nicholson Aitrack, Unit 13 Wireless Station Park, Chestnut Lane, Bassingbourn SG8 5JH. Tel: 01763 295828. Email: info@nicholsonsts.com. Website: www.nicholsonsts.com. Product Reference: Aitrack RTV Ridge Tile Ventilator for slated roof pitches 25 degrees and over.
- Fill ends of ridges at gables with mortar and slips of tile finished flush.

CLEANING VOIDS

- 980 All accessible voids above boarding in the roof exposed by re-slating are to be thoroughly cleaned of debris before commencing work.

END OF WORKS SECTION

H71 LEAD SHEET COVERINGS/FLASHINGS

To be read with Preliminaries/General conditions.

TYPE(S) OF LEADWORK**210 LEAD GUTTER LINING: PARAPET GUTTERS**

- Drawing reference(s): As the Architect's drawings.
- Base: SW boarding as clauses 635 and 640 below.
- Underlay: Do not use – lead to be chalked to the underside.
- Pretreatment: Apply chalk slurry coat to underside of lead and allow to dry before laying, followed by chalk paste coat after bossing but before final fixing.
- Type of lead: Milled lead to BS EN 12588:2006 and as clause 550, code 8.
- Thickness: 3.55mm (Code 8).
- Longitudinal joints: Not required.
- Cross joints: At step joints using drips without splash lap as clause 790.
- Spacing: As the Architect's drawings but not greater than 3m.
- Outlet(s): Catchpit with chute outlet through the parapet into new hopper heads.
- Existing outlets to be reinstated and to be re-leaded.

230 LEAD WEATHERING TO FIRST FLOOR WINDOWS

- Drawing reference(s): As Architect's drawings.
- Base: Masonry background as existing.
- Underlay: Class A Building Paper to BS 1521:1972 where the existing stone surface is smooth.
- Type of lead: Milled lead as BS EN 12588:2006 and clause 550, code 6.
- Joints: welted end-to-end joints and to incorporate 50mm wide stainless-steel fixing clips at 200mm max. centres.
- Upstand: Turned up against the wall by not less than 75mm and to receive a separate cover flashing as clause 320.
- Spacing: Lengths should not exceed 1500mm between laps.
- Edge details: Welt and clipped to front edges.
- Fixing: Continuous clip to front edge as clause 725.
- Other requirements: Weathering to extend below new leaded glazed lights to provide a continuous ventilation gap of 10mm between the top of the lead and bottom of the window panel, and to be secured to a hardwood timber block fixed to the masonry cill.
- Lead weatherings to be installed prior to the installation of the new leaded window panels.

320 COVER FLASHINGS

- Drawing reference(s): As the Architect's drawings.
- Lead: Code 6 milled lead as BS EN 12588:2006.
- Lengths: Not more than 1500mm.
- End to end joints: Laps of not less than 100mm.
- Cover: Overlap to upstand of not less than 75 mm.
- Fixing: Clips fixed at each lap and at 500mm centres and as clause 720.

345 ABUTMENT FLASHINGS WITH A SECRET GUTTER: ROOF GABLE ABUTMENTS

- Drawing reference(s): As the Architect's drawings.
- Abutment flashings:
 - Lead: Code 6 milled lead as BS EN 12588:2006 in lengths not exceeding 1500mm.
 - End to end joints: Laps of not less than 100 mm.
 - Cover: Overlap to gutter lining upstand of not less than 65 mm from top of the slate finishes.
 - Fixing: Lead wedges at every course.
- Secret gutter lining:
 - Lead: Code 6 milled lead as BS EN 12588:2006 in lengths not exceeding 1500mm.
 - End to end joints: Laps of not less than 150mm for roof pitch of 30 degrees.
 - Upstand: Not less than 65 mm above roof slates.

Fixing: Dress into secret gutter and form a welted edge at side to be tiled. Nail top edge of each sheet. Dress bottom end neatly into gutter.

GENERAL REQUIREMENTS/PREPARATORY WORK

510 WORKMANSHIP GENERALLY:

- Standard: To BS 6915:2001+A1:2014 and latest edition of 'Rolled Lead Sheet - The Complete Manual' published by the Lead Sheet Association.
- Fabrication and fixing: To provide a secure, free draining and completely weathertight installation. All details are to be in compliance with the Lead Sheet Association's technical guidance.
- Operatives: Trained in the application of lead coverings/ flashings. Contractor to submit records of experience on request.
- Performing: Measure, mark, cut and form lead prior to assembly wherever possible.
- Marking out: With pencil, chalk or crayon. Do not use scribes or other sharp instruments without approval.
- Bossing and forming: Straight and regular bends, leaving sheets free from ripples, kinks, buckling and cracks.
- Solder: Use only where specified.
- Sharp metal edges: Fold under or remove as work proceeds.
- Finished work: Fully supported, adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress.
- Protection: Prevent staining, discolouration and damage by subsequent works.

515 INSITU LEADWELDING: will not be permitted. Leadwelding is to be undertaken to bays on the scaffold and left to cool prior to fixing, to avoid any insitu lead welding.

- **In-situ leadwelding: If there is absolutely no other way of working, insitu welding is only permitted subject to completion of a 'hot work permit' form and compliance with its requirements, and prior notification to the architect by email to oliver@dhva.co.uk. Hot work is only to be undertaken before noon and is to be inspected regularly until 4.30pm for signs of smouldering or fire beneath.**

520 LEAD SHEET

- Production method: Milled lead to BS EN 12588:2006, free from bitumen, solder, other impurities, inclusions, laminations, cracks, air, pinholes and blowholes to code thickness but with a tolerance (by weight) of $\pm 10\%$.
- Identification: Labelled to show thickness/ code, weight and type.

530 LAYOUT: Agree setting out of joints, drips, and laps with the CA before beginning work.

560 EXISTING LEAD TO BE RETAINED: Thoroughly clean by washing with a detergent solution using a stiff brush. If necessary, use a 5% nitric acid solution to remove stubborn deposits. Ensure that the runoff does not have an adverse effect on other materials.

570 EXISTING LEAD TO BE REMOVED will become the property of the Contractor. The scrap value of such lead must be estimated by the Contractor, itemised separately in the tender, and set against the tender sum.

580 REPLACEMENT OF EXISTING LEAD must be carried out in small sections at a time to reduce the risk of weather damage to a minimum. Provide and maintain temporary waterproof coverings to ensure that there is no damage to the existing base and building.

610 SUITABILITY OF BASES:

- Bases to be dry and free of dust, debris, grease and other deleterious matter.
- Laying of lead will be taken as joint acceptance by the Main Contractor and Subcontractor of the suitability of bases.
- Existing plywood bases to be removed and replaced with new boards as clauses 635 and 640.

620 PREPARATION OF EXISTING TIMBER BASES: Inform CA of any defective boards and comply with instructions for replacement. Ensure that all boards are securely fixed. Punch in any protruding fastenings and plane or sand as necessary to achieve an even surface.

635 SUBSTRATES

- Well seasoned softwood (Scandinavian Redwood, SC3 grade and to BS 4978:2007+A2:2017, deal or pine) treated with preservative as per Specification for Preservative Treatment (Section Z12).
- Gutter boards to be ex 150 x 32mm. Boards, firrings and gutter bearers are to be treated as per the Specification for Preservative Treatment (Clause Z12) and are to be secured with copper clout nails only. Gutter finished fall to be 1:80 absolute minimum, and 1:50 where achievable.

640 TIMBER FOR USE WITH LEADWORK:

- New boarded bases: ex 250 x 32mm, sawn not planed, free from wane, pitch pockets, decay and insect attack except pinhole borers and laid with 'penny gap' butt joints
- All projecting nails to be driven well home and edges and irregularities planed off to provide a continuous supporting surface.
- Moisture content: Not more than 16% at time of covering.
- Acidity content: Timber to have average pH value of more than 5.5 (white softwood such as Baltic white wood or European Whitewood generally conforms to this requirement). Check white softwood boarding for acidity. Arrange for initial pH tests of samples drilled from each batch of timber in 6 separate locations. Pass results to architect prior to delivery to site. Contact Lead Sheet Association for suitable laboratory references.
- Preservative treatment: OS Double Vacuum section Z12 and BWPA Commodity Specification C8.
- Fixing: With 25mm annular ringed shank copper or stainless-steel nails, at 300mm grid centres over the area of each sheet and at 150mm centres along edges, set in 10mm from perimeter edges.
- Nail heads: Set flush or just below the surface.

FIXING/JOINTING LEAD

710 HEAD FIXING LEAD SHEET:

- Where not specified otherwise, secure top edge of lead sheets with two rows of fixings, 25 mm and 50 mm from top edge of sheet, at 75 mm centres in each row, evenly spaced and staggered.
- Sheets less than 500 mm deep may be secured with one row of fixings, 25 mm from top edge of sheet and evenly spaced at 50 mm centres.

715 FIXINGS:

- Where not specified otherwise, fix lead sheet to timber substrates with: Copper clout nails to BS 1202-1:2002, with annular ring, helical ring or serrated shank, length not less than 20 mm, shank diameter not less than 3.35 mm and head diameter not less than 8 mm, or Stainless steel (austenitic) clout nails with annular ring, helical ring or serrated shank, length not less than 20 mm or equal to substrate thickness and shank diameter not less than 2.65 mm or 3.35mm for heavy duty.
- Where not specified otherwise, fix lead sheet to concrete or masonry substrates with:

Brass or stainless steel screws, length not less than 19 mm and diameter not less than 3.35 mm, with washers of the same material and plastics plugs of length and diameter to suit screws.

720 CLIPS:

- Material: Lead or copper.
- Lead clips to be 75-100mm in width on sheet edge.
- Copper clips:
Thickness: 0.6mm.
Temper: BS EN 1172:2011, designation R220 in welts, seams and rolls, R240 elsewhere, dipped in solder if exposed to view.
- Dimensions:
Width: 50mm where not continuous.
Length: to suit detail.
- Fixing clips: Secure each to substrate with either two screws or three nail fixings not more than 50mm from edge of lead sheet. Use additional fixings where lead downstands exceed 75mm.
- Fixing lead sheet: welt clips around edges and turn over 25 mm.

725 CONTINUOUS CLIPS:

- Width to suit detail.
- Stainless steel continuous clips to be cut from 0.7mm (1mm for very exposed locations) thick sheet to BS 1449-1.1:1991, grade 304. Clips to be a minimum of 75mm wide.
- Unless specified otherwise fix at 100mm centres. Welt edge of lead sheet around continuous clip and dress down.

770 WELTED JOINTS:

- Form with a 50 mm overlap, 25 mm underlap and copper or stainless-steel clips as clause 720 at not more than 450 mm centres.
- Welt overlap and clips around underlap, loosely turn over and lightly dress down.

790 DRIPS WITHOUT SPLASH LAPS:

- Dress underlap into rebate along top edge of drip and fix with one row of nails at 50 mm centres on centre line of rebate.
- Dress overlap over drip to just short of lower level.

820 WEDGE FIXING INTO JOINTS/CHASES:

- Carefully rake out joint/chase to a depth of not less than 25 mm.
- Dress lead into joint/chase and fix with lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead.
- Prepare joint/chase and apply sealant as section Z22.
Sealant: Low-modulus silicone sealant as recommended by the Lead Sheet Association and to the Contractor's choice.

880 PATINATION OIL

- Manufacturer: Contractor's Choice
Product reference: Contractor's choice.
- Location: On all exposed lead surfaces.
- As soon as practical, apply a smear coating of patination oil, evenly in one direction and in dry conditions. Oil to be applied no later than the end of the day's work. Apply to all visible areas and between laps.

END OF WORKS SECTION

K20 TIMBER BOARD FLOORING/SARKING/LININGS/CASINGS

To be read with Preliminaries/General conditions.

TYPE(S) OF FLOORING/SARKING/LINING/CASING

- 110 TIMBER BOARD FLOORING: To the First Floor Bell Ringing Chamber
- Base: 170 x 50mm timber joists at approximately 400mm centres.
 - Boards: To BS EN 942:2007 and BS 1297:1987, except that blue stain, fissures, knot holes and loose or unsound knots will not be permitted on the face side of flooring.
Species: Well-seasoned Elm/pitch pine floorboards with straight edges to match the existing. Allow a provisional sum of £60/linear m for the supply of Oak and Pine to match.
 - Selection: To match the existing.
 - Sample: Provide a representative sample of the boards for approval by the Architect.
Finished face width: 150mm to match the existing.
Finished thickness: 24mm to match the existing.
Moisture content: Notwithstanding BS 1297:1987, clause 6.1, average moisture content at time of fixing to be 9 to 13%.
 - Fixing: As clause 370.
 - Other requirements: Before commencing, allow for existing modern sheet coverings to be carefully removed to allow visual inspection of the existing floorboards where currently inaccessible. Defective boards are to be carefully removed with new sections to be spliced in. Allow for existing floorboards are to be lightly cleaned using turpentine and the delicate use of wire wool and a cabinet scraper. Water should not be used to clean the floor and damp cloths maybe permitted to wipe down existing surfaces prior in preparation of cleaning. Existing boards should be securely fixed and acceptably level. Protruding fasteners should be punched in or made countersunk. Floorboards to be finished as M60.
- 120 TIMBER BOARD FLOORING: To the Second Floor Belfry
- Base: 110 x 80mm existing timber joists at approximately 450-470mm centres.
 - Boards: To be cleaned of guano by specialist sub-contractor with experience of treating and conserving historic timber floors. Repairs to boards as clause 110.

WORKMANSHIP

- 310 WORKMANSHIP GENERALLY:
- Keep boards dry and do not fix to timber supports which have a moisture content greater than 18%.
 - Methods of fixing and fasteners to be as section Z20 unless specified otherwise.
 - Protect boards from dirt, stains and damage using suitable coverings and boards laid as the work proceeds until Practical Completion.
- 320 ENVIRONMENTAL CONDITIONS
- General requirements prior to starting work specified in the section:
Cleaning: Areas to be kept ventilated as necessary with access to the building by specialist cleaners. Ensure that adjoining areas and historic building fabric is protected at all times.
Installing new boards: Building is to be weathertight, wet trades completed affected areas dried out.
 - Temperature and humidity before, during and after installing boards: Maintained at levels approximating to those which will prevail after the building is repaired/ occupied.
- 330 MOISTURE CONTENT OF TIMBER: During delivery, storage, fixing and thereafter to Practical Completion maintain conditions of temperature and humidity to suit specified moisture content(s). When instructed by the CA, test timber with an approved moisture meter to manufacturer's recommendations.

340 TREATED TIMBER

- Surfaces exposed by minor cutting and drilling: Treated with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.

360 ACCESS HATCH IN THE FLOOR AS SECTION L20: Agree size and position with the CA before boards are fixed. The setting out for the hatch is to be based on full-board dimensions to avoid cutting of boards. Provide additional noggings/dwangs, battens, etc. as necessary.

370 FIXING BOARDS:

- Fix each board securely to each support to give flat, true surfaces free from undulations, lipping, splits and protruding fastenings.
- Allow for movement of timber when positioning boards and fastenings to prevent cupping, springing, excessive opening of joints or other defects.
- Heading joints to be tightly butted and positioned centrally over supports, not less than two board widths apart on any one support.
- Neatly punch all exposed nail heads below surface and plane off any proud edges.

380 EXPANSION PROVISION

- Expansion gaps:
Edges of flooring: Parallel to the lie of boards and 1.5-3.0mm per metre width of flooring.
- Ends of flooring: 10mm wide.
- Spacer blocks and debris: removed before fixing skirtings/ cover fillets.
- Intermediate expansion/ movement joints: Formed as recommended by the flooring supplier.

