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Roof Repair Works (MEND)

Works Section

TENDER

Contents

C20 Demolition 1
C40 Cleaning masonry/ concrete 5
G20 Carpentry/ timber-framing/ first fixing REVISED 9
H62 Natural slating REVISED 15
H71 Lead sheet fully supported roof and wall coverings/ flashings REVISED 25
H72 Aluminium strip/ sheet fully supported roof and wall coverings/ flashings 33
J41 Reinforced bitumen membrane roof coverings 36
K10 Gypsum board dry linings/ partitions/ ceilings 44
K11 Rigid sheet flooring/ sheathing/ decking/ sarking/ linings/ casings 49
K40 Demountable suspended ceilings 52
L10 Windows/ rooflights/ screens/ louvres 58
L20 Doors/ shutters/ hatches 65
L30 Stairs/ ladders/ walkways/ handrails/ balustrades 71
M20 Plastered/ rendered/ roughcast coatings 73
M60 Painting/clear finishing 82
P10 Sundry insulation/ proofing work REVISED 88
P12 Fire-stopping systems 91
P21 Door/ window ironmongery 102
R10 Rainwater drainage systems 103
Z10 Purpose made joinery 108
Z11 Purpose made metalwork 110
Z12 Preservative/ flame-retardant treatment 116
Z20 Fixings and adhesives 118
Z21 Mortars 121
Z22 Sealants 124
Z31 Powder coatings 125
Z33 Anodizing 130

C20
Demolition

General requirements

110 Desk study/ survey

1. Scope: Before starting deconstruction/ demolition work, examine available information, and carry out a survey of:
   1.1. the structure or structures to be deconstructed/ demolished,
   1.2. the site on which the structure or structures stand, and
   1.3. the surrounding area.
2. Report and method statements: Submit, describing:
   2.1. Form, condition and details of the structure or structures, the site, and the surrounding area.
      2.1.1. Extent: To the extent indicated on the drawings
   2.2. Type, location and condition of features of historical, archaeological, geological or ecological importance.
   2.3. Type, location and condition of adjoining or surrounding premises that might be adversely affected by removal of the structure or structures, or by noise, vibration and/ or dust generated during deconstruction/ demolition.
   2.4. Identity and location of services above and below ground, including those required for the Contractor's use, and arrangements for their disconnection and removal.
   2.5. Form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal.
   2.6. Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.
   2.7. Proposed programme of work, including sequence and methods of deconstruction/ demolition.
   2.8. Details of specific pre-weakening required.
   2.9. Arrangements for protection of personnel and the general public, including exclusion of unauthorized persons.
   2.10. Arrangements for control of site transport and traffic.
   2.11. Special requirements: Details of services supplied by the Statutory Authority.
   Disposal methods for gypsum-based products.
   Results of tests to determine the precise nature of hazardous materials.
   Site waste management plan development and proposals.
   Structural calculations in support of method statements.
3. Format of report: Electronic or paper

120 Extent of deconstruction/ demolition

1. General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to the extent indicated on the drawings.

140 Bench marks

1. Unrecorded bench marks and other survey information: Give notice when found. Do not remove marks or destroy the fabric on which they are found.

150 Features to be retained

1. General: Keep in place and protect the following: items as indicated on drawings.

Services affected by deconstruction/ demolition

210 Services regulations

1. Work carried out to or affecting new and/ or existing services: Carry out in accordance with the byelaws and/ or regulations of the relevant Statutory Authority.

220 Location of services

1. Services affected by deconstruction/ demolition work: Locate and mark positions.
2. Mains services marking: Arrange with the appropriate authorities for services to be located and marked.
    2.1. Marking standard: In accordance with National Joint Utilities Group 'Guidelines on the positioning and colour coding of underground utilities' apparatus'.

230 Services disconnection arranged by contractor

1. General: Arrange with the appropriate authorities for disconnection of services and removal of fittings and equipment owned by those authorities prior to starting deconstruction/ demolition.

260 Service bypass connections

1. General: Provide as necessary to maintain continuity of services to occupied areas of the site on which the deconstruction/ demolition is taking place and to adjoining sites/ properties.
2. Minimum notice to adjoining owners and all affected occupiers: 72 hours, if shutdown is necessary during changeover.

270 Services to be retained

1. Damage to services: Give notice, and notify relevant service authorities and/ or owner/ occupier regarding damage arising from deconstruction/ demolition.
2. Repairs to services: Complete as directed, and to the satisfaction of the service authority or owner.

Deconstruction/ demolition work

310 Workmanship

1. Standard: Demolish structures in accordance with BS 6187.
2. Operatives
    2.1. Appropriately skilled and experienced for the type of work.
    2.2. Holding, or in training to obtain, relevant CITB Certificates of Competence.
3. Site staff responsible for supervision and control of work: Experienced in the assessment of risks involved and methods of deconstruction/ demolition to be used.

320 Gas or vapour risks

1. Precautions: Prevent fire and/ or explosion caused by gas and/ or vapour from tanks, pipes, etc.

330 Dust control

1. General: Reduce airborne dust by periodically spraying deconstruction/ demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.

2. Lead dust: Submit method statement for control, containment and clean-up regimes.

340 Health hazards

1. Precautions: Protect site operatives and general public from hazards associated with vibration, dangerous fumes and dust arising during the course of the Works.

350 Adjoining property

1. Temporary support and protection: Provide. Maintain and alter, as necessary, as work proceeds. Do not leave unnecessary or unstable projections.
2. Defects: Report immediately on discovery.
3. Damage: Minimize. Repair promptly to ensure safety, stability, weather protection and security.
4. Support to foundations: Do not disturb.

360 Structures to be retained

1. Extent: As indicated on drawings.
2. Parts which are to be kept in place: Protect.
3. Interface between retained structures and deconstruction/ demolition: Cut away and strip out with care to minimize making good.

370 Partly demolished structures

1. General: Leave in a stable condition, with adequate temporary support at each stage to prevent risk of uncontrolled collapse. Make secure outside working hours.
2. Temporary works: Prevent overloading due to debris.
3. Access: Prevent access by unauthorized persons.

380 Dangerous openings

1. General: Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
2. Access: Prevent access by unauthorized persons.

391 Asbestos-containing materials – unknown occurrences

1. Discovery: Give notice immediately of suspected asbestos-containing materials when discovered during deconstruction/ demolition work. Avoid disturbing such materials.
2. Removal: Submit statutory risk assessments and details of proposed methods for safe removal.

410 Unforeseen hazards

1. Discovery: Give notice immediately when hazards such as unrecorded voids, tanks, chemicals, are discovered during deconstruction/ demolition.
2. Removal: Submit details of proposed methods for filling, removal, etc.

450 Site condition at completion

1. Debris: Clear away and leave the site in a tidy condition.

Materials arising

510 Contractor's property

1. Components and materials arising from the deconstruction/ demolition work: Property of the Contractor except where otherwise provided.
2. Action: Remove from site as work proceeds where not to be reused or recycled for site use.

511 Employer's property

1. Components and materials to remain the property of the Employer: Before commencement of the demolition works, identify and agree with the Employer, items, components and materials to be kept/protected or removed from site for the Employer.
2. Protection: Maintain until these items are removed by the Employer or reused in the Works, or until the end of the Contract.

520 Recycled materials

1. Materials arising from deconstruction/ demolition work: Can be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification and in accordance with any site waste management plan.
2. Evidence of compliance: Submit full details and supporting documentation.
   2.1. Verification: Allow adequate time in programme for verification of compliance.

Ω End of Section

C40
Cleaning masonry/ concrete

General/ preparation

110A Scope of work

1. DOFF cleaning system to existing stonework, cast cills, lintels, copings, corbels, gable vents etc to remove the build up of organic growth, lichen, dirt and grime deposits etc
2. Softwash cleaning system to existing rendered elevations to remove the build up of all organic growth, dirt and grime deposits.

142 Removal of fittings

1. Timing: Before commencement of cleaning work.
2. Disturbance to surfaces: Minimize.
3. Items for disposal: Refer to the Schedule of Works.
4. Items to be kept for reuse: Refer to the Schedule of Works.

160 Protection

1. Surfaces not designated for cleaning: Prevent damage, including marking and staining.
2. Openings: Prevent ingress of water, cleaning agents and detritus.
    2.1. Vents and grilles: Seek instructions before sealing up.
3. Temporary mechanical fastenings
    3.1. In masonry: Locate in joints.
    3.2. In other surfaces: Seek instructions.
4. Additional protection: Submit proposals.

175 Control and disposal of wash water and detritus

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

180 Cold weather

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

190 Cleaning generally

1. Operatives: Appropriately trained and experienced for each type of cleaning work.
    1.1. Evidence of training: Submit on request.
2. Control of cleaning: Confine cleaning processes and materials to designated areas. Prevent wind drift.
3. Detritus: Remove regularly. Dispose of safely.
4. Monitoring

4.1. Frequently check results of cleaning compared to approved trial samples. If results established by trials are not achieved, seek instructions.

4.2. Works to be inspected and approved in accordance with the requirements of the local planning authority.

5. Modifications to cleaning methods and materials: Seek instructions.

215 Record of cleaning works

1. Written report: Record cleaning methods and procedures used for each type of surface and deposit.
   1.1. Content: Relevant attributes of cleaning methods used including:
      1.1.1. Equipment and settings.
      1.1.2. Dwell times.
      1.1.3. Number of applications.
      1.1.4. Ambient temperatures.
2. Additional documentation: None.
3. Submission: At completion of cleaning works.

Products/ equipment

300 Compatibility of chemical products

1. Products: Compatible and produced by the same manufacturer.

312 Surface biocides

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

332 Water spray (mounted nozzles)

1. Equipment
   1.1. Spray/ Nozzle types: Submit proposals.
   1.2. Nozzles: Position and direction adjustable, relative to surfaces and profiles.
   1.3. Controls: Submit proposals.

342 Pressurized water cleaning equipment

1. Manufacturer: Contractor's choice to CA approval.
   1.1. Product reference: Contractor's choice to CA approval.
2. Operational pressure: Submit proposals.
3. Nozzles: Subject to site trials. Submit proposals.

352 Steam cleaning equipment

1. Manufacturer: Contractor's choice to CA approval.
   1.1. Product reference: Submit proposals.

362 Chemical agents

1. Manufacturer: Contractor's choice to CA approval.
   1.1. Product reference: Submit proposals.

Application

412 Removal of loosely adhered deposits

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

422 Biocide application

1. Preparation: Dampen dry growths and remove loose growths.
2. Surfaces: Prevent damage, including abrasion.
3. Biocide treatment: Appropriate solutions to kill growths and inhibit further growths.
    3.1. Dead growths: Remove.

432 Tooling

1. Tooling of surfaces: Not permitted.

442 Abrasive blocks

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

452 Abrasives cleaning

1. Surfaces: Minimize abrasion.
    1.1. Ingrained deposits: Seek instructions.
2. Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.
3. Detritus: Remove with clean water.

462 Water spray cleaning (mounted nozzles)

1. Surfaces: Minimize water run-off. Prevent damage.
2. Adjustment of washing cycle and nozzle positions: Regularly to achieve optimum cleaning performance.

472 Pressurized water cleaning

1. Surfaces: Prevent damage, including abrasion.
2. Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.

482 Steam cleaning

1. Surfaces: Prevent damage, including abrasion.
2. 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

1. pH indicator: To distinguish pH values between 1-14.
2. Testing before cleaning
    2.1. Clean rinsing water, wetted surfaces and joints: Test for pH. Record as 'control' values.

3. Testing after water rinsing and neutralization
    3.1. Wetted surfaces and joints: Record pH values.
    3.2. Acceptance criteria: Submit proposals.

500 Chemical cleaning

1. Surfaces: Prevent damage, including discolouration, bleaching and efflorescence.
2. Product variables (including concentrations, dwell times and number of applications): Adjust for each surface to achieve optimum cleaning performance.
3. Application: To wetted surfaces.
    3.1. Drying out: Prevent unless recommended otherwise by cleaning product manufacturer.
4. Removal of chemicals and neutralization: As recommended by product manufacturer, including rinsing with clean water.
    4.1. Additional treatment: Where water rinsing is insufficient to neutralize surface, apply compatible neutralizing agent.
    4.2. Surfaces and joints: Minimize absorption of chemicals. Prevent damage, including abrasion.

Ω End of Section

G20
Carpentry/ timber-framing/ first fixing REVISED

General

105 Timber procurement

1. Timber (including timber for wood-based products): Obtained from well-managed forests/ plantations in accordance with:
    1.1. The laws governing forest management in the producer country or countries.
    1.2. International agreements such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).
2. Documentation: Provide either in accordance with chain of custody certification scheme requirements:
    2.1. Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied. or
    2.2. Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood-based products.
3. Chain of Custody Certification scheme: Contractor's choice in accordance with UK Government timber procurement policy (UKTPP), i.e. FSC, GiB or PEFC.

160 Grading and marking of softwood

1. Timber of a target/ finished thickness less than 100 mm and not specified for wet exposure: Graded at an average moisture content not exceeding 20% with no reading being in excess of 24% and clearly marked as 'DG' (dry-graded).
2. Timber wet-graded and specified for installation at higher moisture contents: graded at an average moisture content above 20% and unmarked.
3. Structural timber members cut from large graded sections: Regraded to approval and marked accordingly.

Products

210A Structural softwood (graded direct to strength class) for structural softwood generally - External use REVISED

1. Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
2. Strength class to BS EN 338: C24.
3. Treatment:
    3.1. Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8.
        3.1.1. Design service life: 40 years.
    3.2. Fire retardant treatment: Fire retardant impregnation to NBS section Z12 and Wood Protection Association Commodity Specification FR4, Type HR.
4. Sizes:
    4.1. 47 mm (T1) x 75 mm (T1) - Size 1.
    4.2. 47 mm (T1) x 100 mm (T1) - Size 2.
    4.3. 47 mm (T1) x 150 mm (T1) - Size 3.
    4.4. 47 mm (T1) x 125 mm (T1) - Size 4.