390 FINISHES TO FLOORING

- Exposed fastener heads: Punched or set below surface and to be filled with stopping to match the wood.
- Straps/ Boards: Sanded to give clean, smooth and flush surface free from score marks.
- Finish: As section M60.

END OF WORKS SECTION

L10 WINDOWS/ROOFLIGHTS/SCREENS/LOUVRES

To be read with Preliminaries/General conditions.

PRELIMINARY INFORMATION/REQUIREMENTS**110 EVIDENCE OF PERFORMANCE**

- Certification: Provide independently certified evidence that all specified variants of components comply with specified performance requirements.

120 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items: New window units.

140 CONTROL SAMPLES

- Procedure: Obtain approval of appearance and quality before proceeding with works to the remaining quantity.
- Designed items: As identified within the sections.

COMPONENTS**310 STEEL WINDOWS: WGF.01 and WGF.03**

- Drawing reference(s): 1398 (50)01
- Manufacturer: Contractor Design and to submit proposals for fixed light windows.
- Reference: Mild steel window sections.
- Mild steel: To BS EN 10025-2 and cold straightened. Manufactured in accordance with BS 6510.
- Weathertightness: To BS 6375-1:2015+A1:2016.
Exposure category (Design wind pressure): 2000 (Pa).
Air Permeability: Class 4.
Water Tightness: 300 Pa
Wind Resistance: Class A5.
- Construction: All frames have welded corners and are flat and square within normal manufacturing dimensional tolerances of +/- 2mm.
- Galvanising:
Hot dip galvanising: All frames and ancillary profiles (steel attachments, coupling members and ancillaries) shall be positively rustproofed by hot-dipped galvanising after manufacture to BS EN ISO 1461.
- Glazing details: As Contractor design.
Thermal insulation: 1.4 W/m²K.
- Weatherstripping: Dual Weather-stripping: External and Internal black EPDM self-adhesive weather/air seals.
- Finish as delivered: Steel Age finish in Aged Bronze Stipple by Bradleys Metal Finishes: 49 Knightsdale road, Ipswich, Suffolk, IP1 4JJ. Tel: 01473 461400. Email: mail@bradleys-uk.com. Process: Coating will be undertaken by specialist coat applicator.
- Sealants: Joint surfaces are to be clean, grease and dust free and prepared in accordance with the sealant manufacturers recommendations.

INSTALLATION**710 PROTECTION OF COMPONENTS**

- General: Do not deliver to site components which cannot be put immediately into suitable clean, dry, floored and covered storage.
- Stored components: Stack vertical or near vertical on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

740 CORROSION PROTECTION

- Surfaces to be protected: Metal surfaces taken back to bare.
- Protective coating: Two pack.
- Timing of application: Before fixing components.

750 BUILDING IN

- General: Not permitted unless indicated on drawings.
- Brace and protect components to prevent distortion and damage during construction of adjacent structure.

765 WINDOW INSTALLATION GENERALLY

- Installation: Into prepared openings.
- Gap between frame edge and surrounding construction:
 - Minimum: 5mm.
 - Maximum: 10mm.
- Distortion: Install windows without twist or diagonal racking.

770 PREPARED OPENINGS: Ensure that dpcs are positioned correctly in relation to frames and are not displaced during fixing operations.

781 FIXING OF STEEL FRAMES

- Standard: As section Z20.
- Fasteners: Stainless steel screws into masonry plugs.
 - Spacing: When not predrilled or specified otherwise, position fixings not less than 50 mm and not more than 190 mm from each end of jamb, adjacent to each hanging point of opening lights, and at maximum 900 mm centres.

800 BACKFILLING OF STEEL FRAME SECTIONS

- Windows fixed into direct openings: After fixing, fill the back of steel frame sections with a waterproof cement fillet.

820 IRONMONGERY: Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Prevent damage to ironmongery and adjacent surfaces. At completion check, adjust and lubricate as necessary to ensure correct functioning.

END OF WORK SECTION

L20 DOORS/SHUTTERS/HATCHES

To be read with Preliminaries/General conditions.

PRELIMINARY INFORMATION/REQUIREMENTS**110 EVIDENCE OF PERFORMANCE**

- Certification: Provide independently certified evidence that all specified variants of components comply with specified performance requirements.

150 SITE DIMENSIONS

- Procedure: Before starting work on designated items, take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items: New units.

COMPONENTS**300 INETRNL OAK PLANK AND LEDGE DOOR:**

- Materials: Generally, to BS EN 942.
 - Species: Joinery quality European Oak to BS EN 942 table NA2.
 - Density: Minimum 720 kg/m³ at 15% moisture.
 - Appearance class: J10 (joinery grade).
- Thickness: 50mm double plank (2no. ex.25mm boards).
- Assembly:
 - Adhesive: To be Urea Formaldehyde adhesive (e.g. Cascamite or Resorcinol).
 - Joinery workmanship: As section Z10.
 - Accuracy: To BS 4787-1:1980.
- Preservative treatment: Organic solvent as section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C5.
Desired service life: 30 years.
- Moisture content on delivery: 8-12%.
- Finish as delivered: Primed for site decoration and finish using Fiddes Hard Wax Oil.
Samples to be provided before final application.
- Ironmongery: 2no. band and spike 'T' hinges in beeswax finish and pintles to be resin and mortar fixed into mortar beds of existing masonry, thumb latch.

310 EXTERNAL OAK PLANK AND LEDGE DOOR:

- Materials: Generally, to BS EN 942.
 - Species: Joinery quality European Oak to BS EN 942 table NA2.
 - Density: Minimum 720 kg/m³ at 15% moisture.
 - Appearance class: J10 (joinery grade).
- Thickness: 50mm double plank (2no. ex.25mm boards).
- Assembly:
 - Adhesive: To be Urea Formaldehyde adhesive (e.g. Cascamite or Resorcinol).
 - Joinery workmanship: As section Z10.
 - Accuracy: To BS 4787-1:1980.
- Preservative treatment: Organic solvent as section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C5.
Desired service life: 30 years.
- Moisture content on delivery: 8-12%.
- Finish as delivered: Primed for site decoration and finish using Fiddes Exterior High Build Wood Oil finish. Samples to be provided before final application.
- Ironmongery: 2no. band and spike 'T' hinges in beeswax finish and pintles to be resin and mortar fixed into mortar beds of existing masonry, thumb latch.

630 ROOF ACCESS HATCH:

- Manufacturer: Bilco UK Ltd., Pavilion 7, Fornham Business Court, Hall Farm, Fornham St. Martin, Bury St. Edmunds, Suffolk, IP31 1SL. Tel: 01284 701696. Email: QASUK@quanex.com. Website: www.bilcouk.co.uk
- Reference: Type S-50TB Roof Hatch.
- Roof Hatch:
 - Furnish and install where indicated on plans metal roof hatch Type S-50TB, size 915mm wide x 760mm long. Length denotes hinge side. The roof hatch shall be single leaf. The roof hatch shall be pre-assembled from the manufacturer.
 - Performance characteristics:
 1. Cover and curb shall be thermally broken to prevent heat transfer between interior and exterior surfaces.
 2. Cover shall be reinforced to support a minimum live load of 195kg/m² with a maximum deflection of 1/150th of the span or 97kg/m² wind uplift.
 3. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
 4. Operation of the cover shall not be affected by temperature.
 5. Entire hatch shall be weather tight with fully welded corner joints on cover and curb.
 - Cover: Shall be 2.3mm aluminium with a 127mm beaded flange with formed reinforcing members. Interior and exterior surfaces shall be thermally broken to minimize heat transfer and to resist condensation. Cover shall have a heavy extruded EPDM rubber gasket bonded to the cover interior to assure a continuous seal when compressed to the top surface of the curb.
 - Cover insulation: Shall be 75mm thick polyisocyanurate, fully covered and protected by a 1mm aluminium liner.
 - Curb: Shall be 305mm in height and of 2.3mm aluminium. Interior and exterior surfaces shall be thermally broken to minimize heat transfer and to resist condensation. The curb shall be formed with a 140mm flange with 11mm holes provided for securing to the roof deck. The curb shall be equipped with an integral metal capflashing of the same gauge and material as the curb, fully welded at the corners, that features the Bil-Clip® flashing system, including stamped tabs, 153mm on center, to be bent inward to hold single ply roofing membrane securely in place.
 - Curb insulation: Shall be 75mm thick polyisocyanurate.
 - Lifting mechanisms: Manufacturer shall provide compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe welded to the curb assembly.
 - Hardware:
 1. Heavy stainless steel pintle hinges shall be provided.
 2. Cover shall be equipped with a spring latch with interior and exterior turn handles.
 3. Roof hatch shall be equipped with interior and exterior padlock hasps.
 4. The latch strike shall be a stamped component bolted to the curb assembly.
 5. Cover shall automatically lock in the open position with a rigid hold open arm equipped with a 25mm diameter red vinyl grip handle to permit easy release for closing.
 6. Compression spring tubes shall be an anti-corrosive composite material and all other hardware shall be zinc plated and chromate sealed. [For installation in highly corrosive environments or when prolonged exposure to hot water or steam is anticipated, specify Type 316 stainless steel hardware].
 7. Cover hardware shall be bolted into heavy gauge channel reinforcing welded to the underside of the cover and concealed within the insulation space.
 - Finishes: Factory finish shall be mill finish aluminium.
- Work included: Furnishing and installing factory finished roof hatches.
- References: BS EN 12208:2008 – Water tightness.
- Submittals:
 - Product data: Provide manufacturer's product data for all materials in this specification.
 - Shop drawings: Show profiles, accessories, location, and dimensions.
 - Samples: Manufacturer to provide upon request; sized to represent material adequately.

- Contract closeout: Roof hatch manufacturer shall provide the manufacturer's Warranty prior to the contract completion.
- Product Handling:
 - All materials shall be delivered in manufacturer's original packaging.
 - Store materials in a dry, protected, well-vented area. The contractor shall thoroughly inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
 - Remove protective wrapping immediately after installation.
- Job Conditions:
 - Verify that other trades with related work are complete before installing roof hatch.
 - Mounting surfaces shall be straight and secure; substrates shall be of proper width.
 - Refer to the construction documents, shop drawings, and manufacturer's installation instructions.
 - Coordinate installation with roof membrane and roof insulation manufacturer's instructions before starting.
 - Observe all appropriate OSHA safety guidelines for this work.
- Warranty/ Guarantee:
 - Manufacturer's standard warranty: Materials shall be free of defects in material and workmanship for a period of five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge. Electrical motors, special finishes, and other special equipment (if applicable) shall be warranted separately by the manufacturers of those products.
 - Manufacturer's Quality System: Registered to ISO 9001:2008 Quality Standards including in-house engineering for product design activities.

INSTALLATION

- 710 PROTECTION OF COMPONENTS: Do not deliver to site components which cannot be put immediately into suitable dry, floored and covered storage. Stack on bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.
- 740 CORROSION PROTECTION
- Surfaces to be protected: Metal surfaces taken back to bare.
 - Protective coating: Two pack.
 - Timing of application: Before fixing components.
- 760 BUILDING IN
- General: Not permitted unless indicated on drawings.
- 780 PREPARED OPENINGS: Ensure that dpcs are positioned correctly in relation to frames and prevent displacement during fixing operations.
- 800 FIXING OF LOOSE THRESHOLDS
- Spacing of fixings: Maximum 150 mm from each end and at 600 mm maximum centres.
- 820 SEALANT JOINTS
- Sealant: Ardex or similar.
 - Product reference: To suit application.
 - Colour: To match components.
 - Application: Triangular fillets finished to a flat or slightly convex profile.
- 830 FIXING IRONMONGERY GENERALLY
- Fasteners: Supplied by the ironmongery manufacturer.
 - Finish/ corrosion resistance: To match ironmongery.
 - Holes for components: No larger than the minimum required for satisfactory fit/ operation.
 - Adjacent surfaces: Undamaged.
 - Moving parts: Adjusted, lubricated and functioning correctly at completion.

850 LOCATION OF HINGES

- Primary hinges: Where not specified otherwise, position hinges with centre lines 250 mm from top and bottom of door leaf.
- Third hinge: Where specified, positioned centrally between the top and bottom hinges.
- Hinges for fire resisting doors: Positioned in accordance with door leaf manufacturer's recommendations.

END OF WORK SECTION

L40 GENERAL GLAZING

To be read with Preliminaries/General conditions.

140 MATERIAL SAMPLES

- Representative samples of designated materials: Submit before cutting panes.

150 WORKMANSHIP GENERALLY:

- Glazing generally: to BS 6262-4:2018.
- Integrity: The glazing must be wind and watertight under all conditions with full allowance made for deflections and other movements.
- Dimensional tolerances: Panes/sheets to be within +/-2mm of specified dimensions.
- Materials:
 - Compatibility: Glass/ plastics, surround materials, sealers, primers and paints/ clear finishes to be used together to be compatible. Avoid contact between glazing panes/ units and alkaline materials such as cement and lime.
 - Protection: Keep materials dry until fixed. Protect insulating glass units and plastic glazing sheets from the sun and other heat sources.

152 PREPARATION

- Surrounds, rebates, grooves and beads: Clean and prepare before installing glazing.

155 GLASS GENERALLY

- Standards to BS 952-1:1995 and relevant parts of:
 - BS EN 572 for basic soda lime silicate glass.
 - BS EN 1096 for coated glass.
 - BS EN 1748-1 for borosilicate glass.
 - BS EN 1748-2 for ceramic glass.
 - BS EN 1863 for heat strengthened soda lime silicate glass.
 - BS EN 12150 for thermally toughened soda silicate lime safety glass.
 - BS EN 12337 for chemically strengthened soda lime silicate glass.
 - BS EN 13024 for thermally toughened borosilicate safety glass.
 - BS EN ISO 12543 for laminated glass and laminated safety glass.
- Panes/ sheets: Clean and free from obvious scratches, bubbles, cracks, rippling, dimples and other defects.
- Edges: Generally undamaged. Shells and chips not more than 2mm deep and extending not more than 5mm across the surface are acceptable if ground out.

200 NEW LEADED GLAZED GLASS WINDOWS

- New leaded lights are to be installed in the first floor lancet openings as windows WFF.01, WFF.02 and WFF.03.
- Carefully remove the existing fibreglass panels and iron saddle bars as section C20, without causing new damage to the surrounding stonework. The existing stonework has been damaged by rust jacking and should be repaired as section C41. Openings are to be fully protected for the duration of the works to prevent birds and weather from entering the building.
- Allow for templating existing openings.
- For pricing purposes assume all new glass panes are to be clear 2.5-3mm hand-made cylinder glass using the MONO product by Histoglass: Histoglass, Highfield, Selby Road, Garforth Cliff, Leeds, LS25 2AG. Tel: 01423 500844. Email: sales@histoglass.co.uk. Website: www.histoglass.co.uk.
- Install 3no. lead trays to the base of the windows as section H71.
- Allow for installing 4no. grade 316 stainless-steel 15mm square saddle bars into the existing sockets and re-bedded in lime mortar as Z21. Where the stone jambs have spalled, piecing-in or mortar repairs are to be agreed with the Architect on site. Alternative methods are to be explored including the introduction of non-ferrous tips in stainless steel installed to the existing bar ends to preserve the original material. Saddle bars are to be primed and decorated as M60.

- New leaded light panels are to be set in 6mm wide round profile lattice of lead comes with a 16mm wide border. Lead panels are to be secured to the saddle bars using lead or copper ties.
- Hodgsons Leaded Light Cement may be used to secure glass to the lead comes. The glaziers own specification may be substituted if it fulfils waterproofing and durability requirements.
- Pointing of leaded light panels is to be undertaken by stonemasons and not the glaziers. The mix is as section Z21 and details of the proposed mix are to be submitted to the Architect for approval.
- New leaded light panels to be undertaken by a specialist glazier experienced in the conservation and production of traditional leaded windows. Suggested sub-contractors for providing new leaded light panels are as follows:

Jim Budd Stained Glass
The Foyce
Gladestry
Kington
Herefordshire
HR5 3NS
Tel: 01544 37060/ 07979 758752.
Email: mail@jimbudd.co.uk.
Website: www.jimbudd.co.uk.

Ben Sinclair
Norgrove Studios Ltd.
Bentley
Redditch
Worcestershire B97 5UH
Tel: 01527 541545.
Email: bsinclair@norgrovestudios.co.uk.
Website: www.norgrovestudios.co.uk.

Nick Bayliss (Architectural Glass) Ltd.
152 Warstone Lane
Hockley
Birmingham
West Midlands
B18 6NZ
Tel: 0121 233 1985.
Email: info@baylissglass.co.uk.
Website: www.baylissglass.co.uk.

END OF WORKS SECTION

M20 PLASTERED/RENDERED/ROUGHCAST COATINGS

To be read with Preliminaries/General conditions.

TYPE(S) OF COATING**340 LIME AND HAIR PLASTER FOR REINSTATED COFFERED CEILING**

- Location: Ground floor reinstated lime plaster ceiling.
- Substate: Timber joists and lath.
- Pricking up coat:
 - Lime putty: best mature lime putty as clause 481.
 - Sand: Washed plastering sand graded up to 2.34mm as clause 482.
 - Mix proportions: 1:2.5 lime:sand.
 - Fibre reinforcement: Hair as clause 492 with 300g of hair to 20kg lime.
 - Thickness: 8-10mm from face of lath.
- Floating coat:
 - Lime putty: As for pricking up coat.
 - Sand: As for pricking up coat.
 - Mix proportions: As for pricking up coat.
 - Fibre reinforcement: As for pricking up coat.
 - Thickness: 8-10mm excluding dubbing out.
- Setting (final) coat:
 - Lime putty: As for previous coats.
 - Sand: Washed plastering sand graded up to 0.5mm.
 - Mix proportions: 1:1 lime:sand.
 - Thickness: 3mm.

350 LIME AND HAIR PLASTER FOR WALLS: AS EXISTING BUILD-UP AND TO MATCH WHERE REPAIRS ARE REQUIRED

- Location: Ground floor porch and second floor belfry.
- Substrate: Masonry walls.
- Pricking up coat:
 - Lime putty: best mature lime putty as clause 481.
 - Sand: Washed plastering sand graded up to 2.34mm as clause 482.
 - Mix proportions: 1:2.5 lime:sand.
 - Fibre reinforcement: Hair as clause 492 with 300g of hair to 20kg lime.
 - Thickness: 8-10mm excluding dubbing out.
- Floating coat:
 - Lime putty: As for pricking up coat.
 - Sand: As for pricking up coat.
 - Mix proportions: As for pricking up coat.
 - Fibre reinforcement: As for pricking up coat.
 - Thickness: 8-10mm excluding dubbing out.
- Setting (final) coat:
 - Lime putty: As for previous coats.
 - Sand: Washed plastering sand graded up to 0.5mm.
 - Mix proportions: 1:1 lime:sand.
 - Thickness: 3mm.

360 THREE-COAT LIME: SAND RENDER ON EXTERIOR MASONRY BACKGROUND

- Substrate: Existing Forest of Dean Pennant rubble stone wall.
- Preparation: Remove all loose and friable material and existing render. Repoint substrate but leave joints raked-back by 10mm to provide a key. On surfaces offering poor suction and keying, it is recommended to use a stipple coat (3-4mm thick) applied by casting on or harling. The main coat can be applied after sufficient hardening and finishes as required.
- Lime: 4-6 months minimum matured lime putty.
- Manufacturer: Ty Mawr Lime, Units 5 & 12, Brecon Enterprise Park, Brecon, Powys, LD3 8BT. Tel: 01874 611350. Email: tymawr@lime.org.uk. Website: www.lime.org.uk.

- Undercoat: Apply a 3mm harl coat for any areas that aren't raked back or where stones are large to the same mix as the scratch coat. Each coat must be scratched to give a thoroughly good mechanical key before further coats are applied.
- Scratch coat: 10-15mm coat consisting of 1:3 mix of lime putty and sharp, gritty, well-graded sand 5-0.075mm with no hair reinforcement.
- Float coat: 8-10mm coat consisting of 1:3 mix of lime putt and shar, gritty, well graded sand 5-0.075mm with no hair reinforcement. Each coat must be scratched to give a good mechanical key before further coats are applied. This coat must be brought to a level and true surface.
- Finishing coat: 6mm of 1:3mix of lime putty and sharp, fine, well-graded sand 1.18-0.075mm with no hair reinforcement.
- Finish: Plain wood (not plastic) float coat.
- Other requirement: Lining out of render required in the east elevation blank arch and to be scribed into the final coat whilst it is leather hard but dampened to control suction. The coat must be dry enough to not pull away on the tool, but damp enough to cut without tearing. Used a specialised ashlar tool, jointing rule or a thin, bent metal rod to scribe the lines into the render and cut to a V-shape joint. Lines to be softened with a small brush or sponge.

GENERAL REQUIREMENTS FOR WORKMANSHIP

- 409 SAMPLES: Before placing orders submit for approval representative samples of the proposed external and internal render finishes.
- 418 CONTROL SAMPLE(S): Complete sample area(s), being part of the finished work, in approved location(s) as follows, and obtain approval of appearance before proceeding: To the blank nave arch in the east elevation and undertake a sample area of 1 x 1m.
- 421 SCAFFOLDING
- General: Prevent putlog holes and other breaks in coatings.
- 422 PROTECT AREAS
- In addition to general protection, adequately protect any areas adjacent to the working area against water during cleaning, plaster dropping during plastering, or any other damage which might reasonably result from carrying out the works described in this section.
- 423 UNIFORMITY OF COLOUR AND TEXTURE
- General: Maintain consistent colour and texture. Obtain each material from one source and mix different loads if necessary.
- 449 ADMIXTURES
- Do not use unless specified or approved.
 - Do not use admixtures of any type with proprietary mixes.
 - Do not use calcium chloride or any admixtures containing calcium chloride.
- 455 MIXING HAIR AND LIME PLASTER
- Proportions specified are by volume and for damp sand.
 - Adjust proportions if dry sand is used. Dry out wet sand before use.
 - Use mortar mill or paddle type mixers for mixing lime plasters. Do not use a barrel mixer. Keep plant and banker boards clean at all times.
 - Accurately measure constituents using a clean gauge box, ideally an empty lime putty container.
 - Mix ingredients thoroughly together and add hair only at the last minute to avoid breaking or tearing into short pieces.
 - Check that sufficient hair has been added to pricking up coat for ceilings by taking up an amount on a trowel. The plaster should hand down from the edges without dropping off.
- 458 CONTAMINATION
- Do not allow contamination of one type of material by another, or by any set material.

461 INITIAL SET

- Do not use mixes after initial set has taken place. Do not retemper or reconstitute mixes, unless permitted by the manufacturer of proprietary mixes.

474 COLD WEATHER

- General: Do not use frozen materials or apply coatings on frozen or frost bound substrates.
- External work: Avoid when air temperature is at or below 5°C and falling or below 3°C and rising.
- Maintain temperature of work above freezing until coatings have fully hardened.
- Internal Work: Take all necessary precautions to enable internal coating work to proceed without detriment when air temperature is below 3°C.

MATERIALS AND MAKING OF MORTAR

481 READY PREPARED LIME PUTTY

- Use lime putty slaked directly from CL 90 (high calcium) quicklime to BS EN 459-1, using an excess of water and matured in pits/containers that allow excess water to drain away.
- Density of matured lime putty: 1.3 to 1.4 kg/litre.
- Maturity of lime putty before use: Not less than 90 days after slaking.
- Prevent lime putty from drying out or wetting and protect from frost.

482 SAND FOR PLASTERING

- Cleaned washed, sharp and well-graded fine aggregate sand complying with BS EN 13139:2002, to be substantially dried before use.

483 WATER

- Mains supply to be kept free from impurities. Do not add water to plasters/ mortars prepared with lime putty.

484 TIMBER FIRRINGS

- Where specified in the Schedule of Works, firrings to correct the line and level of existing ceiling structure and to be formed of treated softwood, 25mm wide, tacked into position before fixing timber lathing. Where fixing timber lathing to thin firrings on ceilings increase length of lath thickness by thickness of furring, unless firrings are more than 16mm in thickness and securely fixed to supporting timber with nails at 300 centres.

485 TIMBER LATHING FOR CEILINGS AND CORNICES

- Supports (not included in this section) Timber joists/firrings at 330mm nominal centres.
- Lathing: Riven/Split oak/ chestnut laths nominal ¼ (6-7mm) thick, 32mm wide and in length long enough to cover 3 or 4 supports. Laths must be straight, free from knot or defect and evenly spaced 6-10mm apart, fixed at every support with 35mm stainless steel ring shank nails.
- Supplier: Mike Wye, Buckland Filleigh Sawmills, Shebbear, Beaworthy, Devon EX21 5RN. Tel: 01409 281644. Email: sales@mikewye.co.uk. Website: www.mikewye.co.uk.

485 SITE PREPARED NONHYDRAULIC LIME:SAND MORTAR

- Lime putty: As clause 481.
- Thoroughly mix lime putty with sand (or knock up previously prepared mortar) either mechanically or manually. Add only sufficient water to produce a workable mix.

488 SITE PREPARED HYDRAULIC LIME:SAND MORTAR

- Thoroughly mix hydraulic lime powder with sand, first in the dry state and then with water. Add only sufficient water to produce a workable mix.
- Do not retemper or use mortar that has begun to stiffen.

492 HAIR REINFORCEMENT

- Type: Clean long goat hair.
Proportions: Add at approximately 5 kg/m³ of lime:sand.
- Supplier: Mike Wye, Buckland Filleigh Sawmills, Shebbear, Beaworthy, Devon EX21 5RN.
Tel: 01409 281644. Email: sales@mikewye.co.uk. Website: www.mikewye.co.uk.
- Hair to be clean and free from grease and other impurities. Length of chopped fibres: 30-50 mm and well teased before adding to the mix.
- Mix thoroughly into lime:sand mortar with approximately 2 grams of hair per 1kg or mortar, during final mixing stage or knocking up stage as appropriate for the type of lime. Ensure that hair is well distributed throughout the mix without balling into lumps. Do not add hair to lime:sand mortar which is to be stored for more than 4 weeks.

496 WORK TO HISTORIC PLASTER/RENDERS GENERALLY

- Materials, and methods of working for the repair and replacement of plasterwork (decorative and plain) must match that of the original work as closely as possible, unless specified otherwise.
- Before commencing work, agree mixes, preparation and application methods with the CA.
- Use plasterers who are skilled and experienced in the repair and replacement of historic plasterwork.

498 PROTECTION OF HISTORIC PLASTERWORK

- Prevent damage and disfigurement to plain and decorative plasterwork during the course of the works:
 - Provide or ensure provision of protection and/or temporary support to all vulnerable areas of plasterwork using methods agreed with the CA.
 - Adopt careful working methods when working alongside or above plasterwork to prevent disturbance from vibration and impact.
 - Do not make temporary fixings into decorative plasterwork or apply adhesive tape to plaster surfaces.
 - Do not allow rigid boards, battens, etc. to touch plasterwork directly. Sandwich an isolating layer of mineral wool or other approved soft material between the boards and plaster face. Ensure that the isolating layer is firmly pressed against the plaster face.

PREPARING SUBSTRATES**510 SUITABILITY OF SUBSTRATES**

- Soundness: Free from loose areas and significant cracks and gaps.
- Cutting, chasing, making good, fixing of conduits and services outlets and the like: Completed.
- Tolerances: Permitting specified flatness/ regularity of finished coatings.
- Cleanliness: Free from dirt, dust, efflorescence and mould, and other contaminants incompatible with coatings.

511 PREPARATION GENERALLY

- Remove efflorescence, dust and other loose material by thoroughly dry brushing.
- Remove all traces of paint, grease, dirt and other materials incompatible with coating by scrubbing with water containing detergent and washing off with plenty of clean water. Allow to dry before applying coatings unless specified otherwise.

515 KEYING/BONDING

- Prepare backgrounds as specified for the type of coating to be applied. Methods other than those specified may be submitted for approval.

524 PREVIOUSLY PAINTED SURFACES

- Remove all paint by needle hammering or other suitable method.

527 RAKING OUT FOR KEY

- Joints in existing masonry: Rake out to a depth of 13mm (minimum).
- Dust and debris: Remove from joints.

531 ROUGHENING FOR KEY

- Substrates: Roughen thoroughly and evenly.
- Depth of surface removal: Minimum necessary to provide an effective key.

545 SUITABILITY OF BACKGROUNDS

- General: Suitable to receive coatings/ backings.
- Soundness: free from loose areas and significant cracks and gaps.
- Cutting, chasing, making good, fixing of conduits and services outlets and the like: Completed.
- Tolerances: Permitting specified flatness/ regularity of finished coatings.
- Cleanliness: Remove dirt, dust, efflorescence and mould, and other contaminants incompatible with coatings.

551 REMOVAL AND RENEWAL OF EXISTING PLASTER/RENDER

- The extent and location of renewal of existing coatings (plain and decorative work) must be agreed, at least on a provisional basis, with the CA before the work is started. Remove existing coatings in ways that will reasonably minimise the amount of removal and renewal.

556 REPAIRING EXISTING RENDER

- Cut out all loose, hollow, soft, friable, badly cracked or otherwise damaged areas to form rectangular patches with straight horizontal and vertical edges, square cut or slightly undercut.
- Cut back to imitation joint lines where they occur.
- Cut out cracks other than hairline cracks to a width of not less than 75 mm.
- Wash and brush exposed backgrounds and edges to remove dust and loose material.

566 REPAIRING EXISTING PLASTER

- Remove plaster that is loose, soft, friable, badly cracked or affected by efflorescence. Gently tap all remaining intact surfaces and remove hollow sounding areas of plaster, unless otherwise agreed with the CA.
- Remove stained plaster to 300 mm beyond last point of visible staining, unless otherwise agreed with the CA.
- Cut back to straight horizontal and vertical edges.
- Advise CA if any built-in timbers, structural deficiencies or sources of damp are revealed.
- Thoroughly dry brush the background and edges to remove dust, loose material and efflorescence.

568 REPAIRING EXISTING DAMP AFFECTED PLASTER

- Remove plaster on walls affected by rising damp up to a height of 300 mm above the highest point reached by the damp or 1 m above the dpc, whichever is higher.
- Rake out perished and salt contaminated mortar joints and cut out and renew any heavily salt contaminated bricks or blocks in the background.
- Advise CA if any built-in timbers, structural deficiencies or additional sources of damp are revealed.
- Provide the maximum ventilation possible and leave walls to dry for as long as possible before applying new plaster.
- Thoroughly dry brush background to remove dust, loose material and efflorescence.

573 TREATMENT OF ORGANIC GROWTHS

- Biocides must be approved and registered by the Health and Safety Executive (HSE) and listed in the current 'Reference Book 500', as surface biocides.