4.5. T2 target sizes to suit application - Size 5.

210B Structural softwood (graded direct to strength class) for structural softwood generally - External use

1. Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
2. Strength class to BS EN 338: C16.
3. Treatment:
   3.1. Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8.
      3.1.1. Design service life: 40 years.
   3.2. Fire retardant treatment: Fire retardant impregnation to NBS section Z12 and Wood Protection Association Commodity Specification FR4, Type HR.
4. Sizes:
   4.1. 38 mm (T1) x 75 mm (T1) - Size 1.
   4.2. 38 mm (T1) x 100 mm (T1) - Size 2.
   4.3. T2 target sizes to suit application - Size 3.

210C Structural softwood (graded direct to strength class) for firrings

1. Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
2. Strength class to BS EN 338: C16.
3. Treatment:
   3.1. Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8.
      3.1.1. Design service life: 40 years.
4. Sizes:
   4.1. 47 mm (T1) thick tapered to suit 1 degree pitch. Minimum depth 25 mm - Size 1.
   4.2. T2 target sizes to suit application - Size 2.

270A Ungraded softwood generally - External use REVISED

1. Quality of timber: Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
2. Surface finish: Refer to drawings for details.
3. Treatment:
   3.1. Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8.
      3.1.1. Design service life: 40 years.
   3.2. Fire retardant treatment: Fire retardant impregnation to NBS section Z12 and Wood Protection Association Commodity Specification FR1, Type HR.
4. Sizes:
   4.1. 25 mm x 38 mm (sawn) - Size 1.
   4.2. 38 mm x 38 mm (sawn) - Size 2.
   4.3. 38 mm x 50 mm (sawn) - Size 3.
   4.4. 50 mm x 50 mm (sawn) - Size 4.

4.5. 75 mm x 50 mm (sawn) - Size 5.

4.6. 100 mm x 50 mm (sawn) - Size 6.

4.7. Sawn/ regularised to suit application - Size 7.

275A Wood trim for fascia and barge boards

1. Species: Contractor's choice.
2. Standard: To BS 1186-3.
   2.1. Class: 2.
3. Treatment: Organic solvent impregnation to NBS section Z12 and Wood protection Association Commodity Specification C5.
   3.1. Design service life: 40 years.
4. Finish: Prepared and primed as clause M60.130A.
5. Fixing: Two 50 mm lost head nails to each support.
6. Other requirements: Fascia and barge board thicknesses depth and profile are to match existing.

Workmanship generally

401 Cross section dimensions of structural softwood and hardwood

1. Dimensions: Dimensions in this specification and shown on drawings are target sizes as defined in BS EN 336.
2. Tolerances: The tolerance indicators (T1 and T2) specify the maximum permitted deviations from target sizes as stated in BS EN 336, clause 4.3:
   2.1. Tolerance Class 1 (T1) for sawn surfaces.
   2.2. Tolerance Class 2 (T2) for further processed surfaces.

402 Cross section dimensions of non-structural softwood

1. Dimensions: Dimensions in this specification and shown on drawings are finished sizes.
2. Maximum permitted deviations from finished sizes: As stated in BS EN 1313-1, clause 6 for sawn sections.

420 Warping of timber

1. Bow, spring, twist and cup: Not greater than the limits set down in BS EN 14081-1 and BS 4978 for softwood, or BS EN 14081-1 and BS 5756 for hardwood.

430 Selection and use of timber

1. Timber members damaged, crushed or split beyond the limits permitted by their grading: Do not use.

435 Notches, holes and joints in timber

1. Notches and holes
   1.1. General: Avoid if possible.
   1.2. Sizes: Minimum needed to accommodate services.
   1.3. Position: Do not locate near knots or other defects.
   1.4. In same joist: Minimum of 100 mm apart horizontally.
   1.5. Notches in joists
      1.5.1. Position: Locate at top. Form by sawing down to a drilled hole.
      1.5.2. Depth (maximum): 0.15 x joist depth.

1.5.3. Distance from supports: Between 0.1 and 0.2 x span.

1.6. Holes in joists

1.6.1. Position: Locate on neutral axis.

1.6.2. Diameter (maximum): 0.25 x joist depth.

1.6.3. Centres (minimum): Three x diameter of largest hole.

1.6.4. Distance from supports: Between 0.25 and 0.4 of span.

1.7. Notches in roof rafters, struts and truss members: Not permitted.

1.8. Holes in struts and columns: Locate on neutral axis.

1.8.1. Diameter (maximum): 0.25 x minimum width of member.

1.8.2. Centres (minimum): Three x diameter of largest hole.

1.8.3. Distance from ends: Between 0.25 and 0.4 of span.

2. Scarf joints, finger joints and splice plates: Do not use without approval.

440 Processing treated timber

1. Cutting and machining: Carry out as much as possible before treatment.
2. Extensively processed timber: Retreat timber sawn lengthways, thicknessed, planed, ploughed, etc.
3. Surfaces exposed by minor cutting/ drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

450 Moisture content

1. Moisture content of wood and wood-based products at time of installation: Not more than:
   1.1. Covered in generally unheated spaces: 24%.
   1.2. Covered in generally heated spaces: 20%.
   1.3. Internal in continuously heated spaces: 20%.

451 Moisture content testing

1. Procedure: When instructed, test timber sections with an approved electrical moisture meter.
2. Test sample: Test 5%, but not less than ten lengths of each cross section in the centre of the length.
3. Test results: 90% of values obtained to be within the specified range. Provide records of all tests.

510 Protection

1. Generally: Keep timber dry and do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.
2. Timber and components: Store under cover, clear of the ground and with good ventilation. Support on regularly spaced, level bearers on a dry, firm base. Open pile to ensure free movement of air through the stack.
3. Trussed rafters: Keep vertical during handling and storage.

520 Exposed end grain protection

1. Components: Seal exposed end grain of the following before delivery to site: All.
2. Sealer: Clear end grain sealer.

530 Painted finishes

1. Structural timber to be painted: Primed as specified before delivery to site.

540 Clear finishes

1. Structural timber to be clear finished: Keep clean and apply first coat of specified finish before delivery to site.

550 Exposed timber

1. Planed structural timber exposed to view in completed work: Prevent damage to and marking of surfaces and arrises.

Jointing timber

570 Jointing/ fixing generally

1. Generally: Where not specified precisely, select methods of jointing and fixing and types, sizes and spacings of fasteners in compliance with section Z20.

630 Bolted joints

1. Bolt spacings (minimum): To BS EN 1995-1-1, section 8.5.
2. Holes for bolts: Located accurately and drilled to diameters as close as practical to the nominal bolt diameter, and not more than 2 mm larger.
3. Washers: Placed under bolt heads and nuts that would otherwise bear directly on timber. Use spring washers in locations which will be hidden or inaccessible in the completed building.
4. Bolt tightening: So that washers just bite the surface of the timber. Ensure that at least one complete thread protrudes from the nut.
    4.1. Checking: At agreed regular intervals up to completion. Tighten as necessary.

670 Anti-corrosion finishes for fasteners

1. Galvanizing: To BS 7371-6, with internal threads tapped and lightly oiled following treatment.
2. Sherardizing: To BS 7371-8, Class 1.
3. Zinc plating: To BS EN ISO 4042 and passivated.

Erection and installation

740 Pre-erection checking

1. Timing: Not less than ten days before proposed erection start date.
2. Checklist
    2.1. Foundations and other structures to which timber structure will be attached: Check for accuracy of setting out.
    2.2. Holding down bolts: Check for position, protruding length, condition and slackness.
3. Inaccuracies and defects: Report without delay.
4. Erection: Obtain permission to commence.

750 Modifications/ Repairs

1. Defects due to detailing or fabrication errors: Report without delay.
2. Methods of rectification: Obtain approval of proposals before starting modification or remedial work.
3. Defective/damaged components: Timber members/ components may be rejected if the nature and/or number of defects would result in an excessive amount of site repair.

760 Temporary bracing

1. Provision: As necessary to maintain structural timber components in position and to ensure complete stability during construction.

770 Additional supports

1. Provision: Position and fix additional studs, noggings and/ or battens to support edges of sheets materials, and wall/ floor/ ceiling-mounted appliances, fixtures, etc. shown on drawings
2. Material properties: Additional studs, noggings and battens to be of adequate size and have the same treatment, if any, as adjacent timber supports.

775 Bearings

1. Timber surfaces which are to transmit loads: Finished to ensure close contact over the whole of the designed bearing area.
2. Packings: Where provided, to cover the whole of the designed bearing area.
    2.1. Crushing strength: Not less than timber being supported.
    2.2. In external or inaccessible locations: Rot and corrosion proof.

780 Wall plates

1. Position and alignment: To give the correct span and level for trusses, joists, etc.
2. Bedding: Fully in fresh mortar.
3. Joints: At corners and elsewhere where joints are unavoidable use nailed half-lap joints. Do not use short lengths of timber.

784 Joists generally

1. Centres: Equal, and not exceeding designed spacing.
2. Bowed joists: Installed with positive camber.
3. End joists: Positioned approximately 50 mm from masonry walls.

795 Trimming openings

1. Trimmers and trimming joists: When not specified otherwise, not less than 25 mm wider than general joists.

Ω End of Section

H62
Natural slating REVISED

Types of slating

105 Roof slating to pitched roofs R1, R4 and R5 REVISED

1. Description: TO PITCHED ROOFS R1, R4 & R5.
2. Substrate: Existing rafters at 600 mm centres
3. Pitch: Existing - estimated 35°
4. Underlay: Vapour-permeable underlay as clause 235A.
    4.1. Direction: Parallel to eaves.
    4.2. Head-lap (minimum): 150 mm.
5. Battens
    5.1. Size: 50 x 25 mm.
    5.2. Fixing: 65 x 3.35 mm galvanized annular ring shank nails.
6. Slates
    6.1. Supplier: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.
        6.1.1. Product reference: RIVERSTONE PHYLLITE.
    6.2. Type: ULTRA.
    6.3. Size: 400 mm x 250 mm.
    6.4. Head-lap (minimum): 100 mm.
7. Fixing: Two nails each slate. 35 x 3.35 mm, copper nails.
8. Eaves slates: Two, 40 mm x 3.35 mm copper nails.

110 Sub-contractor's information

1. It is the roofing subcontractor's responsibility to check that the background to which he is applying slating is square, plumb, and level. If the backgrounds are defective then this should be bought to the attention of the Site Manager and under no circumstances should, felt, battens or slating be applied to defective roof slopes.

120 Vertical slating to gable ends of roof R2

1. Substrate: Existing timber framework with 12mm panelvent sheathing board.
2. Underlay: Vapour-permeable underlay to BS EN 13859, Class W1 as clause 235B.
    2.1. Recycled content: None permitted.
    2.2. Fixing: Parallel to bottom edge.
    2.3. Horizontal lap (minimum): 100 mm.
3. Battens
    3.1. Size: 50 x 25 mm
    3.2. Fixing: 65 x 3.35 mm galvanized annular ring shank nails.
4. Slates
    4.1. Supplier: RTC QUARRIES TREVILLETT. T: 01840 770010. W: www.rtcquarries.co.uk.
        4.1.1. Product reference: CORNISH ROOFING SLATE.

4.2. Type: Cornish blue-grey.
4.3. Size: 400 mm L x 250 mm W.
4.4. Head-lap (minimum): 44.5 mm
4.5. Fixing: Two nails each slate.

5. Accessories: None.

145 Roof slating to pitched roofs R2, R3 and S5 REVISED

1. Description: TO PITCHED ROOF R2, R3 & S5.
2. Substrate: Existing timber sarking boards on rafters at 600 mm centres.
3. Pitch: Existing - Estimated 35°.
4. Underlay: Vapour-permeable underlay as clause 235A.
   4.1. Recycled content: None permitted.
   4.2. Direction: Parallel to eaves.
   4.3. Head-lap (minimum): 150 mm.
5. Counter battens
   5.1. Size: 38 x 50 mm.
   5.2. Fixing: As clause 259.
6. Battens
   6.1. Size: 50 x 25 mm.
   6.2. Fixing: 65 x 3.35 mm galvanized annular ring shank nails.
7. Slates
   7.1. Supplier: RTC QUARRIES TREVILLETT. T: 01840 770010. W: www.rtcquarries.co.uk.
      7.1.1. Product reference: CORNISH ROOFING SLATE.
   7.2. Type: Cornish blue-grey.
   7.3. Size:
   7.4. Length: Random, from 300 mm to 500 mm.
   7.5. In regular diminishing courses.
   7.6. Width: Random, not less than half length.
   7.7. Head-lap and side-lap: In accordance with BS 5534, clause 5.5, to suit slate size, roof pitch and exposure.
   7.8. Fixing: Two nails each slate. 35 x 3.35mm, copper nails.
   7.9. Eaves slates: Two, 40 x 3.35mm copper nails.
8. Accessories: None.

Performance - Not Used

Slating generally

205 Suppliers information ADDED

1. Check the existing supporting roof structure to be slated is in a suitable state to receive the roof covering. It must be sound and true to its flatness and square. SSQ cannot be held responsible for problems that exist prior to roof slating.
2. Comply with SSQ Natural Roofing Slate Design and Fixing Guide and the following British Standards.

2.1. BS 5534:14 code of practice for slating and tiling,

2.2. BS 8000:13-part 6 Workmanship, slating and tiling.

3. Specification and drawings take precedence over SSQ slates data sheets.

210 Basic workmanship REVISED

1. Grading: All slates to be sorted and graded on the ground prior to going on the scaffold, into a minimum of three thicknesses, thin, medium, and thick, with the thicker slates at the eaves etc.,
2. General: Fix slating and accessories to make the whole sound and weathertight at earliest opportunity.
3. Setting out: To true lines and regular appearance, with neat fit at edges, junctions and features.
4. Fixings for slating accessories: As recommended by manufacturer.
5. Gutters and pipes: Keep free of debris. Clean out at completion.

220 Removing existing slating

1. General: Carefully remove slates, battens, underlay, etc. with minimum disturbance of adjacent retained slating.
2. Undamaged slates: Set aside for reuse.