BACKINGS/BEADS/JOINTS

600 PREPARE OLD PLASTER

- Carefully cut back loose and friable plaster to sound square edges either perpendicular to or parallel with lathing. Align perpendicular edges just behind supporting timber to expose lath fixings. Slightly undercut plaster edges to key in new work. Remove dust by dry brushing.

- 605 PREPARE OLD PLASTER PRICKING UP COAT INTACT
- Carefully cut back loose and friable plaster to a sound edge. Slightly under-cut plaster edges to key in new work.
- 625 FILL CRACKS
- Remove loose materials with a sharp pointed instrument, brush and blow out dust and fine debris, dampen both sides of the crack to control suction and neatly fill with the appropriate setting coat plaster.
 - Omit hair and replace coarse aggregate with fines for very fine filling.
- 630 FILL HOLES
- Remove loose materials with a sharp pointed instrument, brush and blow out dust and fine debris, dampen plaster to control suction and neatly fill holes with setting coat plaster, omitting hair.
- 632 BEADS/STOPS FOR INTERNAL USE REPAIRS
- Material: Oak.
 - Manufacturer/ Supplier: Ty Mawr Lime, Unit 12, Brecon Enterprise Park, Brecon, Powys LD3 8BT. Tel: 01874 611350. Email: tymawr@lime.org.uk. Website: www.lime.org.uk.
 - Product reference: Plastering P-Beads to form a bullnose corner.
- 640 BEADS/STOPS GENERALLY
- Cut neatly, form mitres at return angles and remove sharp edges, swarf and other potentially dangerous projections.
 - Fix securely, using the longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with background. Use mechanical fixings for external beads/stops.
 - After coatings have been applied, remove coating material while still wet from surfaces of beads/stops which are to be exposed to view.
- 646 CRACK CONTROL AT JUNCTIONS BETWEEN DISSIMILAR SOLID SUBSTRATES
- Locations: Where defined movement joints are not required. Where dissimilar solid substrate materials are in same plane and rigidly bonded or tied together.
 - Crack control materials:
 - Isolating layer: Building paper to BS 1521.
 - Metal lathing: Galvanised steel plain expanded metal with spacers.
 - Installation: Fix metal lathing over isolating layer. Stagger fixings along both edges of lathing.
 - Width of installation across face of dissimilar substrate material (column, beam etc., with face width not greater than 450mm):
 - Isolating layer: 24mm (minimum) beyond junctions with adjacent substrate.
 - Lathing: 100mm (minimum) beyond edges of isolating layer.
- 673 PLASTERING OVER CONDUITS/ SERVICE CHASES
- General: Prevent cracking over conduits and other services.
 - Services chased into substrate: Isolate from coating by covering with galvanized metal lathing, fixed at staggered centres along both edges.

INTERNAL PLASTERING

- 710 APPLICATION GENERALLY
- Application of coatings: Firmly and in one continuous operation between angles and joints. Achieve good adhesion.
 - Appearance of finished surfaces: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
 - Accuracy: Finish to a true plane, to correct line and level, with all angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.
 - Drying out: Prevent excessively rapid or localised drying out.

715 FLATNESS/ SURFACE REGULARITY

- Sudden irregularities: Not permitted.
- Deviation of plaster surface: Measure from underside of a straight edge placed anywhere on surface.
- Permissible deviation (maximum) for plaster not less than 13 mm thick: 3 mm in any consecutive length of 1800mm.

718 JUNCTION OF NEW PLASTERWORK WITH EXISTING

- Finish new plasterwork flush with the original face of existing work to form a seamless junction.

720 DUBBING OUT

- General: Correct substrate inaccuracies.
- New smooth dense concrete and similar surfaces: Dubbing out prohibited unless total plaster thickness is within range recommended by plaster manufacturer.
- Thickness of any one coat (maximum): 10 mm.
- Mix: As undercoat.
- Application: Achieve film bond. Allow each coat to set sufficiently before the next is applied. Cross scratch surface of each coat.

731 UNDERCOATS GENERALLY

- Apply firmly, rule to an even surface and cross scratch each coat to provide a key for the next coat.

742 THIN COAT PLASTER

- Preparation for plasters less than 2 mm thick: Fill holes, scratches and voids with finishing plaster.

778 WOOD FLOAT FINISH

- Appearance: An even overall texture. Finish with a dry wood float as soon as wet sheen has disappeared.

786 TIMBER LATHING

- Apply undercoat with sufficient pressure to force it between laths and form continuous keys.

794 LIME PUTTY PLASTER – SCRATCH AND FLOAT COATS ON MASONRY

- Suction Control:
- - Apply a fine mist spray clean water to the surface in sufficient quantity to reduce excessive suction. The background will absorb water away from the surface and so the wetting with a fine mist spray should be done several times the day before application and several times on the day of application. Always dampen preceding coats before applying next coat.
- Application:
- - Scratch coat:
Apply a fine mist spray of clean water to the surface in sufficient quantity to reduce excessive suction. Lay on preblended plaster coat at approx. 10mm. Level the surface and after the surface has firmed up, key in a crisscross pattern. Allow approx. 5 to 7 days between coats depending on curing conditions.
- - Float coat:
Apply a fine mist spray of clean water to the surface in sufficient quantity to reduce excessive suction. Lay on pre-blended plaster coat at approx. 8mm. Level the surface and after the surface has firmed up key with devil float. Allow approx. 4 to 7 days between coats depending on curing conditions.

795 LIME PUTTY PLASTER – PRICKING OUT AND FLOAT COATS ON LATH

- Pricking out coat:
Roughly lay on the plaster with the sole object of forming a strong and complete key that will support the finished plasterwork. The plaster should squeeze readily between each lath and bend over under it's own weight. It should be stiff enough not to fall apart if pressed too far. Apply an even force over the whole extent of the work keeping the pricking up coat of equal

thickness throughout. When finished and whilst still moist, cross scratch or score all over with a sharpened lath or scratcher. Scoring should be as deep as possible without baring the lath with edges left rough to provide a key for the next layers of plaster. Allow the pricking up coat to set to such that it does not yield to pressure, before proceeding to apply floating coat work. Do not attempt to accelerate setting by forced drying. Allow up to 4 weeks in cool weather for an adequate set to develop.

- Floating coat:

Form screeding rails to the required finish line and thickness in plaster bands in about 150mm wide to the angles and borders of the work and at intervals of 1200mm across the whole breadth of ceilings, or height of walls/partitions. Screeding rails must be straight with one another and prived in every way with a straight edge, with allowance for inaccuracies and deformation in existing work where new work is a continuation of line and plane. Lay on plaster and firmly spread and press into form a solid bond with the scoring of the first coat. Where dubbing out is required score and allow each layer to set before applying next. Use a darby float or long straight edge traversing the screeding rails to strike off excess plaster and bring the whole to straight and perfectly even surface.

796 LIME PUTTY PLASTER – FINISH COAT

- Application:

Apply a fine mist spray of clean water to the surface in sufficient quantity to reduce excessive suction. Lay on preblended plaster at approximately 3mm. Allow plaster to stiffen and polish with steel or plastic trowel. Do not over trowel the surface.

798 LIME PUTTY PLASTER – PROTECTION

- Work should not start with temperatures below 5 degrees C.
- Do not use heating.
- In quick drying conditions mist spray during curing.

RENDERING

810 APPLICATION GENERALLY

- Apply each coating firmly to achieve good adhesion and in one continuous operation between angles and joints.
- All coatings to be not less than the thickness specified, firmly bonded, of even and consistent appearance, free from rippling, hollows and ridges.
- Finish surfaces to a true plane, to correct line and level, with all angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.
- Prevent excessively rapid or localised drying out.

820 DUBBING OUT

- If necessary to correct background inaccuracies dub out in thicknesses of not more than 13 mm in same mix as undercoat. Total thickness of dubbing must not exceed 25 mm unless approved otherwise.
- In areas where thickness of dubbing will exceed 20 mm, first apply an approved keying/bonding treatment.
- Comb surface of each dubbing out coat. Allow each coat to set but not dry before the next is applied.

840 UNDERCOATS GENERALLY

- Apply first undercoat or dubbing out coat by throwing from a trowel.
- Allow to stiffen and comb to provide a key for the next coat. Comb to produce evenly spaced wavy horizontal lines, approximately 20 mm apart and 5 mm deep. Do not penetrate through the coat.
- Brush down each undercoat to remove dust and loose particles and dampen to control suction before applying next coat.

856 FINAL COAT - PLAIN FLOATED FINISH

- Finish with wood or other suitably faced float to give an even, open texture. Do not apply water while working up. Do not draw excessive laitance to surface (either by overworking or by use of steel trowel).

880 DRYING

- Work in the shade and out of drying winds whenever possible.
- Keep each undercoat and final coat damp for the first 3-4 days by covering with polyethylene sheet and/or spraying with water. Hang sheeting clear of the final coat where it is the final finish. Thereafter prevent from drying out too rapidly.
- Allow each coat to dry out thoroughly to ensure that drying shrinkage is substantially complete before applying next coat.

885 DRYING OF NONHYDRAULIC LIME RENDER

- Work in the shade and out of drying winds whenever possible.
- Keep each undercoat and final coat damp by covering with hessian and spraying with water until coating is sufficiently firm. Hang sheeting clear of coatings.
- Thoroughly consolidate/scour each coat one or more times as necessary to control shrinkage.

890 PROTECTION

- Adequately protect newly applied external coatings against frost and rain for the first 48 hours using hessian sheeting hung clear of the face, or other approved method.

M60 PAINTING/CLEAR FINISHING

To be read with Preliminaries/General conditions.

NOTE: ALL COLOURS TO BE AGREED WITH THE ARCHITECT/ CLIENT

COATING SYSTEMS

- 117 EPOXY PAINT TO PRE-PRIMED CAST IRON DOWNPIPES
- Location: 2no. external downpipes and hoppers as Architect's drawings and section R10.
 - Manufacturer: Rust-Oleum UK, Tor Coatings Ltd, Unit 21, White Rose Way, Follingsby Park, Gateshead, Tyne and Wear, NE10 8YX. Tel: 0191 410 6611. Email: info.uk@rustoleum.eu. Website: www.rustoleumcolours.co.uk.
 - Product reference: Rust-Oleum 9100 High Solids Epoxy and Rust-Oleum Polyurethane Topcoat 9200.
 - Colour: RAL 9005 Jet Black
 - Surfaces: New primed cast iron metal.
 - Preparation: As required by manufacturer.
 - Initial coats: Apply a build-up coat of Rust-Oleum 9100.
 - Finishing coats: Final coat of Rust-Oleum 9200 (semi-gloss) polyurethane Topcoat.
- 118 SINGLE-PACK EPOXY PAINT TO PREVIOUSLY PAINTED CAST IRON RAILINGS – GROUND FLOOR STAIR DECORATIVE RAILINGS
- General: Final specification to be agreed with the specialist metal conservator and allow the following specification for the purposes of pricing.
 - Location: 2no. ground floor stairs as the Architect's drawings.
 - Manufacturer: Rust-Oleum UK, Tor Coatings Ltd, Unit 21, White Rose Way, Follingsby Park, Gateshead, Tyne and Wear, NE10 8YX. Tel: 0191 410 6611. Email: info.uk@rustoleum.eu. Website: www.rustoleumcolours.co.uk.
 - Product reference: Rust-Oleum 9100 High Solids Epoxy and Rust-Oleum Polyurethane Topcoat 9200.
 - Surfaces: Existing bare metal (cast iron).
 - Preparation: As clauses 400, 440 and 490. Wire brush the existing surfaces back to bare metal allowing for up to 90% removal (although previously cleaned).
 - Colour: RAL 9005 Jet Black.
 - Initial coats: A primer coat should be applied using Rust-Oleum 769 Damp Proof Rust Primer, which should be brush applied and thinned approximately 10% with 633 thinner. This should be followed by a build-up coat of Rust-Oleum 1060 High Build Metal Primer in a complimentary colour to the topcoat ensuring that a minimum dry film thickness of 100 µm is achieved. To be applied as required by manufacturer.
 - Finishing coats: Final coat of Rust-Oleum 7500 (satin-gloss) Alkythane Gloss in black finish.
- 133 TRADITIONAL OIL GLOSS TO EXISTING INTERNAL JOINERY
- Location: Second floor clock dial cases as Architect's drawings.
 - Manufacturer: Little Greene, Wood Street, Openshaw, Manchester, M11 2FB. Tel: 0161 23 00 880. Email: mail@thelittlegreene.com. Website: www.littlegreene.com.
 - Product reference: Traditional Oil Gloss
 - Surfaces:
 - Preparation: As clauses 400, 440 and 461. As required by manufacturer. Clean and degrease with a suitable detergent or sugar soap. Abrade with a medium grade sandpaper to provide a key.
 - Colour: To match existing and sample area to be agreed with the CA.
 - Initial coats: Apply one coat of Little Greene ASP.

- Finishing coats: 2 coats using a roller application for flat surfaces. Lightly rub down between coats to remove dust motes and other surface contamination.
- 140 DISTEMPER TO NEW LIME PLASTER CEILINGS
- Location: Ground floor coffered ceiling.
 - Manufacturer: Rose of Jericho, Horchester Farm, Holywell, Dorchester DT2 0LL. Tel: 01935 83676. Email: info@roseofjericho.co.uk. Website: www.roseofjericho.co.uk.
 - Product reference: Casein Distemper.
 - Colour: TBC – sample area to be agreed on site with the Architect.
 - Surfaces: New lime plaster ceiling.
 - Preparation: As required by manufacturer. Porous or newly plastered ceilings should be primed with a wash coat of Casein Distemper diluted with 10% clean water. New lime plaster should be allowed to carbonate and dry for at least four weeks prior to application.
 - Initial coats: Diluted application with 10% clean water as described under preparation.
 - Finishing coats: Two coats as recommended.
- 160 TRADITIONAL BEESWAX FINISH FOR NEW FLOORBOARD AND DOORS
- Location: As Architect's drawings and sections K20 and L20.
 - Manufacturer: Colron, Sherwin-Williams UK Limited, Thorncliffe Park, Chapelton, Sheffield. Tel: 0114 240 9469. Email: enquiry@colron.co.uk. Website: www.colron.co.uk.
 - Product reference: Refined Beeswax Paste.
 - Surfaces:
 - Preparation: As required by Manufacturer.
 - Colour: TBC with site samples, using 2no. colour samples from the current range (Antique Pine and Natural – Clear).
 - Initial coats: 1no. to be cloth applied in the direction of the wood grain. Allow 15 minutes drying time. Wax to be buffed using extra fine grade steel wool or Colron Craftsmens Cloths in the direction of the wood grain. Leave two hours before applying the second coat.
 - Finishing coats: 1no. coat minimum to be cloth applied in the direction of the wood grain. Additional coats can be added to increase the colour intensity.
- 161 EXTERIOR WOOD OILS FOR TIMBER DOORS AND ROOF HATCH.
- Location: External entrance door, and high-level external access and roof hatches.
 - Manufacturer: Fiddes & Son Limited, Florence Works, Brindley Road, Cardiff CF11 8TX. Tel: 029 2034 0323. Email: finishes@fiddes.co.uk or sales@fiddes.co.uk. Website: www.fiddes.co.uk.
 - Product reference: Fiddes Exterior High Build Wood Oil.
 - Surfaces:
 - Preparation: As required by Manufacturer. Ensure all surfaces are clean, dry, and free from any previous finish. Remove any fungal growth, dirt or moss on old wood prior to application, and ensure a preservative has been applied. Sand the substrate with a medium 120 grade sanding paper or 120 grade sanding disk, removing all traces of dust.
 - Colour: Clear finish as standard.
 - Initial coats: Stir contents thoroughly before and during use. Apply using a good quality bristle or synthetic brush and apply EVENLY and THOROUGHLY, following the direction of the grain. Leave to dry 4-6 hours in warm, dry well-ventilated conditions, or preferably overnight. Sand lightly with fine 320 grade sand paper.
 - Final coats: Apply as first coat, evenly, allowing good ventilation. Leave to dry 4-6 hours in warm, dry conditions, or preferably overnight. Apply as above. Clean applicators with White Spirit.

164 REVIVING INTERNAL JOINERY

- Where referred to on the drawings as 'revive', internal joinery should provisionally have the following treatment:
 - Subject to trials, carefully remove existing varnishes by poultice, sanding or chemical removal (such as white spirit), and apply wood stain such as Colron or Equal Approved and finish with a microcrystalline wax.

165 DECORATIVE WOODSTAIN/ VARNISH/ PRESERVATIVE: INTERNAL GROUND FLOOR JOINERY

- Manufacturer: OSMO or Equal Approved.
 - Product reference: Wood Wax or Polyx-Oil Tints and samples to be provided.
- Surfaces:
 - Preparation: As required by Manufacturer.
- Initial coats: Natural Oil Wood Stain.
 - Number of coats: 2no.
 - Colour Tone: TBC with site samples on plywood and hardwood and to be agreed with the Architect.
- Finishing coats: Not required.

170 LIMEWASH COATING FOR MASONRY BACKGROUND

- Manufacturer: Ty Mawr Lime, Unit 12, Brecon Enterprise Park, Brecon, Powys LD3 8BT. Tel: 01874 611350. Email: tymawr@lime.org.uk. Website: www.lime.org.uk.
 - Product reference: Ty Mawr Limewash.
 - Colour: TBC – sample area to be agreed on site with the Architect.
- Surfaces:
 - Preparation: Make good stonework where required by re-pointing/ dubbing out. Clean and dampen surface before applying the limewash. Shelter coat may be required in some areas where surface condition is uneven/ unstable for direct coating.
- Initial coats:
 - Number of coats: 3no. (minimum).
 - Use as thin as possible with stiff long-haired brush. Apply gentle mist coats to the masonry between applications and to prevent from drying too quickly. It is important to re-moisten the previous coat with a fine mist spray prior to the application of the next coat.
- Finishing coats:
 - Number of coats: 1no. coat.

171 LIMEWASH COATING FOR NEW LIME PLASTER

- Manufacturer: Ty Mawr Lime, Unit 12, Brecon Enterprise Park, Brecon, Powys LD3 8BT. Tel: 01874 611350. Email: tymawr@lime.org.uk. Website: www.lime.org.uk.
 - Product reference: Ty Mawr Limewash.
 - Colour: TBC – sample area to be agreed on site with the Architect.
- Surfaces:
 - Preparation: As clause 400 and see also manufacturer's installation advice. Limewash must be applied to damp surfaces. Lime plaster to be thoroughly moistened with a mist spray prior to application.
- Initial coats:
 - Number of coats: 3no. (minimum).
 - Use as thin as possible with stiff long-haired brush. Apply gentle mist coats to the masonry between applications and to prevent from drying too quickly. It is important to re-moisten the previous coat with a fine mist spray prior to the application of the next coat.
- Finishing coats:
 - Number of coats: 1no. coat.

- 175 MINERAL PAINT APPLICATION FOR PREVIOUSLY PAINTED BACKGROUNDS
- Location: Ground and second floors as the Architect's drawings and to existing plastered a new plaster backgrounds.
 - Manufacturer: Keim Mineral Paints Limited, Santok Building, Deer Park Way, Donnington Wood, Telford, TF2 7NA. Tel: 01952 231250. Email: sales@keimpaints.co.uk. Website: www.keimpaintshop.co.uk.
 - Product reference: Keim Optil.
 - Surfaces:
 - Preparation: As clauses 400 and 440. As required by Manufacturer. Lime plaster repairs must be allowed a minimum of 28 days to dry and must have carbonates to a minimum depth of 2.5mm.
 - Colour: TBC – sample area to be agreed on site with the Architect.
 - Initial coats:
 - For previously coated limewashed or dusting surfaces: Apply Keim Fixativ diluted 50:50 with clean cold water by brush, working well into the surface and allow a minimum of 12 hours to dry before proceeding.
 - For bare lime plaster absorbent or porous surfaces: Apply undiluted Keim Granital Dilution by brush, working well into the surface and allow a minimum 12 hours drying time before proceeding.
 - For previously painted surfaces: Apply a single, undiluted coat of Keim Optil by brush or roller, maintain a wet edge and working to a natural break line. Allow a minimum of 12 hours to dry before proceeding. Apply a second, undiluted coat of Keim Optil as above.
 - Finishing coats: Apply 1no. coat of Keim Optil.

GENERALLY

- 211 PAINT COLOURS
- Colours not yet selected to be confirmed by the AC. Paints may not always be from standard ranges. If special colours are required in accordance with the specification, then the contractor is to allow for tinting of these paints to match colours provided on sample cards.
 - Ensure that paint for one area/ room is batched (mixed together or check each tin for compatibility of colour) to avoid any variations from occurring to the chosen colour.
- 215 HANDLING AND STORAGE:
- Coating materials: Deliver in sealed containers, each clearly labelled with the brand name, type of material and manufacturer's batch number.
 - Materials from more than one batch: Store separately and allocate to distinct parts or areas of the work.
 - Materials storage: To be stored in accordance with manufacturer's recommendations. Use in order of delivery and before expiry of any shelf-life date.
- 220 COMPATIBILITY:
- Check that all materials to be used are recommended by their manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other.
 - Where surfaces have been treated with preservatives or fire retardants, check with treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance.
 - Inform the CA of any discrepancy in specification of coatings and obtain instructions before proceeding with application.

- 230 **ANCILLARY SURFACES:** The descriptions of areas to be coated given in schedules, etc. are of necessity simplified. All ancillary exposed surfaces and features are to be coated to match similar or adjacent materials or areas except where a fair faced natural finish is required or items are completely prefinished. In cases of doubt obtain instructions before proceeding.
- 280 **PROTECTION**
- Adequately protect internal and external surfaces, fixtures and fittings which are not to be coated, by covering with dust sheets, masking or other suitable materials.
 - Exhibit 'Wet paint' signs and provide barriers where necessary to protect other operatives and the general public, and to prevent damage to freshly applied coatings.
- 300 **CONTROL SAMPLES**
- Prepare sample areas of the finished work, including preparation, in advance of the remainder. Obtain approval of appearance before proceeding.
- 320 **INSPECTION BY COATING MANUFACTURERS**
- General: Permit manufacturers to inspect the work in progress and take samples of their products from site if requested.
- 321 **INSPECTION OF WORK STAGES**
- Inspection: Give notice when each stage is ready for inspection.

PREPARATION

- 400 **PREPARATION GENERALLY**
- Standard: In accordance with BS 6150.
 - Refer to any pre-existing CDM Health and Safety File.
 - Refer to CDM Construction Phase Plan where applicable.
 - Suspected existing hazardous materials: Prepare risk assessment and method statements covering operations, disposal of waste, containment, and reoccupation, and obtain approval before commencing work.
 - Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
 - Substrates: Sufficiently dry in depth to suit coating.
 - Efflorescence salts: Remove.
 - Dirt, grease and oil: Remove. Give notice if contamination of surfaces/substrates has occurred.
 - Surface irregularities: Remove.
 - Joints, cracks, holes and other depressions: Fill flush with surface, to provide a smooth finish.
 - Dust, particles and residues from preparation: Remove and dispose of safely.
 - Water-based stoppers and fillers:
 - Apply before priming unless recommended otherwise by manufacturer.
 - If applied after priming: Patch prime.
 - Oil-based stoppers and fillers: Apply after priming.
 - Doors, opening windows and other moving parts:
 - Ease, if necessary, before coating.
 - Prime any resulting bare areas.
- 420 **FIXTURES AND FITTINGS**
- Removal: Before commencing work, remove fixtures and fittings as described in the drawings.
 - Replacement: Refurbish as necessary, refit when coating is dry and as instructed.

425 IRONMONGERY

- Removal: Before commencing work remove ironmongery from surfaces to be coated.
- Replacement: Refurbish as necessary; refit when coating is dry.

430 EXISTING IRONMONGERY

- Refurbishment: Remove old coating marks. Clean and polish before refixing.

440 PREVIOUSLY COATED SURFACES GENERALLY:

- Preparation: In accordance with BS 6150, Section 11.5.
- Contaminated or hazardous surfaces: Give notice of:
 - Coatings suspected of containing lead.
 - Substrates suspected of containing asbestos or other hazardous materials.
 - Significant rot, corrosion or other degradation of substrates.
- Suspected existing hazardous materials: Prepare risk assessment and method statements covering operations, disposal of waste, containment, and reoccupation, and obtain approval before commencing work.
- Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
- Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
- Alkali affected coatings: Completely remove.
- Retained coatings:
 - Thoroughly clean to remove dirt, grease and contaminants.
 - Gloss coated surfaces: Provide key.
- Partly removed coatings:
 - Additional preparatory coats: Apply to restore original coating thicknesses.
 - Junctions: Provide flush surface.
- Completely stripped surfaces: Prepare as for uncoated surfaces.

451 PREVIOUSLY COATED SURFACES - BLAST CLEANING

- Operatives:
 - Trained/ experienced in blast cleaning.
 - Submit evidence of training/ experience on request.
- Dust and nuisance: Minimise.

455 REMOVAL OF EXISTING LEAD PAINT

- Care should be taken when rubbing down lead paint surfaces, even when using a wet abrasive. A dust mask should always be worn and hands should be thoroughly washed before eating, drinking and smoking.
- Removal of lead paint shall be carried out in compliance with The Control of Lead at Work Regulation 2002; The Approved Code of Practice on Control of Lead at Work; The Health and Safety at Work etc. Act; and The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013.

461 PREVIOUSLY COATED TIMBER

- Degraded or weathered surface timber: Take back to provide suitable substrate.
- Degraded substrate timber: Repair with sound timber of the same species.
- Exposed resinous areas and knots: Apply two coats of knotting.

471 PREPRIMED TIMBER

- Areas of defective primer: Take back to bare timber and reprime.

481 UNCOATED TIMBER

- General: Provide smooth, even finish with arrises and moulding edges lightly rounded or eased.
- Heads of fasteners: Countersink sufficient to hold stoppers/fillers.
- Resinous areas and knots: Apply two coats of knotting.

490 PREVIOUSLY COATED STEEL

- Defective paintwork: Remove to leave a firm edge and clean bright metal.
- Sound paintwork: Provide key for subsequent coats.
- Corrosion and loose scale: Take back to bare metal.
- Residual rust: Treat with a proprietary removal solution.
- Bare metal: Apply a primer as soon as possible.
- Remaining areas: Degrease.

500 PREPRIMED STEEL

- Areas of defective primer, corrosion and loose scale: Take back to bare metal. Reprime as soon as possible.

511 GALVANIZED, SHERARDIZED AND ELECTROPLATED STEEL

- White rust: Remove.
- Pretreatment: Apply one of the following:
 - Mordant solution to blacken whole surface.
 - Etching primer recommended by coating system manufacturer.

521 UNCOATED STEEL - MANUAL CLEANING:

- Remove oil and grease.
- Corrosion, loose scale, welding slag and spatter: Remove.
- Residual rust: Treat with a proprietary removal solution.
- Primer: Apply as soon as possible.

531 UNCOATED STEEL - BLAST CLEANING:

- Remove oil and grease.
- Blast cleaning:
 - Atmospheric conditions: Dry.
 - Abrasive: Suitable type and size, free from fines, moisture and oil.
 - Surface finish: To BS EN ISO 8501-1, preparation grade
- Primer: Apply as soon as possible and within four hours of blast cleaning.

541 UNCOATED ALUMINIUM/COPPER/LEAD

- Surface corrosion: Remove, and lightly key surface.
- Pretreatment: Etching primer, if recommended by the coating system manufacturer.

570 UNCOATED MASONRY/RENDERING

- Loose and flaking material: Remove with a stiff brush.

580 UNCOATED PLASTER

- Nibs, trowel marks and plaster splashes: Scarpe off.
- Overtrowelled 'polished' areas: Key lightly.

622 ORGANIC GROWTHS:

- Dead and loose growths and infected coatings: Scarpe off and remove from site.
- Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.
- Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.

APPLICATION

711 COATING GENERALLY:

- Application: In accordance with BS 6150, clause 9.
- Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
- Surfaces: Clean and dry at time of application.

- Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
 - Overpainting: Do not paint over intumescent strips or silicone mastics.
 - Priming coats:
 - Thickness: To suit surface porosity.
 - Application: As soon as possible on same day as preparation is completed.
 - Finish:
 - Even, smooth and of uniform colour.
 - Free from brush marks, sags, runs and other defects.
 - Cut in neatly.
 - Doors, opening windows and other moving parts: ease before coating and between coats.
- 720 PRIMING JOINERY
- Preservative treated timber: Retreat cut surfaces with two flood coats of a suitable preservative before priming.
 - End grain: Coat liberally, allow to soak in, and recoat.
- 730 WORKSHOP COATING OF CONCEALED JOINERY SURFACES
- General: Apply coatings to all surfaces of components.
- 731 SITE COATING OF CONCEALED JOINERY SURFACES
- General: After priming, apply additional coatings to surfaces that will be concealed when fixed in place.
- 740 CONCEALED METAL SURFACES
- General: Apply additional coatings to surfaces that will be concealed when component is fixed in place.
- 751 STAINING TIMBER
- Primer: Apply, if recommended by stain manufacturer.
 - Application: Apply in flowing coats and brush out excess stain to produce uniform appearance.
- 760 VARNISHING:
- First coat: Thin application with white spirit in accordance with manufacturer's recommendations:
 - Brush well and lay off avoiding aeration.
 - Subsequent coats: Provide light key and smooth along the grain between coats.
- 770 EXTERNAL DOORS
- Bottom edges: Prime and coat before hanging doors.
- 810 WATER REPELLENT
- Application: Liberally flood surface, giving complete and even coverage.

END OF WORK SECTION

N10 GENERAL FIXTURES/FURNISHINGS/EQUIPMENT

To be read with Preliminaries/General conditions.

GENERAL**100 SITE DIMENSIONS**

- Procedure: Before starting work on designated items, take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Before starting work on designated items each opening must be measured on site and recorded on shop drawings to ensure accurate fabrication. Make formers as necessary to record out of plumb or square openings.
- Produce shop fabrication drawings and seek the Architect's approval before commencing any fabrication.

105 CONTROL SAMPLES

- Procedure:
 - Finalise component details.
- Fabricate one of each of the following designated items as part of the quantity required for the project.
- Obtain approval of appearance and quality before proceeding with manufacturer of the remaining quantity.