235A Vapour-permeable underlay to pitched roofs R1, R2, R3 R4, R5 and S5

1. Manufacturer: PERMAVENT LTD. T: 01305 766703. W: www.permavent.co.uk.
   1.1. Product reference: APEX air and vapour permeable membrane
2. Standard: To BS EN 13859-1.
   2.1. Resistance to water penetration: Class W1
3. Tape: Integrated tape system.
4. Underlay support: : SSQ eaves protection boards 1500 mm.
   4.1. Manufacturer:: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.
      4.1.1. Product reference:: EPB-150.
5. Laying:: Maintain consistent tautness.
6. Vertical laps (minimum):: 100 mm wide, coinciding with supports and securely fixed.
7. Fixing:: Galvanised steel, copper, or aluminium 20 x 3 mm extra large clout head nails.
8. Eaves:: Where exposed, underlay must be BS 8747 Annex B, type 5U, or equivalent UV durable type.
9. Penetrations:: Use proprietary underlay seals or cut underlay to give a watertight fit around pipes and components.
10. Ventilation paths:: Do not obstruct.

235B Breather membrane to vertical slating

1. Standard:
   1.1. To BS EN 13859-1.
   1.2. To BS EN 13859-2.
   1.3. To EN 13501-1.
2. Material: Thermoplastic polyurethane (TPU).
   2.1. Form: Non-woven laminate.
3. Manufacturer: NOVIA LTD. T: 01622 678952. W: www.novia.co.uk.
   3.1. Product reference: NOVIA FR BREATHER MEMBRANE.

4. Performance characteristics: Class B fire rated to current Building Regulation requirements.
5. Class (minimum): W1.
6. Weight: 110 g/m².
7. Reflective face: 0%.
8. Tensile strength: Machine direction: 270 N/50 mm; cross direction: 175 N/50 mm to EN 12311-1.
9. Elongation (to EN 12311-1): 25% to EN 12311-1.
10. Tear resistance: Machine direction: 90 N; cross direction: 100 N to EN 12310-1.
11. Resistance to air penetration: 0.05 m³/(m².h.50 Pa) to EN 12114.
12. Sd value: 0.075 m to EN ISO 12572 C.
13. Resistance to water penetration:
    13.1. Class W1 to EN 1928A.
    13.2. Class W1 (after ageing) to EN 13859-1 Annex C.
14. Reaction to fire: B-s1,d0 to EN 13501-1 (when fitted to A1/ A2 materials, D-s2,d0 when on wood).
15. Low temperature stability: -40°C to EN 1109.
16. UV resistance: Excellent.
17. Installation: Fix carefully and neatly to provide a complete barrier to water, snow and wind blown dust. Extend membrane below lowest timber member and into reveals of openings.
    17.1. Laps: Horizontal: 100 mm. Vertical: 150 mm and staggered, to shed water away from substrate.
    17.2. Fasteners: As recommended by membrane manufacturer.

240 Underlay

1. Handling: Do not tear or puncture.
2. Laying: Maintain consistent tautness.
3. Vertical laps (minimum): 100 mm wide, coinciding with supports and securely fixed.
4. Fixing: Galvanized steel, copper or aluminium 20 x 3 mm extra-large clout head nails.
5. Eaves: Where exposed, use an external grade (UV resistant) underlay or a proprietary eaves support product.
6. Penetrations: Use proprietary underlay seals or cut underlay to give a watertight fit around pipes and components.
7. Ventilation paths: Do not obstruct.

245 Battens/ counter battens REVISED

1. Timber: Sawn softwood.
    1.1. Manufacturer: MARLEY LTD. T: 01283 722330. W: www.marley.co.uk.
        1.1.1. Product reference: JB RED BATTEN.
    1.2. Species: In accordance with BS 5534, clause 4.12.1.
    1.3. Permissible characteristics and defects: Not to exceed limits in BS 5534, Annex C.
    1.4. Grading: Mechanically graded to comply will BS5534 and treated to BS8417:2003 and carry a 60year guarantee and be FSC or PEFC certified.
    1.5. Moisture content at time of fixing and covering (maximum): 22%.
2. Preservative treatment: As section Z12 and Wood Protection Association Commodity Specification C8.
3. Type: Red/ Blue.

3.1. Note: It is not advisable to use Green Batten (semi graded) as further on site grading is not always carried out and could cause problems in the future.

255 Counter battens on rigid sarking

1. Fixing: Through rigid sarking into rafters at not more than 300 mm centres.

259 Counter battens on rafters ADDED

1. Fixing: Into rafters at not more than 300 mm centres.

260A Cavity ventilation profile

1. Material: Coated aluminium.
2. Manufacturer: WEMICO LIMITED. T: 01562 820123. W: www.wemico.com.
   2.1. Product reference: WEMICO 30 mm x 40 mm ALUMINIUM BLACK COATED VENTILATION PROFILE - Ref: 9300BLACK.
3. Fixing: Fixed to panelvent sheathing board substrate in locations indicated on the detailed drawings using stainless steel screws into plastic plugs.

265 Batten fixing REVISED

1. Setting out: Align parallel to ridge in straight horizontal lines to gauge of slates. Align on adjacent areas.
2. Batten length (minimum): Sufficient to span over three supports.
3. Joints in length: Square cut. Butt centrally on supports. Joints must not occur more than once in any group of four battens on one support.
4. Additional battens: Provide where unsupported laps in underlay occur between battens.
5. Fixing: Each batten to each support. Splay fix at joints in length.
6. Other requirements: Top batten to have an additional 25x6mm lath nailed to it to take head bearing of top slate.

272 Timber for slating substrate work

1. Timber: Sawn softwood, free from wane, pitch pockets, decay and insect attack (ambrosia beetle excepted).
   1.1. Moisture content at time of fixing and covering (maximum): 22%.
2. Preservative treatment: As section Z12 and Wood Protection Association Commodity Specification C8.

275 Slate fixing to pitched roofs R2, R3 and S5

1. Setting out: Lay slates with an even overall appearance with slightly open (maximum 5 mm) butt joints. Align tails.
2. Slate thickness: Consistent in any one course. Lay with thicker end as tail.
3. Ends of courses: Use extra wide slates to maintain bond and to ensure that cut slates are as large as possible. Do not use slates less than 150 mm wide.
4. Top course: Head-nail short course to maintain gauge.
5. Fixing: Centre nail each slate twice through countersunk holes 20-25 mm from side edges.
   5.1. Nails: Copper clout to BS 1202-2 or aluminium clout to BS 1202-3.
   5.2. Nail dimensions: Determine in accordance with BS 5534 to suit site exposure, withdrawal resistance and slate supplier's recommendations.

276 Slate fixing to pitched roofs R1, R4 and R5 REVISED

1. Setting out: Lay slates with an even overall appearance with slightly open (maximum 5mm) butt joints. Align tails.
2. Slate thickness: Consistent in any one course. Lay with thicker end as tail.
3. Ends of courses: Use extra wide slates to maintain bond and to ensure that cut slates are as large as possible. Do not use slates less than 150 mm wide.
4. Top course: Head-nail short course to maintain gauge.
    4.1. Nails: To BS1202 - copper clout.
5. Fixing: Centre nail each slate twice through countersunk holes 20-25mm (maximum) from side edges.
6. Nails: SSQ COPPER CLOUT 35 x 3.35mm.
    6.1. Manufacturer: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.
        6.1.1. Product reference: CN33535.
7. Nails: SSQ COPPER CLOUT 40 x 3.35mm (Eave's course).
    7.1. Manufacturer: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.
        7.1.1. Product reference: CN33540.
8. Nail dimensions: Determine in accordance with BS 5534 to suit site exposure, With drawl resistance, and slate supplier's recommendations.

280A Riverstone ultra - Declaration of performance REVISED

1. Standards:
2. Product specification: To BS EN 12326-1.
3. Methods of test: To BS EN 12326-2.
4. Slate type: PHYLLITE.
5. Dimensional tolerances:
    5.1. Deviations from declared length, width, edge straightness, rectangularity, and flatness is not to exceed values specified in BS EN 12326-1, clause 5.12.
6. Thickness:
    6.1. Nominal thickness and individual thickness variation: To BS EN 12326-1, clause, 5.2.
7. Strength:
    7.1. Characteristic modulus of rupture: (What the minimum requirement is):
        7.1.1. Transverse: 31MPa.
        7.1.2. Longitudinal: 53MPa.
    7.2. Mean MoR:
        7.2.1. Transverse: 43MPa.
        7.2.2. Longitudinal: 67MPa.
8. Water absorption: Code: W1: 0.22% .
9. Freeze-thaw resistance: Not required.
10. Thermal cycle test: Complies: Code: T1.
11. Carbonate content: Complies: 2.3%.
12. Sulphur dioxide test Code: S1.
13. Non-carbonate carbon content: Less than or equal to 2%, Complies: 0.5%.

14. 100 Year Guarantee.
15. Full Labour Back Guarantee.

290 Mortar bedding/ Pointing REVISED

1. Mortar: As section Z21, 1:3 cement:sand, with plasticizing admixtures permitted.
    1.1. Bond strength providing resistance to uplift: In accordance with BS 5534.
    1.2. Sand: To BS EN 1313.
    1.3. Cement: To BS EN 197-1:2011 (Portland cement to class 42.5).
    1.4. Admixtures: To BS EN 934-3.
    1.5. Pigments: To BS EN 12878.
2. Weather: Do not use in wet or frosty conditions or when imminent.
3. Preparation of concrete and clay tile accessories to be bedded: Wet and drain surface water before fixing.
4. Appearance: Finish neatly as work proceeds and remove residue.

Roof slating edges/ junctions/ features

305 Generally

1. Fittings and accessories: As recommended by slate supplier, do not improvise.
    1.1. Exposed fittings and accessories: To match slate colour and finish.
2. Cut slates: Cut only where necessary, to give straight, clean edges.
3. Flashings: Fix with or immediately after slating. Form neatly.

305A Generally REVISED

1. Ensure that related trades are provided with all relevant information relating to carpentry and other work, etc. Before starting work ensure that previous related work is complete and in accordance with the project documents.
2. Form all details using the specified recommended fittings and accessories: do not improvise without prior approval.
3. Please be aware that this specification complies with the minimum requirements set out in British Standards to conform to, Building Regulations. For certain projects such as new housing there may be additional non-regulatory technical requirements from third party insurers that have to be satisfied. For example, there is now a requirement for all mortar bedded ridges and hips must be mechanically fixed to comply with the NHBC Technical Standards to be eligible for NHBC Buildmark Warranty Cover. It is your responsibility to check.
4. Fittings and accessories: As recommended by slate supplier, to match in colour and finish unless specified otherwise.do not improvise.
5. Exposed fittings and accessories: To match slate colour and finish.
6. Cut slates: Cut only where necessary, to give straight, clean edges.
7. Fix edge slates and fittings securely to give neat and true lines. Ensure that all lead flashings are fixed with or immediately after the slating and are neatly dressed down, to the LSA requirements.

325 Fire-separating walls ADDED

1. Separating walls: Completely fill space between top of wall and underside of slates with mineral wool quilt to provide fire-stopping.

2. Boxed eaves: Completely seal air paths in plane of separating wall with wire-reinforced mineral wool, not less than 50 mm thick, fixed to rafters and carefully cut to shape fire-resisting board and quilt to provide fire-stopping.

355A Ventilated eaves with separated grilles/ trays to pitched roofs R1, R4 and R5

1. Fascia grilles: SSQ OVER FASCIA VENT 1000 mm x 25 mm.
    1.1. Manufacturer: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.
        1.1.1. Product reference: OFV25-1000.
2. Ventilator trays: SSQ CONTINUOUS RAFTER TRAY 6000 mm x 600 mm.
    2.1. Manufacturer: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.
        2.1.1. Product reference: RPV-600.
3. Fix to provide free passage of air over insulation.
4. Continuous to prevent water retaining troughs.
5. Gutter: Dress underlay or underlay support tray to form drip into gutter.
6. Under course and first course slates: Fix with tails projecting 50 mm over gutter or to centre of gutter, whichever dimension is the lesser.

445 Mortar-bedded verges with bedded undercloak to pitched roofs R2, R3, R4 and R5

1. Underlay: Carry 50 mm onto outer leaf of gable wall and bed on mortar.
2. Undercloak: Slates.
    2.1. Position: Over underlay, level with underside of slating battens, sloping towards verge.
    2.2. Projection beyond face of wall: 38-50 mm.
    2.3. Bedding: On mortar identical to that used in gable walling.
3. Slating battens: Carry onto undercloak and finish 100 mm from verge edge.
4. Verge slates
    4.1. Bedding: Flush with undercloak on 75 mm wide bed of mortar.
    4.2. Pointing: Flush profile.
    4.3. Fixing: Do not displace or crack mortar.

565A Mortar bedded and mechanically fixed tile hips ADDED

1. Underlay: Lay courses over hip.
2. Overlaps (minimum): 150 mm.
3. Hip tile fixing batten.
4. Roof slates: Cut and fix closely at hip.
5. Hip tiles: PLASMA INTERLOCKING CLAY UNIVERSAL ANGLE HIP.
6. Colour: Anthracite.
7. Manufacturer: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.
    7.1. Product reference: CS TILES PL2 (30-50deg).
8. Bedding: On mortar, continuous to edges and solid to joints.
9. Fixing: Secure to hip tile fixing battens with nails/ wire ties or screws as, recommended by the hip tile manufacturer.
10. Bottom hip tiles: Shape neatly to align with corner of eaves and fill ends with mortar and tile slips finished flush.

615A Metal valleys

1. Lay an additional piece of 5mm external quality plywood on top of the valley board, the valley board should extend 225mm each side of the valley with tilting fillets positioned 150mm each side of the centre.
2. Valley lining boards should not be less than 19mm thick.
3. Underlay: Cut to rake. Dress over tilting fillets to lap onto lead valley. Do not lay under lead.
4. Roof slates: Cut extra wide slates adjacent to valley to fit neatly.
5. Valley width between slates, minimum 100mm.

660Side abutments

1. Underlay: Turn up not less than 100 mm at abutments.
2. Abutment slates: Cut as necessary. Fix close to abutments.
3. Soakers: Interleave with abutment slates. Fix by turning down over head of abutment slates.

660A Side abutments

1. Abutment slates: Cut as necessary, slates less than 150mm wide should not be used. Fix close to abutments.
2. Underlay: Turn up not less than 100 mm at abutments.
3. Code 3 lead soakers length; gauge + lap + 25mm.
4. Fix cover flashing over soaker up stands and secure into brickwork joints.
5. Soakers: Interleave with abutment slates. Fix by turning down over head of abutment slates.

670 Top edge abutments

1. Underlay: Turn up not less than 100 mm at abutments.
2. Top slate courses: Fix close to abutments.

700A Dry ventilated tile ridges to pitched roofs R1, R4 and R5 REVISED

1. Underlay: Provide air gap at apex as recommended by ridge tile manufacturer.
2. Dry ridge fixing battens: In accordance with BS 5534.
3. Dry ridge tiles: PLASMA INTERLOCKING CLAY UNIVERSAL ANGLE RIDGE 450 mm.
4. Colour: Anthracite.
5. Manufacturer: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.
    5.1. Product reference: PL2 (30-50 degree).
6. Fixing:
    6.1. Secure to ridge fixing battens with screws provided.
7. Batten brackets: SSQ GALVANISED RIDGE BATTEN BRACKETS.
    7.1. Manufacturer: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.
        7.1.1. Product reference: GRBB.
8. Ridge roll: ECLIPSE VENTILATED RIDGE ROLL 5 mtr CLASSIC.
    8.1. Manufacturer: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.
        8.1.1. Product reference: EVRR5.

850A Roof slope terminals ADDED

1. Ventilator slates: ECLIPSE NATURAL TOP IN-LINE SLATE VENT.

1.1. Manufacturer: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.

1.1.1. Product reference: NATVENT.

2. Pipe adapter: SSQ Pipe Adaptor.

2.1. Manufacturer: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.

2.1.1. Product reference: HYBRID PA-1.

3. Flexi pipe: SSQ Flexi-Pipe 110mm.

3.1. Manufacturer: SPANISH SLATE QUARRIES UK LTD. T: 020 8038 0292. W: www.ssqgroup.com.

3.1.1. Product reference: HYBRID FLX110.

3.2. Connect to SVP and/ or Mechanical extraction.

Vertical slating edges/ junctions

910 Bottom edges

1. Slating substrate work: Fix timber tilting fillet to support bottom course of slates in correct vertical plane. Fix flashing to tilting fillet.
2. Underlay: Dress over flashing.
3. Undercourse and bottom course slates: Fix with tails neatly aligned.

920 Top edges

1. Top slate courses: Fix under abutment and make weathertight with flashings dressed down not less than 150 mm.

930 Side abutments

1. Slating substrate work: Chase abutment wall and insert stepped flashing.

1.1. Flashing: Return not less than 75 mm behind slating, overlapping underlay and battens. Turn back to form a vertical welt.

2. Abutment slates: Cut and fix neatly.

950 Angles with soakers

1. Angle slates: Cut extra wide slates and fix to form a straight, close mitred junction.
2. Soakers: Interleave with angle slates. Fix by nailing to battens at top edge.

960 Junction with roof verges

1. Slating substrate work: Fix additional slating batten parallel to and below verges.
2. Course end slates: Splay cut slate and a half width slates to angle of verge rake. Fix to additional slating batten with cut edge parallel to and below verge.

Ω End of Section

H71
Lead sheet fully supported roof and wall coverings/ flashings

REVISED

Types of leadwork

209 Gutter lining – box, parapet, tapered and flat roof valley

1. Substrate: New plywood decking and existing plywood/ timber boarded decking.
    1.1. Preparation: Make good existing plywood/ timber boarded decking where necessary.
2. Sheet underlay: Needle punched, non-woven geotextile.
    2.1. Manufacturer: ASSOCIATED LEAD MILLS (ALM). T: 01992 444100. W: www.associatedlead.co.uk.
        2.1.1. Product reference: GEOTEC.
3. Type of lead: Rolled to BS EN 12588.
    3.1. Thickness: 3.15 mm (Code 7).
    3.2. Manufacturer: ASSOCIATED LEAD MILLS (ALM). T: 01992 444100. W: www.associatedlead.co.uk.
        3.2.1. Product reference: ROLLED LEAD.
4. Pretreatment: Apply thin coating of patination oil to underside of lead and allow to dry before laying.
5. Joints in direction of fall: Wood-cored roll as clause 840, for widths of lead sheet greater than 900 mm.
    5.1. Manufacturer: ASSOCIATED LEAD MILLS (ALM). T: 01992 444100. W: www.associatedlead.co.uk.
        5.1.1. Product reference: WOOD CORED ROLL.
    5.2. Spacing: On centre line of gutter and evenly distributed over width of gutter.
6. Cross joints: Drips with splash laps as clause 860 for lengths of lead sheet greater than 2500mm.
    6.1. Spacing: Evenly distributed over the length of the gutter.
7. Outlets: Turn down 75 mm into fascia gutter
    7.1. Chute outlet through wall to hopper head at each end on Roof R1.
    7.2. Turn down 75 mm into fascia gutter on Roof R5.

230 Valley gutter lining to slate/ tile roofs

1. Sheet underlay: Building paper to BS 1521, Class A1.
2. Type of lead: Rolled to BS EN 12588.
    2.1. Thickness: 2.00 or 2.24 mm (Code 5).
3. Manufacturer: ASSOCIATED LEAD MILLS (ALM). T: 01992 444100. W: www.associatedlead.co.uk.
    3.1. Product reference: ROLLED LEAD.
4. Pretreatment: Apply thin coating of patination oil to underside of lead and allow to dry before laying.
5. Laying: Over and beyond tilting fillets.
6. Lengths: Not more than 1500 mm.
    6.1. Cross joints: Lapped not less than 200 mm.
7. Fixing: Welt edges. Nail top edge of each sheet. Dress bottom end neatly into eaves gutter.

322 Soakers for mitred hips to slate/ plain tile roofs

1. Lead
   1.1. Thickness: 1.25 or 1.32 mm (Code 3).
2. Manufacturer: ASSOCIATED LEAD MILLS (ALM). T: 01992 444100. W: www.associatedlead.co.uk.
   2.1. Product reference: ROLLED LEAD.
3. Dimensions
   3.1. Length: Slate/ tile gauge + lap + 25 mm.
   3.2. Underlaps: Not less than 150 mm.

410 Apron flashings

1. Description: Pitched roof to wall abutments - Top abutments
2. Lead
   2.1. Thickness: 2.00 or 2.24 mm (Code 5)
3. Manufacturer: ASSOCIATED LEAD MILLS (ALM). T: 01992 444100. W: www.associatedlead.co.uk.
   3.1. Product reference: ROLLED LEAD.
4. Dimensions
   4.1. Lengths: Not more than 1500 mm.
   4.2. End to end joints: Laps of not less than 100 mm.
   4.3. Upstand: Not less than 75 mm.
   4.4. Cover to abutment: Not less than 150 mm.
5. Fixing: Flashings fixed on slates with Code 6 lead tack, 50 mm wide, at 300 mm centres and laps. Flashings installed in bed joint below cavity tray and sealed as clause 975.

420 Cover flashings

1. Description: Flat roof covering upstand at wall abutments
2. Lead
   2.1. Thickness: 2.00 or 2.24 mm (Code 5)
3. Manufacturer: ASSOCIATED LEAD MILLS (ALM). T: 01992 444100. W: www.associatedlead.co.uk.
   3.1. Product reference: ROLLED LEAD.
4. Dimensions
   4.1. Lengths: Not more than 1500 mm.
   4.2. End to end joints: Laps of not less than 100 mm.
   4.3. Cover: Overlap to upstand of not less than 75 mm.
5. Fixing: Hall clips into bed joint, clips to lead upstand at laps and 450 mm centres.

440 Soakers and cover flashings

1. Description: Pitched roof to wall abutments - Side abutments.
2. Manufacturer: ASSOCIATED LEAD MILLS (ALM). T: 01992 444100. W: www.associatedlead.co.uk.
   2.1. Product reference: ROLLED LEAD.
3. Lead soakers
   3.1. Thickness: 1.25-1.32 mm (Code 3).

3.2. Dimensions
3.2.1. Length: Slate/ tile gauge + lap + 25 mm.
3.2.2. Upstand: Not less than 75 mm.
3.2.3. Underlay: Not less than 100 mm.
3.3. Fixing: By roofer.
4. Lead cover flashings
4.1. Thickness: 2.00 or 2.24 mm (Code 5).
4.2. Dimensions
4.2.1. Lengths: Not more than 1500 mm.
4.2.2. End to end joints: Laps of not less than 100 mm.
4.2.3. Cover: Overlap to soaker upstands of not less than 65 mm.
4.3. Fixing: Cover flashings installed in bed joint below cavity tray and sealed as clause 975.

472 Chimney flashings to slate/ plain tile roofs

1. Manufacturer: ASSOCIATED LEAD MILLS (ALM). T: 01992 444100. W: www.associatedlead.co.uk.
1.1. Product reference: ROLLED LEAD.
2. Lead front apron
2.1. Thickness: 2.00 or 2.24 mm (Code 5).
2.2. Dimensions
2.2.1. Length: Width of chimney plus not less than 150 mm underlap to each side flashing.
2.2.2. Upstand: Not less than 75 mm.
2.2.3. Cover to roof: Not less than 150 mm.
2.3. Fixing: Lead wedges into bed joint.
3. Lead soakers
3.1. Thickness: 1.25 or 1.32 mm (code 3).
3.2. Dimensions
3.2.1. Length: Slate/ tile gauge + lap + 25 mm.
3.2.2. Upstand: Not less than 75 mm.
3.2.3. Underlap: Not less than 100 mm.

480Lead slates

1. Manufacturer: ASSOCIATED LEAD MILLS (ALM). T: 01992 444100. W: www.associatedlead.co.uk.
2. Lead
2.1. Thickness: 2.00 or 2.24 mm (Code 5).
3. Dimensions
3.1. Base: Not less than 400 x 400 mm.
3.2. Upstand: Not less than 150 mm, to fit pipe and at angle to suit roof pitch.

480A Lead slates to pipe, cable and extract duct penetrations

1. Manufacturer: ASSOCIATED LEAD MILLS (ALM). T: 01992 444100. W: www.associatedlead.co.uk.
2. Lead

2.1. Thickness: 2.00 or 2.24 mm (Code 5).

3. Dimensions
   3.1. Base: Not less than 400 x 400 mm and to suit size and number of services penetrating through the roof finish.
   3.2. Upstand: Not less than 150 mm, to fit pipe and at angle to suit roof pitch.

General requirements/ preparatory work

510 Workmanship generally

1. Standard: In accordance with BS EN 14783 and BS EN 12588 and to BS 6915 and latest edition of 'Rolled lead sheet. The complete manual' published by the Lead Sheet Training Academy.
2. Fabrication and fixing: To provide a secure, free draining and completely weathertight installation.
3. Operatives: Trained in the application of lead coverings/ flashings. Submit records of experience on request.
4. Preforming: Measure, mark, cut and form lead prior to assembly wherever possible.
5. Marking out: With pencil, chalk or crayon. Do not use scribers or other sharp instruments without approval.
6. Bossing and forming: Straight and regular bends, leaving sheets free from ripples, kinks, buckling and cracks.
7. Solder: Use only where specified.
8. Sharp metal edges: Fold under or remove as work proceeds.
9. Finished work: Fully supported, adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress.
10. Protection: Prevent staining, discolouration and damage by subsequent works.

516 Lead-welding

1. In situ lead-welding: Is permitted, subject to completion of a 'hot work permit' form and compliance with its requirements.

520 Lead sheet

1. Production method
   1.1. Rolled, to BS EN 12588, or
   1.2. Machine cast and BBA-certified, or
   1.3. Sand cast, from lead free from bitumen, solder, other impurities, inclusions, laminations, cracks, air, pinholes and blowholes; to code thicknesses but with a tolerance (by weight) of ±10%.
2. Identification: Labelled to show compliance with the harmonized standard (hEN) BS EN 14783, where appropriate, and detail of the thickness/ code, weight and type.

610 Suitability of substrates

1. Condition: Dry and free of dust, debris, grease and other deleterious matter.

620 Preparation of existing timber substrates

1. Remedial work: Adjust boards to level and securely fix. Punch in protruding fasteners and plane or sand to achieve an even surface.
2. Defective boards: Give notice.
3. Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.

630 Plywood overlay

1. Standard: Manufactured to an approved national standard and to BS EN 636, section 8 (plywood for use in humid conditions).
    1.1. Sheet size: 2400 or 1200 x 1200 mm and 6 mm thick.
2. Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.
3. Laying: Parallel to perimeter edges with cross joints staggered and a 0.5-1 mm gap between sheets.
4. Fixing: With 25 mm annular ringed shank copper or stainless steel nails, at 300 mm grid centres over the area of each sheet and at 150 mm centres along edges, set in 10 mm from perimeter edges and in pairs across joints.
    4.1. Nail heads: Set flush with or just below the surface.

640 Timber for use with leadwork

1. Quality: Planed, free from wane, pitch pockets, decay and insect attack (ambrosia beetle excepted).
2. Moisture content: Not more than 22% at time of fixing and covering. Give notice if greater than 16%.
3. Preservative treatment: Organic solvent as section Z12 and Wood Protection Association Commodity Specification C8.

645 Sheet underlay ADDED

1. Manufacturer: ASSOCIATED LEAD MILLS (ALM). T: 01992 444100. W: www.associatedlead.co.uk.
    1.1. Product reference: GEOTEC.
2. Weight: 220 g/m².
3. Recycled content: None permitted.

650 Laying sheet underlay

1. Handling: Prevent tears and punctures.
2. Laying: Butt or overlap jointed onto a dry substrate.
    2.1. Fixing edges: With copper or stainless steel staples or clout nails.
    2.2. Do not lay over roof edges but do turn up at abutments.
    2.3. Wood core rolls: Fixed over sheet underlay.
    2.4. Protection: Keep dry and cover with lead at the earliest opportunity.

Fixing lead

705 Head fixing lead sheet

1. Top edge: Secured 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.
2. 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.