PRODUCTS**110 PURPOSE MADE SERVICES RISER CUPBORAD: Ground Floor Porch**

- Drawing reference(s): 1398 (50)04.
- Standard: To BS 6222-2 and -3 and BS EN 14749.
- All to be hardwood, oak veneered plywood carcasses and inset panels with hardwood cornice, door framing/ stiles, nosings, edgings, lippings, skirting/ plinth, beading.
- Finish/ Colour: Stained/ oiled/ waved as section M60.
 - Carcasses to be 18mm oak veneered plywood.
- Manufacturer: Bespoke by joiner
 - Product reference: N/A.
- Dimensions: Refer to the drawings and site measure.
- Shelving: 50mm o/a formed by 2no. 25mm plywood with hardwood lippings or framed to suit.
 - Finish/ Colour: Stained/ oiled/ waved as section M60.
- Doors:
 - Material: Oak framed stiles with oak veneered plywood inset panels.
 - Thickness: O/A min. 38mm to suit joiners recommendation.
 - Finish/ Colour: Stained/ waved/ oiled as section M60.
- Side and fixed panels:
 - Material: Oak veneered plywood.
 - Thickness: 25mm.
 - Finish/ Colour: Stained/ waved/ oiled as section M60.
- Plinths:
 - Material: Solid oak or oak veneered plywood.
 - Thickness: As Architect's drawing.
 - Finish/ Colour: Stained/ waved/ oiled as section M60.
- Cornice:
 - Material: Solid oak or oak veneered plywood.
 - Thickness: As Architect's drawing.
 - Finish/ Colour: Stained/ waved/ oiled as section M60.
- Other accessories: Blum hinges for thick doors at maximum 500mm centres.
- Other requirements:
 - Handleless doors with routed handle in the stile as per the Architect's drawing.
 - Lockable.

EXECUTION

710 MOISTURE CONTENT OF WOOD AND WOOD-BASED BOARDS

- Temperature and humidity: During delivery, storage, fixing and to handover maintain conditions to suit specified humidity moisture content(s) of timber components.
- Testing: When instructed, test components with an approved moisture meter to manufacturer's recommendations.

720 INSTALLATION GENERALLY

- Methods of fixing and fastenings to be as section Z20 unless specified otherwise.

770 TRIMS

- Lengths: Wherever possible, unjointed between angles or ends of runs.
- Running joints: Where unavoidable, obtain approval of location and method of jointing.
- Angle joints: Mitred.

COMPLETION

910 GENERAL

- Doors and drawers: Accurately aligned, not binding. Adjust to ensure smooth operation.
- Ironmongery: Checked, adjusted and lubricated to ensure correct functioning.

END OF WORK SECTION

N25 PERMANENT ACCESS AND SAEFTY EQUIPMENT

To be read with Preliminaries/General conditions.

Fall restraint systems to be designed and installed by a specialist approved contractor.

TYPES OF SYSTEM/ EQUIPMENT**210 PERSONAL FALL PROETCTION EQUIPMENT**

- Type: Fall Arrest Harness and Lifeline/ Rope Grab/ Lanyards.
- Manufacturer: Pammenter + Petrie (P&P) Safety Limited or Equal Approved.
- Allow 2 sets.
- Anchorage device: See clause 220.
- Accessories/ Other requirements: As recommended by the manufacturer.
- Installation: In accordance with BS 7883:2019 by the system manufacturer or a contractor approved by the system manufacturer.
- Structural anchors: Type recommended by the system manufacturer to suit the structure/ fabric into which they will be fixed.

220 SINGLE POINT ANCHORAGE DEVICES

- Standard: To BS EN 795: 2012.
- Type: Removable Safety Eyebolts.
- Manufacturer: Latchways/ Safety at Height (Soll)/ Scorpio Safety System or Equal Approved.
- Product reference: Removable Safety Eyebolts (High Level for fall arrest system) and Ladder Bolts (Low Level to existing stair).
- Material/ Finish: Stainless-steel.
- Locations: As per the manufacturer's recommendations. Allow for:
 - Main roof for access point through the roof access hatch and full perimeter of the existing gantry and stairs in the roof gables.
- Installation: In accordance with BS 7883:2019.
 - Anchors to be fixed to existing modern steel access gantry.
- Other requirements: Provide with each anchor:
 - A backing disc giving the manufacturer's name and telephone number and the date of installation.
 - A certificate of compliance with testing and examination requirements of BS EN 365:2004.
 - Removable eyebolts specified to have minimum visual impact on historic fabric where required.

DESIGN/ PERFORMANCE REQUIREMENTS**420 WIND LOADING FROM EXISTING DATA**

- General: Design the access/ safety system to withstand specified wind loads with equipment in position of maximum exposure and in parked position.

430 SAFETY

- General: The equipment as installed must have no irregularities/ projections capable of inflicting personal injury.
- Finished surfaces and edges of all accessible parts: Regular and smooth.

440 DESIGN LIFE/ MAINTENANCE PROGRAMME

- Design life of access/ safety system: As per the manufacturer's recommendations.
- Schedule for maintenance and for replacement of components: Submit details.

460 ASSESSMENT/ TESTING OF ANCHOR DEVICES

- Design and testing of anchors: To BS EN 795:2012.

FABRICATION, ASSEMBLY AND INSATLLATION

510 FABRICATION AND ASSEMBLY GENERALLY

- Machine cutting, drilling and assembly: Carry out as much as possible in the workshop. Obtain approval for any reassembly on site.
- Dissimilar metal surfaces of assembly components/ supports/ fixings: Isolate to prevent electrolytic corrosion.

520 PROTECTION

- General: Do not deliver to site any components or assemblies that cannot be installed immediately or unloaded into a suitable well protected storage area.

535 EXECUTION GENERALLY

- Structural members: Do not modify, cut notch or make holes in structural members without permission.
- Frameworks: Assemble and brace, including temporary members required for installation.
- Temporary support: Do not use access systems as temporary support or strutting for other work.
- Bolted joints:
 - Contact between dissimilar metals: Avoid.
 - Bolts and washers: Select types, sizes and quantities of fasteners or packings and spacings to retain supported components without distortion or loss of support.
- Welded joints: Comply with latest edition of National Structural Steelwork Specification (NSSS), Section 5.
- Finished components: Smooth, free from distortion, cracks, burrs and sharp arrises.

540 MECHANICAL FIXINGS

- Materials: Unless otherwise recommended by equipment manufacturer:
 - Connecting bolts and other fixings fully accessible for inspection: Carbon steel hot dip galvanized to BS 7371-6.
 - Nuts: Tapped after galvanizing.
 - Cast-in anchors and other fixings not accessible for routine inspection: Austenitic stainless-steel, grade 1.4401 (316) to BS EN 10088-1.

550 FASTENERS, INSERTS AND BOLTS FOR BUILDING IN

- Supplier: Equipment manufacturer/ supplier.

560 FIXINGS FOR SECURING EQUIPMENT

- Adjustment capability: Adequate three-dimensional adjustment to accommodate building structure/ fabric irregularities.

570 FIXING ANCHOR INSTALLTION

- Site drilling or cutting into structure/ fabric: Permitted only in approved locations.
- Distance between all fixing devices and edges of supporting material: Not less than recommended by fixing manufacturer.

610 IDENTIFICATION AND REGISTARTION LABELS FOR EQUIPMENT

- Provision: Provide and fix to each piece of equipment a permanent label giving:
 - Manufacturer's name, address and telephone number.
 - Name and/ or reference code of model.
 - Serial number and year of manufacture.
 - Maximum load in kilograms that may be sustained by the equipment.
- Location: In positions such that labels can be easily read.

615 CE MARKING AND DECLARATION OF CONFORMITY OF PERMANENTLY INSTALLED SUSPENDED ACCESS EQUIPMENT

- Marking: Equipment to be clearly labelled with a CE mark indicating conformity with the current edition of the Supply of Machinery (Safety) Regulations.
- Declaration of conformity: Provide for the complete installation a declaration of conformity with Machinery Directive 2006/42/EC together with certificates of incorporation for parts not supplied or installed by the main equipment manufacturer or supplier.

640 MARKING OF ANCHOR DEVICES

- Provision: Provide on or near each anchor device a label or other clear marking giving:
 - Manufacturer's name and telephone number.
 - Serial number and year of manufacture of device.
 - Maximum number of personnel that may be attached to the device at any one time.
 - Requirements for energy absorbers, ground clearance etc.
- Anchor devices intended solely for use with personnel protective equipment: Indicate restriction of use by pictogram or other suitable marking on or near the device.

810 SERVICE// MAINTENANCE

- General: Following acceptance of the completed installation, service and maintain the equipment for the period stated below as and at intervals recommended by the manufacturer. Such maintenance to include 'call-out' service during normal working hours to maintain the equipment in an acceptable and safe condition.

820 OPERATING INSTRUCTIONS

- Equipment and accessories: Where appropriate, mark in such a way that is possible to identify the correct mode of operation for their safe use.

830 OPERATING AND MAINTENANCE MANUAL

- General: Provide, for inclusion in the Building Manual, printed instructions and recommended procedures to be established by the Employer for operating and routinely maintaining the equipment. Provide diagrams where appropriate.
- Content:
 - Instructions for assembling/ erecting equipment for use.
 - Comprehensive operating instructions, including safety and emergency procedures, for all motions including upward, downward and lateral travel, and slew.
 - List of replacement parts, with references.
 - Recommended procedures for testing equipment.

840 AS INSTALLED DRAWINGS

- General: After commissioning/ testing of the equipment provide as installed drawings for inclusion in the Building Manual.
- Number of sets: 1 set per copy and TBA.
- Drawing content:
 - Contractor's name and contract number.
 - Location and date of installation.
 - Manufacturer's name, model and type numbers.
 - General arrangement of the complete installation.
 - Electrical circuit wiring diagrams complete with details and ratings of all items of equipment.

END OF WORK SECTION

P31 HOLES/CHASES/COVERS/SUPPORTS FOR SERVICES

To be read with Preliminaries/General conditions.

- 110 CO-ORDINATION: Liaise with subcontractors to establish locations and dimensions of all holes and chases required for services. Submit details to CA for checking before proceeding with the work. Existing containment routes should be reused wherever possible, and chasing and notching for new services in any of the building fabric is not permitted without the prior consent of the CA.
- 185 HOLES, RECESSES AND CHASES IN MASONRY:
- Holes, recesses and chases to be in locations which will least affect the strength, stability and sound resistance of the construction, and to be of the smallest practicable size.
 - Holes must not exceed 300 mm square.
 - Do not cut chases in walls of hollow or cellular blocks without approval.
 - In walls of other materials:
 - Where permitted, vertical chases must be not deeper than one third of the single leaf thickness.
 - Horizontal or raking chases must be not longer than 1 m and not deeper than one sixth of the single leaf thickness.
 - Do not set chases or recesses back-to-back; offset by a clear distance not less than the wall thickness. Where sockets, etc. are shown on drawings as nominally back-to-back, obtain instructions.
 - Do not cut until mortar is fully set. Cut carefully and neatly, avoiding spalling, cracking or other damage to surrounding structure. Do not cut chases with mechanical or hand impact tools.
- 230 NOTCHES AND HOLES IN STRUCTURAL TIMBER:
- To be avoided wherever possible and to be the minimum sizes needed to accommodate services.
 - Do not position near knots or other defects in the same cross section which would significantly affect strength of timber.
 - Notches and holes in the same joist to be at least 100 mm apart horizontally.
 - Notches in joists to be at the top, located between 0.07 and 0.25 of span from support, not deeper than 0.125 x depth of joist and to be formed by sawing down to a drilled hole.
 - Holes in joists to be on the neutral axis, with diameter not more than 0.25 x depth of joist, spaced at centres not less than 3 x diameter of largest hole and located between 0.25 and 0.4 of span from support.
 - Notches in roof rafters, struts and columns will not be permitted.
 - Holes in struts and columns to be on the neutral axis, with diameters not exceeding 0.25 x minimum width of member, located between 0.25 and 0.4 of length from end and spaced at centres not less than 3 x diameter of largest hole.
- 280 FLOOR DUCTING AND TRUNKING
- Fixing: Pack ducting and trunking level and true before screeding/ blinding.
- 310 PIPE SLEEVES
- Sleeves: To extend through full thickness of wall/floor and to be accurately positioned to give a minimum clearance around service of 20 mm or diameter of service, whichever is the least.
 - Sleeves, whether built in or installed in preformed holes, to be bedded solid.
 - Where exposed to view, finish bedding and sealing neatly to approval.
- 320 FIRE RESISTING PIPE SLEEVE(S)
- Manufacturer and reference: Contractor's choice.
- Type(s) and size(s) recommended for the purpose by manufacturer.
- Fire resistance: 0.5 hour(s).

END OF WORKS SECTION

Q20 GRANULAR SUB-BASES TO ROADS/PAVINGS

To be read with Preliminaries/General conditions.

- 110 THICKNESSES OF SUB-BASE/SUBGRADE IMPROVEMENT LAYER(S) are specified in the following related sections:
Q25 Slab/Brick/Sett/Cobble pavings.
- 140 EXCAVATION OF SUBGRADES
- Final excavation to formation or sub-formation level: Carry out immediately before compaction of subgrade.
 - Soft spots and voids: Give notice.
 - Old drainage and service trenches: Excavate to remove soft or damaged material then backfill with specified granular sub-base material and compact.
 - Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilized.
- 145 PREPARATION AND COMPACTION OF SUBGRADES
- Timing: Immediately before placing sub-base.
 - Soft or damaged areas: Excavate and replace with sub-base material, compacted in layers 300mm (maximum) thick.
 - Compaction: Thoroughly, by roller or other suitable means, adequate to resist subsidence or deformation of the subgrade during construction and of the completed pavings when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.
- 211 GRANULAR MATERIAL
- Quality: Of a known suitability for use in sub-bases, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111:1990 or a resistance to fragmentation of LA50 for the Los Angeles test to BS EN 1097-2, and in one layer only one of the following:
 - Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
 - Crushed concrete, crushed brick or tile, free from plaster, timber or metal.
 - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
 - Natural gravel.
- 230 PLACING GRANULAR MATERIAL GENERALLY
- Preparation: Loose soil, rubbish and standing water removed.
 - Structures, membranes and buried services: Ensure stability and avoid damage.
- 250 LAYING GRANULAR SUB-BASES FOR PEDESTRIAN AREAS
- General: Spread and levelled.
 - Compaction:
 - Timing: As soon as possible after laying.
 - Method: By roller or other suitable means, adequate to resist subsidence or deformation of the sub-base during construction and of the completed paving when in use. Take particular care to compact fully at intrusions, perimeter and where local excavation and backfilling has taken place.

310 ACCURACY

- Permissible deviation from required levels, falls and cambers (maximum):
 - Subgrades:
 - Roads and parking areas: +20-30mm.
 - Footways and recreation areas: +/- 20mm.
 - Sub-bases:
 - Roads and parking areas: +/- 20mm.
 - Footways and recreation areas: +5-10mm.

330 COLD WEATHER WORKING

- Frozen materials: Do not use.
- Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.

340 PROTECTION

- Sub-bases: As soon as practicable, cover with subsequent layers, specified elsewhere.
- Subgrades: Prevent degradation by construction traffic, construction operations and inclement weather.

END OF WORKS SECTION

Q25 SLAB/BRICK/SETT/COBBLE PAVINGS

To be read with Preliminaries General conditions.

GENERALLY

- 105 **SAMPLES:** Before placing orders submit for approval representative sample(s) of 1 sqm of laid and pointed paving. Ensure that delivered materials match sample(s).
- 110 **NEW STONE PAVINGS:** To Match the Existing Flagstone Floor in the Tower Porch:
- Type: Forest of Dean Pennant Sandstone.
 - Supplier: Birch Hill Pennant Quarry, Fetter Hill, Parkend, Nr. Coleford, Forest of Dean, Gloucestershire, GL16 7LU. Tel: 01594 372023/ 01594 808716. Email: enquired@stonequarries.co.uk. Website: www.birchillpennantquarry.co.uk.
- 125 **ADVERSE WEATHER:**
- Do not lay or joint paving if the temperature is below 8 degC on a falling thermometer or below 5 degC on a rising thermometer.
 - Do not use frozen materials or lay bedding on frozen or frost covered bases.
 - Adequately protect paving with mortar joints and/or mortar bedding from frost damage, rapid drying out and saturation until mortar has hardened.
 - Protect stockpiled bedding sand to ensure it does not become saturated.
 - Protect exposed areas of sand bedding and uncompacted areas of sand bedded paving from heavy rainfall.
 - Remove and replace any sand bedding which becomes saturated before laying paving, or allow to dry before proceeding.
 - If laying dry-sand jointed paving when conditions are damp, brush in as much jointing sand as possible and minimize site traffic over the paving. As soon as paving is dry, top up joints and complete the compaction.
- 135 **ACCEPTANCE OF NEW SUB-BASES:** Before starting work ensure that:
- The base is sound, clean and close-textured enough to prevent loss of bedding materials into it during compaction and use, free from movement under compaction plant and free from compaction ridges, cracks and loose material.
 - The levels and falls of the base are as detailed, within the tolerance specified in clause Q20/310.
 - Drainage outlets are within +0 to -10mm of the required finished level.
- 136 **ACCEPTANCE OF PREPARED EXISTING BASES:** Before starting work ensure that:
- Existing roadbases are sound, clean, free from rutting or major cracking and cleared of sharp stones and debris that may rupture geotextiles.
 - Drainage perforations are adequately prepared to receive geotextiles.
 - The surface of overlaid granular material, if any, is sound, clean, and close-textured enough to prevent loss of bedding materials into it during compaction and use.
 - Levels and falls are as detailed and within +0 to -12 mm of the required finished level.
 - Drainage outlets are within +0 to -10 mm of the required finished level.
- 141 **GRANULAR OVERLAY TO EXISTING BASES:**
- Drawing reference(s): As Architect's drawings.
 - Lay granular material as section Q20.
 - Compact as section Q20.
 - Blind as section Q20.
- 170 **LAYING PAVINGS:**
- Cut paving units neatly and accurately with a masonry saw to give neat junctions with edgings and adjoining finishes.
 - Lines and levels of finished surface to be smooth and even with regular falls to prevent ponding.
 - Bed paving units firmly so that rocking does not occur or develop.

- Lay paving units upwards from the bottom of slopes where creep may occur.
 - Finished paving to have an even overall appearance with even joint widths and free of mortar and sand stains.
- 175 LEVELS OF PAVING: Permissible deviation from specified levels to be ± 6 mm generally. Set paving 6-10 mm above gullies, 3-6 mm above surface drainage channels and 3 mm above kerbs to allow for settlement.
- 180 REGULARITY:
- Sudden irregularities not permitted.
 - Where appropriate in relation to the geometry of the surface, the variation in gap under a 3 m straight edge placed anywhere on the surface to be not more than 10 mm.
 - The difference in level between adjacent paving units to be not more than 2 mm.
- 190 PROTECTION:
- Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
 - Do not overload pavings with stacks of materials.
 - Handle pavings with care to avoid damage to corners and arrises, and to previously laid paving.
 - Pavings bedded on mortar must be kept free from pedestrian traffic for 4 days and vehicular traffic for 10 days after laying.
 - Restrict access to paved areas as necessary to prevent damage from site traffic and plant.
- 300 FULL MORTAR BEDDING:
- Mortar: As Section Z21.
 - Mix: 1:2.5 lime:sand.
 - Consistency: Dry mix.
 - Sand: To BS EN 12620:2002.
 - Spread and level mortar to give the specified average nominal thickness after bedding of slabs.
 - Lay slabs on a full mortar bed and bed down to line and level with a maul.
- 335 MORTAR POINTED JOINTS:
- Mortar mix: 1:3 semidry lime:sand to BS EN 12620:2002.
 - When the surface of the paving is dry and rain is not expected, carefully and thoroughly fill joints using a proper pointing tool and slotted masking shield. Tool to a bucket handle profile 2-3 mm below the slab surface. Clean any mortar from face of slabs before it sets.
 - Immediately after completing joints, cover paving with polyethylene sheeting for not less than three days.

END OF WORKS SECTION

Q50 SITE/STREET FURNITURE/EQUIPMENT

To be read with Preliminaries/General conditions.

MISCELLANEOUS**351 NESTING BOXES:**

- Manufacturer: Vivara Pro, Overloonseweg 11c, 5821 EE Vierlingsbeek, Netherlands. Tel: +31 (0478) 517 945. Email: info@vivarapro.com. Website: www.vivarapro.com.
- Reference: VK MP 06 Bat Façade Box.
- Format: Bat roosts for buildings.
- Dimensions: 510(w) x 790(h) x 160(d) mm.
- Material: Exterior plywood (FSC), spray cork.
- Treatment of finish: Textured.
- Colours: Black.
- Base: Backplate and fixings to be installed in mortar joints.

352 NESTING BOXES:

- Manufacturer: Vivara Pro, Overloonseweg 11c, 5821 EE Vierlingsbeek, Netherlands. Tel: +31 (0478) 517 945. Email: info@vivarapro.com. Website: www.vivarapro.com.
- Reference: NK BI Nest Box 32mm.
- Format: Nest boxes for buildings.
- Dimensions: 210(w) x 305(h) x 190(d) mm.
- Hole size: 32mm.
- Material: Woodstone.
- Treatment of finish: Textured.
- Colours: Brown/ black.
- Base: Backplate and fixings to be installed in mortar joints.

INSTALLATION**510 CONCRETE FOUNDATIONS:**

- Mix: To BS 5328, Designated mix not less than GEN 1 or Standard mix not less than ST2 (alternative mix for small quantities: 50 kg Portland cement, class 42.5, to 100 kg fine aggregate to 250 kg 20 mm nominal maximum size coarse aggregate, medium workability). Do not use admixtures.
- Form neat foundation holes with vertical sides and cover bottom with a 50 mm layer of concrete.
- Accurately position and securely support components.
- Fill holes with concrete to not less than the specified depth, ensuring full compaction as filling proceeds.
- Maintain any temporary support and prevent disturbance for at least 48 hours.
- Concrete foundations exposed to view to be compacted until air bubbles cease to appear on the upper surface, then weathered to shed water and trowelled smooth.

520 SETTING IN EARTH: Form holes as small as practicable to allow refilling. Accurately position and securely support components. Refill with earth, well rammed as filling proceeds.

530 PRESERVATIVE TREATED TIMBER: Treat surfaces exposed by minor cutting and drilling with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.

540 BUILDING IN: Accurately position and securely support components. Set in mortar and point neatly to match adjacent walling. Maintain any temporary support and prevent disturbance of components for at least 48 hours.

550 DAMAGE TO GALVANIZED SURFACES: Touch up minor damage, including on fastenings and fittings, using low melting point zinc alloy repair rods or powders made for this purpose or at least two coats of zinc-rich paint to BS 4652. Apply sufficient material to provide a zinc coating at least equal in thickness to the original layer.

560 SITE PAINTING: Prepare surfaces and apply finishes as soon as possible after fixing.

END OF WORK SECTION

R10 RAINWATER PIPEWORK/GUTTERS

To be read with Preliminaries/General conditions.

TYPE(S) OF PIPEWORK/GUTTER

- 130 NEW CAST IRON PIPEWORK FOR EXTERNAL USE:
- Drawing Refs: 1398 (20)03.
 - Pipes, fittings and accessories: To BS 460:2002+A2:2007.
 - Manufacturer: Hargreaves Foundry, Water Lane, South Parade, Halifax, West Yorkshire HX3 9HG. Tel: 01422 330607. Email: sales@hargreavesfoundry.co.uk. Website: www.hargreavesfoundry.co.uk.
 - Reference: Rectangular Premier (Primed) Eared Pipes.
 - Size(s): 100 x 75 mm.
 - Method of jointing: Polysulphide mastic.
- Accessories: RH132 hopper head, 112.5 and 135 degrees bends and plinth offsets, and access pipes for rodding. 25mm oak bobbins to space brackets off the wall. All downpipes are to fitted clear of the wall on timber bobbins and 4" painted mild steel spikes. Spikes should only run into mortar joints and pointed with lime mortar as section Z21.
- Finish/Colour: Painted black in epoxy paint as section M60.

INSTALLATION

- 400 BEFORE COMMENCING WORK specified in this section, ensure that:
- Below ground drainage is ready to receive rainwater or that the discharge can be dispersed by approved means to prevent damage or disfigurement of the building fabric.
 - Any specified painting of surfaces which will be concealed or inaccessible is completed.
- 410 INSTALLATION GENERALLY:
- Install in accordance with BS EN 12056-3:2000.
 - Install pipework/gutters to ensure the complete discharge of rainwater from the building without leaking.
 - Obtain all components for each type of pipework/guttering from the same manufacturer unless specified otherwise.
 - Where not specified otherwise, use plated, sherardized, galvanised, or non-ferrous fastenings, suitable for the purpose and background, and compatible with the material being fixed or fixed to.
 - Provide access fittings and rodding eyes as necessary in convenient locations to permit adequate cleaning and testing of pipework.
 - Adequately protect pipework/gutters from damage and distortion during construction. Fit purpose made temporary caps to prevent ingress of debris. Fit all access covers, cleaning eyes and blanking plates as the work proceeds.
 - Before installing, ensure that any specified painting or surfaces which will be concealed or otherwise inaccessible is completed.
- 415 BUILDERS WORK: Comply with restrictions on the cutting of holes, chases, notches, etc. and methods of attachment to the building fabric specified in section P31.
- 450 RAINWATER OUTLETS: Ensure that:
- Outlets are securely fixed before connecting pipework.
 - Junctions between outlets and pipework can accommodate all movement in the structure and pipework.

460 FIXING PIPEWORK:

- Fix securely at specified centres plumb and/or true to line.
- Make changes in direction of pipe runs only where shown on drawings unless otherwise approved.
- Fix branches and low gradient sections with uniform and adequate falls to drain efficiently.
- Fix externally socketed pipes/fittings with sockets facing upstream.
- Provide additional supports as necessary to support junctions and changes in direction.
- Fix every length of pipe at or close below the socket collar or coupling.
- Provide a load bearing support for vertical pipes at not less than every storey level. Tighten fixings as the work proceeds so that every storey is self-supporting and undue weight is not imposed on fixings at the base of the pipe.
- Isolate from structure where passing through walls or floors and sleeve pipes as specified in Section P31.
- Provide for thermal and building movement when fixing and jointing and ensure that clearances are not reduced as fixing proceeds.
- Fix expansion joint pipe sockets rigidly to the building and elsewhere use fixings that allow the pipe to slide.

465 JOINTING PIPEWORK/GUTTERS:

- Joint using materials, fittings and techniques which will make effective and durable connections.
- Joint differing pipework/gutter systems with adaptors recommended by manufacturer(s).
- Cut ends of pipes to be clean and square with burrs and swarf removed. Chamfer pipe ends before inserting into ring seal sockets.
- Ensure that jointing or mating surfaces are clean, and where necessary lubricated, immediately before assembly.
- Form junctions using fittings intended for the purpose ensuring that jointing material does not project into bore of pipes, fittings and appliances.
- Remove surplus flux/solvent/cement/sealant from joints.

485 COATED PIPEWORK/GUTTERS: Make good to coatings after cutting and any other damage or recoat, as recommended by the manufacturer.

490 PIPEWORK WITH UNSEALED JOINTS: Ensure that pipes are firmly secured to prevent rattling at joints and fixings.

510 ELECTRICAL CONTINUITY: Use clips or suitable standard couplings supplied for the purpose by pipework manufacturer to ensure electrical continuity at all joints in metal pipes with flexible couplings and which are to be earth bonded.

540 ACCESS FOR TESTING AND MAINTENANCE:

- Install pipework and gutters with adequate clearance to permit testing, cleaning and maintenance.
- Position access fittings and rodding eyes so that they are not obstructed by other pipework, framing, etc.

550 TESTING GENERALLY:

- Inform CA sufficiently in advance to give him a reasonable opportunity to observe tests.
- Check that all sections of installation are free from obstruction and debris before testing.
- Provide clean water, assistance and apparatus for testing as required.
- Carry out tests as specified. After testing, locate and remedy all defects without delay and retest as instructed.
- Keep a record of all tests and provide a copy of each to the CA.

570 GUTTER TEST: Block all outlets, fill gutters to overflow level and after 5 minutes closely inspect for leakage.

590 IMMEDIATELY BEFORE HANDOVER:

- Remove construction rubbish and debris from all roofs and gutters. Where possible, sweep and remove fine dust which may enter rainwater systems. Do not sweep or flush dust or debris into the rainwater system.
- Remove swarf, debris and temporary caps from the entire rainwater installation.
- Ensure that all access covers, rodding eyes, outlet gratings, etc. are secured complete with all fixings.

END OF WORKS SECTION

Z10 PURPOSE MADE JOINERY

To be read with Preliminaries/General conditions.

110 FABRICATION GENERALLY:

- Fabricate joinery components to BS 1186-2:1988.
- Form sections out of the solid when not specified otherwise. Carefully machine timber to accurate lengths and profiles.
After machining, sections to be free from twist and bowing, and surfaces to be smooth and free from tearing, wooliness, chip bruising and other machining defects.
- Assemble with tight, close fitting joints to produce rigid components free from distortion.
- All screws to have pilot holes. Screws of 8 gauge or more and all screws into hardwood to have clearance holes. Screw heads to be countersunk not less than 2 mm below timber surfaces that will be visible in completed work.

120 CROSS SECTION DIMENSIONS OF TIMBER:

- Dimensions on drawings are finished sizes.
- Maximum permitted deviations from finished sizes for softwood sections to be as stated in BS EN 1313-1:2010: Clause 6 for sawn sections
Clause NA. 2 for further processed sections.
- Maximum permitted deviations from finished sizes for hardwood sections to be as stated in BS EN 1313-2:1999.

130 PRESERVATIVE TREATED TIMBER:

- Carry out as much cutting and machining as possible before treatment.
- Retreat all timber which is sawn along the length, ploughed, thickened, planed or otherwise extensively processed.
- Treat surfaces exposed by minor cutting and drilling with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.

140 MOISTURE CONTENT of timber and wood-based boards to be maintained within the range specified for the component during manufacture and storage.**210 LAMINATED PLASTICS VENEERS:**

- Apply sheets in accordance with 'Recommendations for the fabrication of decorative laminated sheets' published jointly by the British Plastics Federation and the British Laminated Plastics Fabricators' Association.
- Condition sheets before bonding. When not otherwise specified, apply to the reverse side of flat boards a balancing veneer of similar construction to the decorative veneer and from the same manufacturer.
- Bond in presses whenever possible.
- Finished components to be free from defects, including bow, twist, scratches, chipping, cracks, pimpling, depressions, glue spill, staining, and defects in colour and pattern.
- All joints exposed to view in the finished work to be tight butted, true and flush. Chamfer edges at all external angles.

220 WOOD VENEERS:

- Condition core material and veneers before bonding. When not otherwise specified, apply to the reverse side of flat boards a balancing veneer with the same moisture and temperature movement characteristics as the facing veneer.
- Set out veneers so that features and pattern are aligned and in regular, uniform symmetry unless specified otherwise. Apply veneers with edges tight butted and flush, with no gaps or other open defects.
- Bond in presses whenever possible.
- Finished components to be free from defects, including bow, twist, scratches, chipping, pimpling, depressions, glue spill and staining.
- Sand to a fine, smooth finish free from sanding marks.

250 FINISHING AND PROTECTING:

- Sand all joinery to give smooth, flat surfaces suitable to receive specified finishes. Arrises to be eased unless specified otherwise.
- Before assembly, seal all end grains for external components with primer or sealer as specified in section M60 and allow to dry.
- Protect completed joinery against damage, dirt, moisture and other deleterious substances.