710 Fixings

1. Nails to timber substrates: Copper clout nails to BS 1202-2, or stainless steel (austenitic) clout nails to BS 1202-1.
    1.1. Shank type: Annular ringed, helical threaded or serrated.
    1.2. Shank diameter: Not less than 2.65 mm for light duty or 3.35 mm for heavy duty.

1.3. Length: Not less than 20 mm or equal to substrate thickness.

2. Screws to concrete or masonry substrates: Brass or stainless steel.
   2.1. Diameter: Not less than 3.35 mm.
   2.2. Length: Not less than 19 mm.
   2.3. Washers and plastic plugs: Compatible with screws and lead.
3. Screws to composite metal decks: Self tapping as recommended by the deck and lead manufacturer/ supplier for clips.

715 Clips

1. Material
   1.1. Lead clips: Cut from sheets of same thickness/ code as sheet being secured.
   1.2. Copper clips
      1.2.1. Thickness: 0.70 mm.
      1.2.2. Temper: BS EN 1172, designation R220 in welts, seams and rolls, R240 elsewhere; dipped in solder if exposed to view.
   1.3. Stainless steel clips
      1.3.1. Thickness: 0.46 mm.
      1.3.2. Grade: BS EN 10088-1, 1.4301(304) terne-coated if exposed to view.
2. Dimensions
   2.1. Width: 50 mm where not continuous.
   2.2. Length: To suit detail.
3. Fixing clips: Secure each to substrate with either two screw or three nail fixings not more than 50 mm from edge of lead sheet. Use additional fixings where lead downstands exceed 75 mm.
4. Fixing lead sheet: Welt clips around edges and turn over 25 mm.

760 Continuous clips

1. Material: Material:
   1.1. Stainless steel continuous clips
      1.1.1. Thickness: 0.46 mm.
      1.1.2. Grade: BS EN 10088-1, 1.4301(304).
2. Dimensions
   2.1. Width: To suit detail.
3. Fixing clips: Secure at 200 mm centres.
4. Fixing lead sheet: Welt edge around continuous clip and dress down.

770 Wedge fixing into joints/ Chases

1. Joint/ chase: Rake out to a depth of not less than 25 mm.
2. Lead: Dress into joint/chase.
   2.1. Fixing: Lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead.
3. Sealant: As clause 975.
   3.1. Application: As section Z22.

Jointing lead

810 Forming details

1. Method: Bossing or lead-welding except where bossing is specifically required.
2. Lead-welded seams: Neatly and consistently formed.
    2.1. Seams: Do not undercut or reduce sheet thickness.
    2.2. Filler strips: Of the same composition as the sheets being joined.
    2.3. Butt joints: Formed to a thickness one third more than the sheets being joined.
    2.4. Lap joints: Formed with 25 mm laps and two loadings to the edge of the overlap.
3. Bossing: Carried out without thinning, cutting or otherwise splitting the lead sheet.
    3.1. Details where bossing must be used: Not applicable.

840Wood-cored roll joints without splash lap

1. Wood core
    1.1. Size: 45 x 45 mm round tapering to a flat base 25 mm wide.
    1.2. Fixing to substrate: Brass or stainless steel countersunk screws at not more than 300 mm centres.
2. Undercloak: Dress half way around core.
3. Copper or stainless steel clips. Fix to core at not more than 450 mm centres. Do not restrict thermal movement of the undercloak.
4. Overcloak: Dress around core with edge welted around ends of clips, finishing 5 mm clear of main surface.

860Drips with splash laps

1. Underlap: Dress into rebate along top edge of drip.
    1.1. Fixing: One row of nails at 50 mm centres on centre line of rebate.
2. Overlap: Dress over drip and form a 40 mm splash lap.

880Welted joints

1. Joint allowance: 50 mm overlap and 25 mm underlap.
2. Copper or stainless steel clips: Fix to substrate at not more than 450 mm centres.
3. Overlap: Welt around underlap and clips and lightly dress down.

950Plaques – existing

1. Existing plaques/ inscriptions: Retain and refix in approved locations by lead-welding along edges.

970Patination oil

1. Manufacturer: ASSOCIATED LEAD MILLS LTD. T: 01992 444100. W: www.associatedlead.co.uk.
    1.1. Product reference: PATINATION OIL.
2. Application: As soon as practical, apply a smear coating to lead, evenly in one direction and in dry conditions.

975 Lead Sealant

1. Manufacturer: ASSOCIATED LEAD MILLS LTD. T: 01992 444100. W: www.associatedlead.co.uk
    1.1. Product reference: FLASHPOINT

2. Location: At lead/masonry joints, replace the outer 25 mm of mortar under the DPC tray during the build with narrow timber fillets. Remove timber fillets once mortar has set and insert lead sheet. Introduce sealant between lead and DPC, ensuring no voids.
3. Application: As soon as practical, apply a smear coating to lead, evenly in one direction and in dry conditions.

980Hall Clips

1. Manufacturer: ASSOCIATED LEAD MILLS LTD. T: 01992 444100. W: www.associatedlead.co.uk
    1.1. Product reference: HALL CLIPS
        1.1.1. Material:: Grade 304 tempered stainless steel.
2. Location: Insert Hall Clips into the joint. Hall clips to be fitted at lapped joints and 450 mm centres linear flashings, at least 1no. clip
3. Application: As soon as practical, apply a smear coating to lead, evenly in one direction and in dry conditions.

Ω End of Section

H72
Aluminium strip/ sheet fully supported roof and wall coverings/ flashings

Types of aluminium work

250A Weathering to parapet

1. Substrate: Chamfered timber battens on 18mm plywood roof deck.
2. Manufacturer: ALUMASC WATER MANAGEMENT SOLUTIONS. T: 01536 383810. W: www.alumascwms.co.uk.
   2.1. Product reference: SKYLINE SLOPING ALUMINIUM COPING.
3. Aluminium: Coated sheet, as clause 525
   3.1. Alloy designation: EN AW-1199.
   3.2. Temper: H12.
   3.3. Finish: Polyester powder coated. RAL colour to CA approval.
   3.4. Thickness: 2.0 mm minimum.
   3.5. Sizes: As dimensioned on the detail drawings to suit existing parapet widths.
4. Joints: Extruded aluminium alloy concealed fixing straps with protected double nib extruded neoprene weather seals at all joints and maximum 1500 mm centres, the coping being locked to each fixing strap and the fixings allowing for thermal movement and structural movement.
5. Fixings: Copings securely 'snapped' on to fixing strap with allowance for thermal movement. No fixings to pass through the coping or be visible.
6. Purpose-made corners, junctions and other fittings of the same specification, mitred and welded, to be supplied as necessary.

General requirements/ preparatory work

510 Workmanship generally

1. Standard: Generally to BS EN 14783, BS EN 507, CP 143-15 and latest edition of the FTMRC publication 'UK guide to good practice in fully supported metal roofing and cladding'.
2. Fabrication and fixing: To provide a secure, free draining and completely weathertight installation.
3. Operatives: Trained in the application of aluminium coverings/ flashings. Submit records of experience on request.
4. Measuring, marking, cutting and forming: Prior to assembly wherever possible.
5. Marking out: With pencil, chalk or crayon. Do not use scribers or other sharp instruments without approval.
6. Folding: With mechanical or manual presses to give straight, regular and tight bends, leaving panels free from ripples, kinks, buckling and cracks. Use hand tools only for folding details that cannot be pressed.
7. Surface protection: Fully coat surfaces to be embedded in concrete or mortar with high build bitumen-based paint, after folding.
8. Sharp metal edges: Fold under or remove as work proceeds.
9. Joints: Do not use sealants to attain waterproofing.
10. Finished aluminium work: Fully supported, adequately fixed to resist wind uplift and able to accommodate thermal movement without distortion or stress.

10.1. Protection: Prevent staining, discolouration and damage by subsequent works.

515 Welding

1. In situ welding: Not permitted.

525 Coated aluminium strip/ sheet

1. Standard: To BS EN 14783 and BS EN 1396.
2. Manufacturer: Contractor's choice to CA approval.
   2.1. Product reference: Contractor's choice to CA approval.

530 Integrity of aluminium

1. Requirement: Design coverings/ flashings and methods of attachment to prevent loss of weathertightness and permanent deformation due to wind pressure or suction.
2. Structural requirements
   2.1. Wind loads: Calculate to BS 6399-2.

555 Layout

1. Setting out of longitudinal and cross joints: Submit proposals.

610 Suitability of substrates

1. Condition: Dry and free of dust, debris, grease and other deleterious matter.

630 Plywood overlay

1. Standard: Manufactured to an approved national standard and to BS EN 636, section 8 (plywood for use in humid conditions).
   1.1. Sheet size: 2400 or 1200 x 1200 mm and 6 mm thick.
2. Laying: Parallel to perimeter edges with cross joints staggered and a 0.5 to 1 mm gap between sheets.
3. Fixing: With 25 mm annular ringed shank aluminium or galvanized steel nails, at 300 mm grid centres over the area of each sheet and at 150 mm centres along edges, set in 10 mm from perimeter edges and in pairs across joints.
   3.1. Nail heads: Set flush with or just below surface.

640 Timber for use with aluminium work

1. Quality: Planed, free from wane, splits, pitch pockets, decay and insect attack (ambrosia beetle excepted).
2. Moisture content: Not more than 22% at time of fixing and covering.
3. Preservative treatment: Organic solvent as section Z12, and Wood Protection Association Commodity Specification C8.

Fixing - Not Used

Jointing

810 Forming details

1. Folds and welts: Form without thinning or splitting the strip/ sheet.
2. Thermal movement: Form details with appropriate allowance for movement, without impairment of security at full expansion or contraction.

Ω End of Section

J41
Reinforced bitumen membrane roof coverings

Types of roof covering

110A Reinforced bitumen overlay system

1. Description: Flat roof overlay works - Roofs S1, S2, S3, S4, S7, S8 and S9.
2. Substrate: Existing roof covering.
    2.1. Preparation:
        2.1.1. The existing waterproofing is to be examined and then prepared by removing any rough edges and/ or defects in its surface and repairing any localised damaged areas.
        2.1.2. Waterproofing generally should be secure and properly attached to the sub-structure, clean, dry, smooth, free from frost, contaminants, loose material, voids, protrusions and organic growths.
        2.1.3. Before priming and application of the membrane, the substrate must be clean and dry, free from surface water, ice, snow or frost, dust, dirt, oil, grease, or any foreign matter detrimental to the adhesion of the waterproofing system.
3. Primer: BAUDER ACTIVATOR-PRIMER (Canister) APR01-BLACK as clause 322A.
    3.1. Application method: Spray applied to provide even and full coverage. Avoid pooling. Never attempt touching within 10 minutes of primer application, even if the surface appears dry.
4. Waterproof covering:
    4.1. Manufacturer: BAUDER LTD. T: 01473 257671. W: www.bauder.co.uk.
    4.2. Underlayer: BAUDERTEC SPRINT DUO, as clause 400A.
        4.2.1. Application: Self-adhesive elastomeric bitumen underlay, fully bonded by removing the peel off release film.
        4.2.2. Side laps are to be 100 mm and must be laid red over blue, and heat sealed/ torched (depending on 'Torch-Free' & 'Safe to Torch' zones) and rolling with the BAUDER LONG HANDLED LAP ROLLER to extrude a continuous bead of bitumen.
        4.2.3. Head laps to be 100 mm and staggered, side laps to be 80 mm and heat sealed/ torched (depending on 'Torch-Free' & 'Safe to Torch' zones) to extrude a continuous bead of bitumen.
    4.3. Capping sheet: BAUDERFLEX K4E, as clause 400B.
        4.3.1. Application: Fully bonded to the underlayer by torching in the approved BAUDER manner.
        4.3.2. Head laps to be 100 mm, side laps to be 80 mm, torch sealed to provide a continuous bitumen bead extrusion from all laps.
        4.3.3. Colour: Charcoal grey slate.
    4.4. Flashings and detail work:
        4.4.1. Detail work to be carried out in BAUDERFLEX K4E in accordance with current British Codes of Practice. Side laps to be 80 mm, head laps to be 100 mm. A continuous bead of bitumen must extrude from all laps.
        4.4.2. 50 mm x 50 mm BAUDERPIR T KL 50 ANGLE FILLETS must be used at all right-angled upstands. Angle fillets will need to be installed using BAUDER insulation adhesive, or a suitable bitumen adhesive.
5. Accessories:
    5.1. BAUDER GRP TRIM, see clause 345A.

Performance

210 Roof performance

1. General: Secure, free-draining and weathertight.

225 Hygrothermal performance

1. Interstitial condensation within roof construction: Determine risk as recommended in BS 5250 and BS EN ISO 13788.
2. Air and vapour control layer: If necessary, provide a suitable membrane so that damage and nuisance from interstitial condensation do not occur.

240A General design requirements

1. All works must comply with all current relevant standards, codes of practice, and the Building Regulations to provide a secure, free draining and completely weathertight roof, including but not limited to:
    1.1. BS 6229 - Flat roofs with continuously supported coverings. Code of practice.
    1.2. BS 8217 - Reinforced bitumen membranes for roofing. Code of practice.
    1.3. BS 5250 - Code of practice for control of condensation in buildings.
    1.4. BS EN 1991-1-4 Eurocode 1 - Actions on structures. General actions. Wind actions.
    1.5. BS EN 12056-3 - Gravity drainage systems inside buildings. Roof drainage, layout and calculation. - BS EN ISO 6946 - Building components and building elements. Thermal resistance and thermal transmittance. Calculation method.
    1.6. The Building Regulations Approved Document Part L1 or Part L2. Conservation of fuel and power.
2. The design must take account of all structural factors to ensure that the waterproof covering is able to accommodate the effect of movement in order to avoid stress or deformation under these conditions.
    2.1. Upstands: At the junction between a metal deck on a steel frame and solid wall that is independent of the steel frame, differential movement between the roof and the wall can be expected and an independent upstand may be required.
3. The waterproofing components' resistance to dead and imposed loading must be assessed to avoid failure of the component/and or reduction in performance. Where resistance is deemed inadequate, suitable measures to mitigate load intensity will need to be considered.
4. Insulation must be incorporated to avoid a cold bridge as determined by building control and/or appointed design professional.
5. The design must ensure that the continuity of the waterproof covering is maintained for a vertical height of at least 150mm above the finished roof level at all abutments, parapets etc.
6. The building owner or their appointed design professional must have satisfied themselves that the roof structure and deck are suitable to receive the dead load of the proposed specification.
7. It is strictly the responsibility of the client and/or their design professional to ensure compliance of the proposed specification with all relevant Building Regulations by consultation with Building Control. In the event of any doubt about the interpretation or application of the Building Regulations in relation to any particular new build or refurbishment works, clarification must be sought directly from Building Control.

Products

322A Primer

1. Type: Synthetic rubber resin-based non-flammable primer, black in colour.
2. Manufacturer: BAUDER LTD. T: 01473 257671. W: www.bauder.co.uk.

2.1. Product reference: ACTIVATOR-PRIMER (Canister), APR01-Black.

3. Packaging: 20.5kg Canister.

330 Timber trims, etc.

1. Quality: Planed. Free from wane, pitch pockets, decay and insect attack (except ambrosia beetle damage).
2. Moisture content at time of covering (maximum): 22%.
3. Preservative treatment: To BWPDA Commodity Specification C8.

345A Perimeter trims

1. Type: GRP - Pultruded glass fibre reinforced polyester resin.
2. Manufacturer: BAUDER LTD. T: 01473 257671. W: www.bauder.co.uk.
   2.1. Product reference: BAUDER GPR TRIM.
3. Colour: Grey.
4. Size: Depth of profile - Select from 100 mm/ 150 mm.
   4.1. Lengths (maximum): 3 m.

400A Underlayer

1. Type: Elastomer bitumen self-adhesive underlayer with variable technology for lap sealing.
2. Manufacturer: BAUDER LTD. T: 01473 257671. W: www.bauder.co.uk.
   2.1. Product reference: BAUDERTEC SPRINTDUO..
3. Roll size: Width 1.0 m x 15.0 m Length, Thickness 2 mm.
4. Certification: BBA Certificate No. 10/4744, manufactured under ISO 9001, and ISO 14001.

400B Top layer/ Cap sheet

1. Type: Elastomer bitumen torch-on capping sheet..
2. Manufacturer: BAUDER LTD. T: 01473 257671. W: www.bauder.co.uk.
   2.1. Product reference: BAUDERFLEX K4E.
      2.1.1. Colour: Charcoal grey slate.
3. Roll size: Width 1.0 m x 7.5 m Length, Thickness 4.2 mm.
4. Certification: BBA Certificate No. 10/4744, manufactured under ISO 9001, and ISO 14001.

490A Balustrade

1. Type: A freestanding, non-penetrative guard rail system for roof edges in accordance with BS EN 13374.
2. Manufacturer: ROOF-PRO. T: 03335 771500. W: www.roof-pro.co.uk.
   2.1. Product reference: SURE-FOOT GUARDRAIL FREESTANDING SYSTEM.
3. Material (framework): Galvanised steel tube with galvanised cast iron fittings.
4. Material (counterweights): Recycled PVC.
5. Height: 1100 mm.
6. Vertical supports: max. 2.5 m centres.
7. Counterweight arms: max. 5.0 m centres.
8. Corners: 2 No. 90° preformed swept bends.

9. End terminations: Form using purpose made D section secured into weighted upright / form using 2 No. wall flanges securely fixed into masonry.
10. Angles: Form acute and obtuse angles using 2 No. variable angle corners.
11. Changes in height: Form using 4 No. 90° elbows.
12. All variable details: Cut mid and top rails to suit where necessary.
    12.1. Preparation: All cut edges to be treated with galvanising paint prior to fitting.
13. Fixings: Securement of all grub screws to be checked post installation.
14. Access gates: Modular galvanised steel self-closing, half height gates, as per manufacturer's recommendations.
15. Commissioning: The completed Guardrail must be signed off as fit for purpose by a safety system specialist on behalf of Sure-Foot, prior to use.

Execution generally

515 Adverse weather

1. General: Do not lay coverings in high winds, wet or damp conditions or in extremes of temperature unless effective temporary cover is provided over working area.
2. Unfinished areas of roof: Keep dry. Protect edges of laid membrane from wind action.

520A Incomplete work

1. Progress of the works will be such as to maintain the waterproof integrity of the roof/s. At the end of each working day, all open laps and joints to be sealed in accordance with current codes of practice.
2. On resumption of work: Cut away tail of membrane from completed area and remove.

530 Applying primers

1. Coverage per coat (minimum): As recommended by the primer manufacturer.
2. Surface coverage: As recommended by the primer manufacturer.
3. Coats: As recommended by the primer manufacturer.

552A Site inspections

1. Site inspections will be made by Bauder during the works to ensure that the installation is executed in accordance with the Bauder warranty requirements and current codes of practice. A site visit report form, along with supporting photographs will be issued to the client/contractor following each inspection. The reports will identify and monitor the works observed during the inspections and will, where applicable, make recommendations for appropriate rectification which the contractor is to undertake in order to satisfy the warranty requirements.

553A Health & safety

1. It is strictly the contractor's responsibility to ensure that all works are executed in accordance with current health and safety legislation. Guidance may be taken from HSE publication reference: HSG33 - Health and Safety in Roof Work.
2. Safety scaffolding, the location of rubbish skips, access ladders etc. should be agreed with the client/principal contractor and be in accordance with current Health and Safety regulations.
3. Wherever a gas torch is employed, the contractor must observe the greater of a minimum one-hour fire watch, or the period dictated by their own insurers, after cessation of torching. Fire extinguishing equipment must be readily available, in accordance with Health and Safety legislation.

4. Sure-Foot Guardrail System or other suitable temporary or permanent fall arrest or fall protection measures will be necessary for the inspection and maintenance of the warranted Alumasc Roofing System throughout its life cycle.
5. Product data and MSDS documents are available for all relevant products supplied by Alumasc; available for download from www.alumascroofing.co.uk.

554AStoring of materials

1. Materials must be stored carefully on a clean dry surface, under cover and raised clear of the ground.
    1.1. Insulation should be stored inside wherever possible. If outside storage is unavoidable, the insulation packaging alone is not under any circumstances sufficient to provide protection.
2. Roll materials must be stored on end.
3. The load-bearing capacity of the structure must be checked if material is to be stored at roof level.
4. Only sufficient material for the day's schedule should be taken out of store, or uncovered, and placed close to the area being worked. Insulation should only be unwrapped immediately prior to use.
5. Materials that become wet during storage that are susceptible to weakening, damage etc. (e.g. Insulation), should be replaced.

Substrates/ air and vapour control layers/ warm deck roof insulation

610A Suitability of substrates

1. Suitability of base: Ensure that the tolerances of the structure to which the works are being installed are within permissible deviation of a level surface and satisfactory to receive the proposed specification. The substrate is to be even and free from any irregularities that may compromise the works/and or performance. It is the responsibility of the appointed contractor to verify and report any deficiencies so that they can be corrected prior to commencing with the application.
2. Substrates generally: Secure, clean, dry, smooth, and free from frost, contaminants, voids and protrusions.
3. Preliminary work: Complete including:
    3.1. Formation of upstands, kerbs, box gutters, sumps, grooves, chases, and expansion joints.
    3.2. Fixing of battens, anchoring plugs/strips.
4. Moisture content and stability of substrate: Must not impair roof integrity.
5. Acceptable methods of drying of roof areas, where required, must be agreed with the client prior to the commencement of works.

Waterproof membranes/ accessories

710 Laying reinforced bitumen membranes generally

1. Direction of laying: Unrolled up the slope.
    1.1. Where practicable, install so that water drains over and not into laps.
2. Side and end laps: In accordance with manufacturer's requirements.
3. Head and side laps: Offset.
4. Intermediate and top layer/ capsheet: Fully bond.
5. Successive layers: Apply without delay. Do not trap moisture.
6. Strips of bitumen membrane for 'linear' details: Cut from length of roll.
7. Completed coverings: Firmly attached, fully sealed, smooth, weatherproof and free-draining.

738A Self-adhesive bonding of reinforced bitumen underlay

1. Preparation: Substrate/s must be even and free from any irregularities that may compromise the bond.
    1.1. Undertake an adhesion test to establish a full bond can be obtained to the primed substrate.
2. Bond: Full over whole surface, with no air pockets.
3. Application: Remove release film and firmly pressure roll the surface and overlaps to ensure adhesion. The roll must be accurately aligned prior to the removal of the release film.
4. Side and head laps: 80mm side lap & 100mm head lap.
    4.1. Side laps are self-adhesive when subject to temperatures of >15° under normal conditions. However, in cold weather or if the lap has become contaminated, hot air equipment should be used to ensure the laps
    are fully sealed. End laps should be heat welded using hot-air equipment. If left exposed overnight both side and end laps must be heat welded to ensure they are fully sealed.

740A Torch-on bonding of reinforced bitumen membranes

1. Setting out: Neat, with carefully formed junctions.
2. Bond: Full over whole surface, with no air pockets.
3. Application: Use of a roll bar is recommended to field areas.
4. Side and head laps: 80 mm side lap & 100 mm head lap.
    4.1. A minimum 5 mm to 10 mm continuous bead of bitumen must extrude from all laps including detailing.
    4.2. Excess compound at laps of top layer/cap sheet: Leave as continuous bead, do not spread or remove.

785A Fixing perimeter trims

1. Bitumen membrane: Lay over roof edge upstand. Project free edge from wall or fascia.
2. Trim:
    2.1. Setting out: 3 mm (minimum) clear from wall or fascia. All lengths should be close butt jointed, using the connecting pieces supplied.
    2.2. Fasteners: Screw fixings only, type and length appropriate to substrate.
    2.3. Fixing: 30 mm from ends and at 300 mm (maximum) centres.
    2.4. Corner pieces: Purpose made.
3. Completion:
    3.1. Contact surfaces: Prime.
4. Completion of bitumen membrane:
    4.1. Top layer/ Cap sheet: Butt joint to rear edge of trim.
    4.2. Cover strip: Fully bond flashing piece of membrane to the primed trim, overlapping onto the system below by a minimum of 100 mm.
    4.3. Cover strip material: BAUDERFLEX K4E CAP SHEET.

Surfacing - Not Used

Completion

910A Final inspection

1. Interim and final roof inspections: Strictly in accordance with Alumasc requirements to satisfy the warranty requirements.

2. Rainwater goods must be tested by the contractor upon completion of the works prior to handover.
3. The contractor must contact Alumasc to arrange a final inspection upon completion of each stage of the works. It is strictly the responsibility of the contractor to notify Alumasc that a final inspection is required, and also to ensure that the inspection takes place prior to the application of any surfacing above the waterproof covering. Failure on either or both counts will jeopardise approval and/or warranty release.
4. Once the final inspection has been carried out, the warranty will be issued via the roofing contractor upon acceptable rectification of any snags as identified by Alumasc, or without undue delay should all be satisfactory.

921A Protection

1. As soon as an area of waterproofing has been completed it should be inspected upon notification of completion by the contractor. Completed areas should not be used as a building platform or as an access route by other trades. If unavoidable, appropriate protection must be provided for the duration of the construction period. Care should be taken not to mark or dent the works while laying any additional protection. Inspection and/or leak testing must always take place after removal of such protection.
2. Roofs accessed for regular maintenance of plant, or parts of the building, should be given consideration in providing a predetermined route to and from the entry point to minimise potential hazards.

940Completion

1. Roof areas: Clear.
2. Outlets: Clear.
3. Work necessary to provide a weathertight finish: Complete.
4. Storage of materials on finished surface: Not permitted.
5. Completed membrane: Do not damage. Protect from chemicals, traffic and adjacent or high-level working.

941A Manufacturer's warranty

1. A 20 year product and workmanship guarantee is to be provided upon completion following a Final Inspection by Bauder Ltd.
2. Details regarding the full terms and conditions are available separately from Bauder Ltd upon request. This system must be installed by a Bauder Approved Contractor, to be eligible for guarantee. The system comprises the waterproofing membranes, insulation, air and vapour control layer, and attachment of these products.
3. It is imperative that the Contractor conforms with the workmanship criteria. Any deviation from this will result in the contract being considered unguaranteeable by Bauder Ltd's insurers.

942AMaintenance

1. It is recommended that all flat roofs be inspected at a minimum frequency of twice a year. Ideally, inspections should be carried out in spring and autumn accounting for the effects of annual extremes of weather to be checked. Inspection should also be carried out following works on the roof by other trades, or following installation of new roof equipment.
2. All inspections/and or maintenance actions carried out at roof level must be in full compliance with the appropriate health and safety regulations, and particularly those specifically dealing with working at height.
3. The substitution of any products (or installation by means other than those described) is strictly prohibited, unless agreed in writing, in advance, with Bauder.
4. Bauder Ltd will not accept any liability arising from unauthorised variations or un-notified changes in circumstances relating to the application or performance of Bauder products or systems.

Ω End of Section

K10
Gypsum board dry linings/ partitions/ ceilings

Types of dry lining

205A Thermal lining on timber

1. Background: Existing timber rafters/ joists.
2. Metal resilient (acoustic) bars: Not required.
3. Linings:
   - 3.1. Manufacturer: KINGSPAN GROUP. T: 01544 388601. W: www.kingspan.com.
     - 3.1.1. Product reference: 52.5 mm KOOLTHERM K118 INSULATED PLASTERBOARD.
   - 3.2. Fixing: Screw fixed into existing timbers using Drywall Screws as recommended by the board manufacturer.
4. Finishing: Skim coat plaster finish as clause 680A.
   - 4.1. Primer/ Sealer: As recommended by the board manufacturer.
   - 4.2. Accessories: Metal beads/ stops as recommended by the board manufacturer.
5. Other requirements:
   - 5.1. Prior to applying finish to boards, reinforce joints and angles with GYPROC JOINT TAPE in full accordance with the board manufacturer's instructions.