END OF WORKS SECTION

Z11 PURPOSE MADE METALWORK

To be read with Preliminaries/General conditions.

110 MATERIALS GENERALLY:

- Grades of metals, section dimensions and properties to be to the appropriate British Standard. When not specified, select grades and sections appropriate for the purpose.
- Prefinished metal may be used if methods of fabrication do not damage or alter appearance of finish and finish is adequately protected.
- Fastenings to be to the appropriate British Standard and, unless specified otherwise, to be of the same metal as the component, with matching coating or finish.

120 FABRICATION GENERALLY:

- Fabricate components carefully and accurately to ensure compliance with design and performance requirements.
- Do not permit contact between dissimilar metals in components which are to be fixed where moisture may be present or occur.
- Finished components to be rigid and free from distortion, cracks, burrs and sharp arrises. Moving parts must move freely and without binding.
- Unless specified otherwise, mitre corner junctions of identical sections.

130 COLD FORMED WORK: Use brake presses or cold rolling to produce accurate profiles with straight arrises.**150 THERMAL CUTTING OF STAINLESS STEEL:** After cutting, grind off material which is liable to corrode.**170 WELDING/BRAZING GENERALLY:**

- Thoroughly clean surfaces to be joined.
- Ensure accurate fit using clamps and jigs where practicable. Use tack welds only for temporary attachment.
- Make joints with parent and filler metal fully bonded throughout with no inclusions, holes, porosity or cracks.
- Prevent weld spatter falling on surfaces of materials which will be self-finished and visible in completed work.
- Remove all traces of flux residue, slag and weld spatter.

180 WELDING OF STEEL: Metal arc welding to BS EN 1011-1:2009, or other methods subject to approval.**190 WELDING OF STAINLESS STEEL:** TIG welding to BS EN 1011-3, or other methods subject to approval. Use double bevel butt welds, backing bars to remove heat, jiggling, tack welds and any other measures necessary to minimise distortion. Remove slight distortion by light hammering, taking care not to damage surface finish.**250 FINISHING WELDED/BRAZED JOINTS:**

- Butt joints which will be visible in completed work to be smooth, flush with adjacent surfaces.
- Fillet joints which will be visible in completed work to be executed neatly. Grind smooth where specified.

310 APPLYING COATINGS:

- Apply after fabrication is complete and all fixing holes have been drilled, unless otherwise specified.
- Before applying coating remove all paint, grease, flux, rust, burrs and sharp arrises.
- Make good all defects which would show after application of coating and finish surfaces smooth.
- Paint to be as section M60.

Z11 Purpose made metalwork (continued)

Z11

360 GALVANIZING: To BS EN ISO 1461:2022.

SAMPLES

400 SAMPLES

- Samples are to be provided as shown on the Architect's drawings.

END OF WORKS SECTION

Z12 PRESERVATIVE TREATMENT

To be read with Preliminaries/General conditions.

110 GENERALLY:

- Application to be carried out after cutting and machining, but before assembly, by a processor licensed by the treatment solution manufacturer for the specified treatment.
- For each batch of timber, provide a certificate of assurance that treatment has been carried out as specified.

120 BWPDA COMMODITY SPECIFICATIONS, where specified, are those defined in the latest edition of the British Wood Preserving and Damp-proofing Association Manual. Solution strengths and treatment cycles to be selected to achieve the service life (if specified) and to suit timber treatability.**160 ORGANIC SOLVENT PRESERVATIVE TREATMENT:**

- Moisture content of timber at time of treatment to be as specified for the component at time of delivery. After treatment, timber to be surface dry before use.
- Application: Double vacuum/low pressure.
- Preservative solution manufacturer and reference: Contractor's choice and to be agreed with the CA.

END OF WORKS SECTION

Z20 FIXINGS/ADHESIVES

To be read with Preliminaries/General conditions.

- 110 **FIXING GENERALLY:** Use fixing and jointing methods and types, sizes, quantities and spacings of fasteners which are suitable having regard to:
- Nature of and compatibility with product/material being fixed and fixed to.
 - Recommendations of manufacturers of fasteners and manufacturers of components, products or materials being fixed and fixed to.
 - Materials and loads to be supported.
 - Conditions expected in use.
 - Appearance, this being subject to approval.
- 120 **FASTENERS** for materials and components forming part of external construction to be of corrosion resistant material or have a corrosion resistant finish.
- 130 **FASTENERS** for materials and components:
- Forming part of external construction but not directly exposed to the weather to be of corrosion resistant material or have a corrosion resistant finish.
 - Directly exposed to the weather to be of corrosion resistant material.
- 140 **FIXING THROUGH FINISHES:** Ensure that fasteners and plugs (if used) have ample penetration into the backing.
- 150 **PACKINGS:**
- Provide suitable, tight packings at fixing points to take up tolerances and prevent distortion.
 - Use noncompressible, rot proof, noncorrodible materials positioned adjacent to fixing points.
 - Ensure that packings do not intrude into zones that are to be filled with sealant.
- 160 **CRAMP FIXING:**
- When not specified otherwise, position cramps not more than 150 mm from each end of frame sections and at 600 mm maximum centres.
 - Secure cramps to frames with matching screws as masonry work proceeds, and fully bed in mortar.
- 170 **NAILING:**
- Nails: To BS 1202-1:2002.
 - In joints, use not less than two nails and opposed skew nailing unless specified otherwise.
 - Drive nails fully in without splitting or crushing the material being fixed.
 - Punch nail heads below surface that will be visible in the completed work.
- 180 **MASONRY NAILS:** Do not use without approval.
- 210 **PLUGS:**
- Proprietary types selected to suit the background, loads to be supported and conditions expected in use.
 - Locate plugs accurately in correctly sized holes in accordance with manufacturer's recommendations.
- 220 **SCREW FIXING:**
- Screws: To BS 1210-1:2002.
 - All screws to have clearance holes. Screws of 8 gauge or more and all screws into hardwood to have pilot holes about half the diameter of the shank.
 - Before using brass, aluminium or other soft metal wood screws precut the thread with a matching steel wood screw.
 - Do not hammer screws unless specifically designed to be hammered.
 - Drive countersunk heads flush with timber surface, or not less than 2 mm below it if they are to be stopped.
 - Washers and screw cups, where specified, to be of the same material as the screw.

- 230 PELLETING: Countersink screw heads 6 mm below timber surface and glue in grain-matched pellets not less than 6 mm thick, cut from matching timber. Pellets to occupy the whole depth of the holes and be finished off flush with surface.
- 240 PLUGGING: Countersink screw heads 6 mm below timber surface and glue in plugs. Plugs to occupy the whole depth of the holes and project from the surface.
- 250 POWDER ACTUATED FIXING SYSTEMS:
- Do not use without approval.
 - Tools to be to BS 4078-2:1989 and Kitemark certified and used in accordance with BS 4078-1:1987. Operatives to be trained and certified as competent by tool manufacturer.
 - Fasteners, accessories and consumables to be types recommended by the tool manufacturer.
 - Ensure that operatives take full precautions against injury to themselves and others.
 - Remove all unspent cartridges from the site when no longer required.
 - Apply zinc rich primer to heads of fasteners used externally, in external walls or in other locations subject to dampness.
 - Use top hat section plastics washers to isolate cartridge fired nails from stainless steel components fixed externally, in external walls or in other locations subject to dampness.
- 510 ADHESIVES:
- Adhesive types: As specified in the relevant section.
 - Surfaces to receive adhesive to be sound, unfrozen, free from dust, grease and any other contamination likely to affect bond. Where necessary, clean surfaces using methods and materials recommended by adhesive manufacturer.
 - Adjust surface regularity and texture as necessary to suit bonding and gap filling characteristics of adhesive.
 - Ensure that operatives observe manufacturer's and statutory requirements for storage and safe usage of adhesives.
 - Do not use adhesives in unsuitable environmental conditions or beyond the storage period recommended by the manufacturer.
 - Apply adhesives using recommended spreaders/applicators to ensure correct coverage. Bring surfaces together within recommended time period and apply pressure evenly over full area of contact to ensure full bonding.
 - Remove surplus adhesive using methods and materials recommended by adhesive manufacturer and without damaging surfaces.

END OF WORKS SECTION

Z21 MORTARS

To be read with Preliminaries/General conditions.

- 111 MORTAR MIX PROPORTIONS and other particular requirements are specified below.
- 120 SAND FOR MORTARS:
- To BS EN 13139:2002 unless specified otherwise.
 - Sand for facework mortar to be from one source, different loads to be mixed if necessary to ensure consistency of colour and texture.
 - Sand to be hard, clean and free from adherent coatings.
 - Sand to be well graded.
- 121 FINE AGGREGATE:
- To be naturally occurring crushed sandstone or stone dust, selected, sieved and graded in fineness to achieve the colour and texture desired, and well washed.
 - Keep the percentage of fine aggregates to a minimum.
- 130 SAMPLES:
- Sample panels are to be prepared for agreement with the architect in advance of work. **All sample panels are to be cured and this timescale is to be fully factored into the Main Contractor's programme.**
- 148 HYDRAULIC LIME: SAND MORTAR:
- Sample panels of bedding and ashlar pointing mixes are to be agreed with the architect prior to commencement. Samples are to be undertaken in areas agreed with the architect.
 - The colour specification and match for these mortars will be agreed between the contractor and architect prior to commissioning of sample panels.
 - Further sample batch will be required, if necessary, until a satisfactory result is achieved.
 - It is likely that different sands will be required for bedding and ashlar pointing mortar mixes.
 - Colour matches will be achieved through aggregate and lime combining alone, unless agreed otherwise with the architect.
 - On no account should coal, coal ash or clinker be added to the mortars.
- 149 MORTAR MIXES:
- The following table is a preliminary guide only to the range of mortars that will be required for different purposes, and to assist costing. Mixes are to be treated as only a starting point for mortar samples. Final mixes will be determined by agreement of sample panels. Proportions are by volume (dry).
- MIX 1 – FINE ASHLAR POINTING AND BEDDING (3-5mm JOINTS)
- Lime putty or NHL 2 hydraulic lime (St Astier or similar).
 - Fine (sieved 3mm down) well graded sharp sand and Forest of Dean sandstone dust.
- MIX 2 – WIDE JOINT ASHLAR POINTING AND BEDDING (4-10mm JOINTS)
- Lime putty or NHL 2 hydraulic lime (St Astier or similar).
 - Medium (sieved 4mm down) well graded sharp sand and Forest of Dean sandstone dust.
- 180 ADMIXTURES:
- Do not use in mortar unless specified or approved.
- 181 AGGREGATES
- Aggregates to produce the correct colour and texture to approval.
 - To be well washed, to be free of reactive silica (cryptocrystalline quartz or metamorphic schist) and low sulphate content.
 - Aggregates (with the exception of pit sand) are to be evenly graded 0.075mm to 5mm particle size to BS EN 13139:2002. Sieve test results are to be produced if requested. No more than 10% of any aggregate mix is to be above 5mm in size. Lime quantity is not be less than the volume of the void content of the mixed aggregate.

183 WATER:

- Potable water meeting the requirements of BS EN 1008:2002 is to be used.

200 SITE STORAGE OF CEMENT GAUGED MORTAR MATERIALS:

- Store different sands and aggregates in different stockpiles on hard clean bases that allow free drainage.
- Store bags of cement and hydrated lime in dry conditions, raised off the ground and not touching damp surfaces. Do not use cement or hydrated lime affected by damp or from damaged bags. Lime from opened bags should be used on the same day.
- Avoid intermixing and contamination between stored materials and other building materials, debris or other deleterious matter.

210 MAKING MORTAR:

- Keep plant and banker boards clean at all times.
- Measure materials accurately by volume using clean gauge boxes or clean, undamaged buckets. Proportions of mixes are for dry sand.
- Mix ingredients thoroughly to a consistence suitable for the work and free from lumps.
- Use roll pan mixers (such as Rolpanit) for mixing lime putty mortars.
- Do not mix mortar when the air temperature is at or below 6°C.
- Use mortar within about two hours of mixing at normal temperatures. Mortar may be knocked up at any time the same working day to restore workability. If the mix requires significant water added it must be rejected. Do not use hydraulic mortar, which has begun to stiffen.

223 MORTAR PROTECTION AND TENDING OF LIME MORTARS:

- Press back and repoint lime mortars before and after mortar takes on initial set.
- Take all necessary precautions to protect mortar from frost damage and undue mortar loss.
- Protect all areas of work with hessian and keep damp, to ensure a slow and even curing of mortar. During hot weather hessian must be applied immediately and kept continuously damp.
- Where the temperature is expected to drop below 5°C, the mortar must be insulated. Unprotected mortar damaged by frost is to be replaced at the contractor's expense.

224 PIGMENTS:

- To add to mortar mixes for colouring purposes, if required.
- Use only naturally occurring pigments, e.g. stone dust etc.
- Pigments to be to BS EN 12878:2014 and lime fast.

REPOINTING

231 EXTENT OF REPOINTING:

- Before starting work on each area of the building, agree with the CA the exact amount of existing pointing to remain untouched and the extent of repointing work to the remainder.

232 FROST AND INCLEMENT WEATHER:

- Do not use lime mortar in temperatures lower than 5°C.
- Maintain all areas of pointing above 5°C until the mortar has fully hardened and protect from frost damage for the duration of the contract. At temperatures of under 10°C lime mortar can take many weeks to carbonate.
- Protect new pointing against rain and snow, sun and wind, by covering when precipitation occurs and at the end of each day's work.
- Rake out and replace any mortar damaged by frost and where instructed. Rebuild damaged work.

233 RAKING OUT:

- Rake out to a minimum depth of 25mm, or equal to the joint width, whichever is the greater, using hand tools only.
- Remove loose, failed, mortar, dirt and root growth.

- Where mortar is dense, cut out using masonry chisels, with impact from club hammer obliquely to the joint face. Do not use power tools.
- Do not increase the joint width by using inappropriate tools or damaging the brick arrises.
- Check joint depths with a feeler gauge.
- Leave a clean square face after raking out.
- Thoroughly clean joints and flush out with water, avoiding unnecessary saturation. Remove all dust and debris.
- If old weathered-out joints have become coloured by algae, apply a biocide as Section C41.

234 REPOINTING GENERALLY:

- Dampen joints well before carrying out repointing.
- Work from top to bottom of the walls.
- New pointing to match old work in colour and texture (unless otherwise instructed).
- Use pointing iron to push the mortar into the joint with maximum pressure.
- Fill all voids. Allow for hand grouting and tamping-in wherever necessary to fill deep voids.
- Press back all mortar surfaces after the initial set.
- The existing finish of the mortar joints varies between different buildings on the job and between different parts of the buildings. Match adjacent joint profile or use a joint profile from elsewhere on the building as instructed. In general, however keep the joint surface slightly back from the face of the brick / stone and weather the face slightly.
- Unless otherwise instructed, carefully brush joints after the initial set to expose the aggregate.

236 CLEANING:

- Keep stone and brick surfaces free from mortar staining as far as possible.
- Clean off all stains from stone and brick faces as work proceeds. If hydrochloric acid or other acid is used, wash off fully immediately after use. Do not rub the surface of the wall.

237 TENDING LIME MORTAR POINTING:

- Cover, inspect damp down and press in mortar as required throughout the contract period, or until the mortar has fully dried out.
- Control drying to avoid shrinkage cracks.
- Protect all areas of repair work with hessian and keep damp to ensure slow, even curing of mortar.

END OF WORKS SECTION