245A Ceiling lining on timber joists

1. Background: New and existing timber joists.
2. Linings:
   - 2.1. Manufacturer: BRITISH GYPSUM LTD. T: 0870 545 6356. W: www.british-gypsum.com.
     - 2.1.1. Product reference: 12.5mm GYPROC SOUNDBLOC WALLBOARD.
   - 2.2. Fixings: Screw fixed to timber joists with Drywall Screws to board manufacturer's recommendations.
3. Finishing: Skim coat plaster finish as clause 680A.
   - 3.1. Primer/ Sealer: As recommended by the board manufacturer.
   - 3.2. Accessories: All necessary angle beads and stops as recommended by the board manufacturer.
4. Other requirements:
   - 4.1. Prior to applying finish to boards, reinforce joints and angles with GYPROC JOINT TAPE in full accordance with the board manufacturer's instructions.
   - 4.2. Fire stopping around service penetrations as section P12.

275A Encasement on timber framing to service ducts generally

1. Timber framework: SW timber studwork at 400 mm centres as clause G20.270A.
2. Linings:
   - 2.1. Manufacturer: BRITISH GYPSUM LTD. T: 0870 545 6356. W: www.british-gypsum.com.
     - 2.1.1. Product reference: 15 mm GYPROC DURALINE.
   - 2.2. Fixing: Screws as recommended by the board manufacturer.
3. Finishing: Skim coat plaster finish as clause 680A.
   - 3.1. Primer/ Sealer: As recommended by the board manufacturer.

3.2. Accessories: All necessary angle beads and stop beads as recommended by the board manufacturer.

4. Other requirements:

4.1. Prior to applying finish to boards, reinforce joints and angles with GYPROC JOINT TAPE in full accordance with the board manufacturer's instructions.

General/ preparation

305 Compliance with performance requirements

1. Testing/ Assessment: Submit UKAS accredited laboratory reports for the following: Fire resistance: Partitions (including deflection heads and doorsets) and suspended ceilings (including access units)..
2. Materials, components and details: As used in testing/ assessment reports. If discrepancies arise, give notice.

335 Additional supports

1. Framing: Accurately position and securely fix to give full support to:

1.1. Partition heads running parallel with, but offset from main structural supports.

1.2. Fixtures, fittings and service outlets. Mark framing positions clearly and accurately on linings.

1.3. Board edges and lining perimeters, as recommended by board manufacturer to suit type and performance of lining.

375 New wet laid bases

1. Dpcs: Install under full width of partitions/ freestanding wall linings.

1.1. Material: Bituminous sheet or plastics.

Components

400 Gypsum boards generally

1. Standard

1.1. Gypsum plasterboard to BS EN 520.

1.2. Gypsum fibre board to BS EN 15283-2.

1.3. Evidence of compliance: Submit Declaration of Performance (DoP).

Installation

435 Dry linings generally

1. General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.
2. Cutting gypsum boards: Neatly and accurately without damaging core or tearing paper facing.

2.1. Cut edges: Minimize and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.

3. Fixings boards: Securely and firmly to suitably prepared and accurately levelled backgrounds.
4. Finishing: Neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.

445 Ceilings

1. Sequence: Fix boards to ceilings before installing dry lined walls and partitions.
2. Orientation of boards: Fix with bound edges at right angles to supports and with ends staggered in adjacent rows.

3. Two layer boarding: Stagger joints between layers.

510 Sealing gaps and air paths

1. Location of sealant: To perimeter abutments and around openings.
    1.1. Pressurized shafts and ducts: At board-to-board and board-to-metal frame junctions.
2. Application: To clean, dry and dust free surfaces as a continuous bead with no gaps.
    2.1. Gaps greater than 6 mm between floor and underside of gypsum board: After sealing, fill with jointing compound.

555 Fire-stopping at perimeters of dry lining systems

1. Material: Tightly packed mineral wool or intumescent mastic/ sealant.
2. Application: To perimeter abutments to provide a complete barrier to smoke and flame.

560 Joints between boards

1. Tapered edged gypsum boards
    1.1. Bound edges: Lightly butted.
    1.2. Cut/ unbound edges: 3 mm gap.
2. Square edged plasterboards: 3 mm gap.
3. Square edged gypsum fibre boards: 5 mm gap.

565 Vertical joints

1. Joints: Centre on studs.
    1.1. Partitions: Stagger joints on opposite sides of studs.
    1.2. Two layer boarding: Stagger joints between layers.

570 Horizontal joints

1. Surfaces exposed to view: Horizontal joints not permitted. Seek instructions where height of partition/ lining exceeds maximum available length of board.
2. Two layer boarding: Stagger joints between layers by at least 600 mm.
3. Edges of boards: Support using additional framing.
    3.1. Two layer boarding: Support edges of outer layer.

580 Insulation backed plasterboard

1. General: Do not damage or cut away insulation to accommodate services.
2. Installation at corners: Carefully cut back insulation or plasterboard as appropriate along edges of boards to give a continuous plasterboard face, with no gaps in insulation.

610 Fixing gypsum board to timber

1. Fixing to timber: Securely at the following centres (maximum):
    1.1. Nails: 150 mm.
    1.2. Screws to partitions/ wall linings: 300 mm. Reduce to 200 mm at external angles.
    1.3. Screws to ceilings: 230 mm.
2. Position of nails/ screws from edges of boards (minimum)
    2.1. Bound edges: 10 mm.

2.2. Cut/ unbound edges: 13 mm.

3. Position of nails/ screws from edges of timber supports (minimum): 6 mm.

Finishing

650 Level of dry lining across joints

1. Sudden irregularities: Not permitted.
2. Joint deviations: Measure from faces of adjacent boards using methods and straightedges (450 mm long with feet/ pads) to BS 8212, clause 3.3.5.
   2.1. Tapered edge joints
      2.1.1. Permissible deviation (maximum) across joints when measured with feet resting on boards: 3 mm.
   2.2. External angles
      2.2.1. Permissible deviation (maximum) for both faces: 4 mm.
   2.3. Internal angles
      2.3.1. Permissible deviation (maximum) for both faces: 5 mm.

680A Skim coat plaster finish

1. Manufacturer: BRITISH GYPSUM LTD. T: 0870 545 6356. W: www.british-gypsum.com.
   1.1. Product reference: THISTLE MULTI-FINISH.
      1.1.1. Thickness: 2-3mm.
2. Joints: Fill and tape except where coincident with metal beads.
3. Finish: Tight, matt, smooth surface with no hollows, abrupt changers of level or trowel marks.

692 Rigid beads/stops

1. Internal: To BS EN 13658-1.
2. External: To BS EN 13658-2.

695 Installing beads/ Stops

1. Cutting: Neatly using mitres at return angles.
2. Fixing: Securely using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
3. Finishing: After joint compounds/ plasters have been applied, remove surplus material while still wet from surfaces of beads exposed to view.

725 Repairs to existing gypsum board

1. Performance of repairs must match original specified performances.
2. Filling small areas with broken cores: Cut away paper facing, remove loose core material and fill with jointing compound.
   2.1. Finish: Flush, smooth surface suitable for redecoration.
3. Large patch repairs: Cut out damaged area and form neat hole with rectangular sides. Replace with matching gypsum board.
   3.1. Fixing: Use methods to suit type of dry lining, ensuring full support to all edges of existing and new gypsum board.

3.2. Finishing: Fill joints, tape and apply jointing compound to give a flush, smooth surface suitable for redecoration.

Ω End of Section

K11
Rigid sheet flooring/ sheathing/ decking/ sarking/ linings/ casings

Types of flooring/ sheathing/ decking/ sarking/ lining/ casings

110 Wood-based sheets generally

1. Standard: To BS EN 13986.
    1.1. Evidence of compliance: All sheets to be UKCA/ UKNI/ CE marked. Submit Declaration of Performance (DoP).

485AExternal wall sheathing to pitched roof R2 gables

1. Substrate: New and existing timber studwork.
    1.1. Additional supports: As clause 930.
2. Sheathing:
    2.1. Manufacturer: PANEL AGENCY LTD. T: 01474 872578. W: www.panelagency.com.
        2.1.1. Product reference: PANELVENT DWD.
    2.2. Thickness: 12 mm.
3. Setting out: Long edges vertical and centred on supports.
    3.1. Expansion gap between adjacent boards: 1 - 2 mm expansion gap to all edges.
4. Fixing to supports:
    4.1. Fasteners: Galvanised annual ring shank nails (at least 50 mm long and 3 mm diameter maximum).
    4.2. Fixing centres (maximum): 150 mm maximum.
    4.3. Around board edges: 150 mm maximum.
    4.4. Along intermediate supports: 300 mm maximum.
    4.5. Fixing distance from edges (minimum) : In accordance with the manufacturer's recommendations.

515A Plywood roof decking

1. Substrate: Existing timber roof construction.
    1.1. Additional supports: As clause 930.
2. Decking: Plywood manufactured to the relevant standards and quality control procedures specified in BS EN 636, and so marked.
    2.1. Type: Contractor's choice to CA approval.
    2.2. Grade: Exterior.
    2.3. Nominal thickness/ number of plies: 18 mm (4 or 5).
    2.4. Edges: Tongued and grooved all edges.
3. Setting out: Long edges running across supports. End joints central over joists and staggered.
4. Fixing:
    4.1. Fasteners: 50 mm x 8 gauge wood screws into pilot holes.
    4.2. Fixing centres:
        4.2.1. Along each support: 25 mm from each long edge and at maximum 150 mm centres between.
        4.2.2. Around perimeter of roof: Maximum 150 mm centres.

5. Expansion provision:
    5.1. Clear expansion gap around perimeter of roof area and upstands: 10 mm.
    5.2. Intermediate expansion/ movement joints: As recommended by decking manufacturer.

Workmanship

910 Installation generally

1. Timing: Building to be weathertight before fixing boards internally.
2. Moisture content of timber supports (maximum): 18%.
3. Joints between boards: Accurately aligned, of constant width and parallel to perimeter edges.
4. Methods of fixing, and fasteners: As section Z20 where not specified otherwise.

930 Additional supports

1. Additional studs, noggings/ dwangs (Scot) and battens
    1.1. Provision: In accordance with board manufacturer's recommendations and as follows:
        1.1.1. Tongue and groove jointed rigid board areas: To all unsupported perimeter edges.
        1.1.2. Butt jointed rigid board areas: To all unsupported edges.
    1.2. Size: Not less than 50 mm wide and of adequate thickness.
    1.3. Quality of timber: As for adjacent timber supports.
    1.4. Treatment (where required): As for adjacent timber supports.

940 Board moisture content and conditioning

1. Moisture content of boards at time of fixing: Appropriate to end use.
2. Conditioning regime: Submit proposals.

950 Moisture content testing

1. Test regime and equipment: Submit proposals.
2. Test results: Submit record of tests and results.

960 Fixing generally

1. Boards/ sheets: Fixed securely to each support without distortion and true to line and level.
2. Fasteners: Evenly spaced in straight lines and, unless otherwise recommended by board manufacturer, in pairs across joints.
    2.1. Distance from edge of board/ sheet: Sufficient to prevent damage.
3. Surplus adhesive: Removed as the work proceeds.

980 Open joints

1. Perimeter joints, expansion joints and joints between boards: Free from plaster, mortar droppings and other debris.
2. Temporary wedges and packings: Removed on completion of board fixing.

990 Access panels

1. Size and position: Agree before boards are fixed.
2. Additional noggings/ dwangs (Scot), battens, etc.: Provide and fix as necessary.

Ω End of Section

K40
Demountable suspended ceilings

Types of ceiling system

115A Unit suspended ceiling system

1. Ceiling system manufacturer: ZENITA. T: 0800 371849. W: www.zenita.com.
   1.1. Product reference: PRESTIGE dB TEGULAR.
2. Ceiling:
   2.1. Infill units: As clause 265A.
   2.2. Ceiling module: 600 mm x 600 mm.
   2.3. Soffit height above finished floor level: Refer to ceiling layout drawings.
3. Grid:
   3.1. Form: PRELUDE 24 XL2.
   3.2. Exposure: Exposed.
4. Access: Infill units fully demountable.
5. Suspension system: As clause 250A.
6. Perimeter trims: As clause 260A.
7. Accessories: None.
8. Integrated services fittings: Luminaires and services to be either independently suspended or supported on the suspended ceiling system as recommended by the suspended ceiling system manufacturer.
9. Other requirements:
   9.1. Fire performance: Class 0 in accordance with the Building Regulations.

General/ performance

203A Definitions

1. Ceiling: Items collectively constituting the ceiling surface i.e. infill units/boards/stretched fabric, access units and grid.
2. Ceiling system: Ceiling plus suspension system and integrated services fittings.

Components

245 Standards

1. Steel panels: To BS EN 10346.
2. Aluminium sheet, strip and plate: To BS EN 485-1 and -2.
3. Aluminium bars, tubes and sections: To relevant parts of BS EN 515, BS EN 573, BS EN 755 and BS EN 12020.

250A Suspension system clause 115A

1. Manufacturer: ZENITA. T: 0800 371849. W: www.zenita.com.
   1.1. Product reference: PRELUDE 24 XL2.

2. Extent of system: Include all hangers, fixings, main runners, cross members, primary channels, perimeter trims, splines, noggins, clips, bracing, bridging, etc, necessary to complete the ceiling system and achieve specified performance.
3. Top fixings: As recommended by the ceiling manufacturer.
4. Hangers: TRULOCK BP AW950 suspension wire secured to soffit with brackets and fixings as recommended by the suspended ceiling manufacturer.
5. Grid type: Exposed grid system.
    5.1. Finish: Pre-coated fully polymerised polyester finish.
    5.2. Colour: Armstrong Global White.

260A Perimeter trims clause 115A

1. Manufacturer: ZENITA. T: 0800 371849. W: www.zenita.com.
    1.1. Product reference: PERIMETER TRIM BP T1924L.
2. Fixings:
    2.1. Fasteners: As recommended by the ceiling manufacturer.
    2.2. Fixing centres (maximum): 450 mm.

265A Infill units clause 115A

1. Manufacturer: ZENITA. T: 0800 371849. W: www.zenita.com.
    1.1. Product reference: PRESTIGE dB TEGULAR.
    1.2. Form: Lay in tiles.
    1.3. Sizes: 600 mm x 600 mm.
    1.4. Colour: White.

Execution

305 Setting out

1. General: Completed ceiling should present, over the whole of its surface exposed to the room below, a continuous and even surface, jointed (where applicable) at regular intervals.
2. Infill and access units, integrated services: Fitted correctly and aligned.
3. Edge/ perimeter infill units size (minimum): Half standard width or length.
4. Corner infill units size (minimum): Half standard width and length.
5. Grid: Position to suit infill unit sizes. Allow for permitted deviations from nominal sizes of infill unit.
6. Infill joints and exposed suspension members: Straight, aligned and parallel to walls, unless specified otherwise.
7. Suitability of construction: Give notice where building elements and features to which the ceiling systems relate are not square, straight or level.

310 Bracing

1. General: Secure, with additional bracing and stiffening to give a stable ceiling system resistant to design loads and pressures.

315 Protection

1. Loading: Do not apply loads for which the suspension system is not designed.

2. Ceiling materials: When necessary, remove and replace correctly using special tools and clean gloves, etc. as appropriate.

320 Top fixing

1. Building structure: Verify suitability.
2. Structural soffit: Timber joists.
    2.1. Suitability to receive specified fixings: Evaluate and confirm.
3. Fixing generally: In accordance with BS EN 13964.
4. Fixing to
    4.1. Concrete: Drill and insert suitable expanding anchors.
    4.2. Aerated concrete: Fix through from the top of concrete units and provide a system of primary support channels.
    4.3. Structural steel: Drill, or use suitable proprietary clips/ adaptors.
    4.4. Metal roof decking: Fix to sides of liner tray corrugations.
    4.5. Timber: Fix to side of joists at least 50 mm from bottom edge. If ceiling system is intended for fire protection, fix into top third of joists.
    4.6. Hollow structural members: Submit fixing proposals.

325 Installing hangers

1. Wire hangers: Straighten and tension before use.
2. Installation: Install vertical or near vertical, without bends or kinks. Do not allow hangers to press against fittings, services, or insulation covering ducts/ pipes.
3. Obstructions: Where obstructions prevent vertical installation, either brace diagonal hangers against lateral movement, or hang ceiling system on an appropriate rigid sub-grid bridging across obstructions and supported to prevent lateral movement.
4. Extra hangers: Provide as necessary to carry additional loads.
5. Fixing
    5.1. Wire hangers: Tie securely at top with tight bends to loops to prevent vertical movement.
    5.2. Angle/ strap hangers: Do not use rivets for top fixing.
6. Spacings: As recommended by the suspended ceiling manufacturer.

335 perimeter trims

1. Jointing: Neat and accurate, without lipping or twisting.
    1.1. External and internal corners: Mitre joints generally. Overlap joints at internal corners are not acceptable.
    1.2. Intermediate butt joints: Minimize. Use longest available lengths of trim. Align adjacent lengths.
2. Fixing: Fix firmly to perimeter wall, edge battens or other building structure.
    2.1. Fasteners: As recommended by the suspended ceiling manufacturer.
    2.2. Fixing centres: As recommended by the suspended ceiling manufacturer.

340 Exposed grids

1. Grid fixings: As recommended by the suspended ceiling manufacturer.
2. Main runners: Install level. Do not kink or bend hangers.
    2.1. Spliced joints: Stagger.

2.2. Wire hangers passing through main runners: Use sharp bends and tightly wrapped loops.

2.3. Angle/ strap hangers: Do not use rivets for bottom fixing.

2.4. Angular displacement of long axis of one runner in relation to next runner in line with it: Not visually apparent.

3. Cross members supported by main runners or other cross members: Install perpendicular to intersecting runners.
4. Cross tees: Flat and coplanar with flanges of main runners after panel insertion.

4.1. Cross tees over 600 mm long, cut and resting on perimeter trim: Provide an additional hanger.

5. Holding down clips: Locate to manufacturer's recommendations.

5.1. Fire-protecting/ resisting ceiling systems: Use clip type featured in the fire test/ assessment.

355 Installing infill units

1. General

1.1. Perimeter infill units: Trimmed, as necessary, to fully fill space between last grid member and perimeter trim. Prevent subsequent movement.

1.2. Deeply textured infill units: Minimize variations in apparent texture and colour. In particular, avoid patchiness.

2. Concealed grids: Install infill units uniformly, straight and aligned. Avoid dimension creep.

2.1. Infill units around recessed luminaires and similar openings: Prevent movement and displacement.

385 Upstands and bulkheads

1. Vertical ceiling systems: Support and brace to provide alignment and stability.
2. High upstands: Provide support at base of upstand.

390 Openings in ceiling materials

1. General: Neat and accurate. To suit sizes and edge details of fittings. Do not distort ceiling system.

395 Integrated services

1. General: Position services accurately, support adequately. Align and level in relation to the ceiling and suspension system. Do not diminish performance of ceiling system.
2. Small fittings: Support with rigid backing boards or other suitable means. Do not damage or distort the ceiling.

2.1. Reaction to fire of additional supporting material: Not less than ceiling material.

3. Services outlets

3.1. Supported by ceiling system: Provide additional hangers.

3.2. Independently supported: Provide flanges to support ceiling system.

401 Ceiling-mounted luminaires

1. Support: By ceiling system. Luminaires should not be supported on the ceiling tile alone. Installation loads should always be adequately spread on the back of the tile or transferred to the grid system using appropriate support arms or yokes. Alternatively, the installation can be independently supported if approved by the CA.

1.1. Independently supported luminaires: Suspension adjusted to line and level of ceiling.

1.2. Ceiling supported luminaires: Modifications and/ or extra support required: To each luminaire.

2. Surface mounted luminaires: Units installed so that in event of a fire the designed grid expansion provision is not affected.

3. Modular fluorescent recessed luminaires: Compatible with ceiling module. Extension boxes must not foul ceiling system.
4. Recessed rows of luminaires: Provide flanges for support of grid and infill units, unless mounted above grid flanges. Retain in position with lateral restraint.
5. Fire-protecting/ resisting ceiling systems: Luminaires must not diminish protection integrity of ceiling system.
6. Access: Provide access for maintenance of luminaires.

411 Mechanical services

1. Fan coil units
   1.1. Inlet/ Outlet grilles: Trim ceiling grid and infill units to suit.
   1.2. Space beneath: Sufficient for ceiling system components.
   1.3. Suspension and connections: Permit accurate setting out and levelling of fan coil units.
2. Air grilles and diffusers
   2.1. Setting out: Accurate and level.
   2.2. Linear air diffusers: Retain in place with lateral restraint. Provide flanges for support of grid and infill units.
   2.3. Grille/ Diffuser ceiling joints: Provide smudge rings and edge seals.
3. Smoke detectors and PA speakers
   3.1. Ceiling infill units: Scribe and trim to suit.
   3.2. Independent suspension: By ceiling system. Luminaires should not be supported on the ceiling tile alone. Installation loads should always be adequately spread on the back of the tile or transferred to the grid system using appropriate support arms or yokes. Alternatively, the installation can be independently supported if approved by the CA.
   3.3. Flexible connections: Required.
4. Sprinkler heads: Carefully set out and level.

500A Electrical continuity and earth bonding

1. Substantial conductive parts of the ceiling system: Electrically continuous and fully earth bonded to carry prospective earth fault currents.
   1.1. Standard: To BS 7671.
2. Sequence: Complete earth bonding as soon as possible after completion of each independent area of suspension system.
3. Testing: After completion of the ceiling system, associated services and fittings, test conductive parts of suspension system required to carry earth fault current, or used as bonding connections. Give notice before testing.
   3.1. Electrical continuity: Measure from various distant conductive points of ceiling system and to earth bar in distribution board serving the area.
   3.2. Test current: Sufficient to indicate probable electrical performance under fault conditions.
   3.3. Test instrument: Type providing a pulse of about 25 A at safe voltage for safe duration, and indicating resistance in ranges 0-2 ohms and 0-20 ohms.
   3.4. Resistance of measuring conductors: Deduce from test instrument readings.
   3.5. Test readings: Record and certify. Add results to resistance of other parts of the path forming the earth fault loop.

Completion

505 Tools

1. Access tools: At Completion, supply one set of the following: As recommended by the suspended ceiling manufacturer .

520 User instructions

1. Contents: Include the following:
   1.1. Correct methods for removing and replacing infill units and other components.
   1.2. Cleaning methods and materials.
   1.3. Recommendations for redecoration.
   1.4. Ceiling systems intended for fire protection: Limitations placed on subsequent alterations and maintenance procedures, to ensure that their fire performance is not impaired.
   1.5. Maximum number, position and value of point loads that can be applied to ceiling system after installation.

530 Spares

1. General: At practical completion, supply the following: 1no. box for each infill tile specified.

Ω End of Section

L10
Windows/ rooflights/ screens/ louvres

General

110 Evidence of performance

1. Certification: Provide independently certified evidence that all incorporated components comply with specified performance requirements.

110A Evidence of performance

1. The frames are to comply with all relevant British Standard Specifications, Codes of Practice, and Statutory Requirements (including all revisions and amendments), as well as the guides and recommendations laid down by the relevant trade organisation relating to their performance, constituent materials, methods of assembly and use. Any exceptions to the above are to be advised in writing by the specifier.
2. All frames and other sections to be extruded to BS EN 755-9: 2016, Specification 6060 T6 or 6063 T6.
3. All materials and ancillary products are to be used and fitted entirely in accordance with the instructions of the relevant manufacturer.

120A Design, site dimensions and survey

1. The Window Fabricator/Installer (Specialist Contractor) is expected to make a pre-tender inspection of the site and all relevant drawings and documents in order to ascertain all relevant conditions, structural details and site layout. No additional claim will be entertained for items that would be apparent during the pre-tender site visit and/or inspection of documents. The Specialist Contractor must allow in his tender for the replacement of all items specified and/or required.
2. The units supplied are to be manufactured to suit existing openings.
3. Notwithstanding any information within this Specification, all framing and infills shall be capable of withstanding the design wind loadings calculated in accordance with BS6399 Pt2: 1997or BS EN 1991-1-1 and imposed loads as defined in BS6399 Pt1: 1996 or BS EN 1991-1-4, and the Specialist Contractor shall carry out calculations to demonstrate this.
4. The Specialist Contractor is responsible for ensuring that all new windows are square and central in the opening, and that a perimeter gap shall be provided to allow adequate thermal expansion and contraction of the framing, consistent with the site location and limitations of the perimeter sealant used. Any packing sections or materialsrequired to compensate for misaligned apertures shall be agreed by the Contract Administrator prior to manufacture.
5. The Specialist Contractor shall provide drawings to the Main Contractor depicting all profiles, glazing, weather seals, gasket fixings and sealants to be used and the relationship of the above to the adjacent structural details for each window/door type.
6. Allow for anomalies and variations in the size of the openings, and for out-of-square openings. This is to include for the manufacture of “specials” as necessary.
7. Window configurations are to be depicted within the attached Window Schedule/Drawings as listed below.
8. The Specialist Contractor is to provide drawings showing the relationship of framing to structure, including all profiles, sealants, fixings, trims and weatherseals.
9. Opening lights within 800mm of FFL should be guarded in accordance with BS6180:2011 and BS6399:1 or BS EN 1991-1-1.

Products

330A Aluminium windows

1. Manufacturer: HYDRO BUILDING SYSTEMS LIMITED. T: 01684 853500. W: www.hydro.com.
   1.1. Product reference: DUALFRAME 75 WINDOW WALL/ TOP HUNG CASEMENT WINDOWS.

334 Aluminium windows - Performance

1. All windows should meet the requirements of BS4873 "Specification for Aluminium Alloy Windows".
2. Notwithstanding any information within this Specification, all framing and infills shall be capable of withstanding the design wind loadings calculated in accordance with BS6399 Pt2: 1997 or BS EN 1991-1-4, and imposed loads as defined in BS6399 Pt1: 1996 or BS EN 1991-1-1, and the Specialist Contractor shall carry out calculations to demonstrate this.
3. The thermal barrier section is achieved using two separate aluminium extrusions and two glass reinforced polyamide extrusions mechanically jointed to form a single compound profile. The sections forming the windows are to incorporate a thermal break, achieved using a high strength, glass reinforced polyamide barrier to PA6.6 GF25.
4. Ancillary profiles may incorporate a polyurethane resin thermal break.
5. Window frame profiles are to be fabricated using 45° mitred joints. Corners to be reinforced with stainless steel corner ties and two extruded aluminium cleats, joined with two-part adhesive, and secured by mechanical crimping.
6. Joints to be sealed with sealants as specified by the aluminium systems company fabrication manual.
7. Sub cills to suit site conditions.
8. All fabrication to be strictly in accordance with the system company's Fabrication and Specification Manuals and all current Technical Bulletins.
9. Aluminium window system to have been tested in accordance with BS EN 1027: 2000 (Windows and Doors. Water tightness. Test method), to meet Exposure Category shown below as defined by BS 6375:1 2009, and to have achieved the following:
10.

Air Permeability	Water Penetration	Wind Resistance	Category
Dualframe 75mm casement			
Class 4 (600pa)	Class 9A (600pa)	Class A5 (2000pa)	2000*

11. * exposure category varies with width/ height of window and mullion/ transom profile used as these are the only unsupported members. An accurate figure can be obtained from the relevant Eurocde, BS EN 1991-1-4 or BS6399:Part2: 1997 calculations and the profile inertia figures given in the relevant product manual.
12. The window specified is to achieve a U value (U_w) of 1.6W/m²K the effective g value should be 0.35 when glazed with the materials outlined in Clause 336 below. U value to be calculated according to BS EN 10077-1 or 10077-2 using the project specific window configurations, in accordance with Approved Document L2B.

336 Aluminium windows - Glazing

1. Glazing to be hermetically sealed double-glazed 28mm units, to conform to Parts N and L of the Building Regulations. Composition of units to be 6.4mm laminated low-e clear glass outer pane, warm edged Argon filled cavity, 6mm toughened glass internally. All producing a low emissivity sealed unit giving a centre pane u-value of 1.0W/m²K or less, combining with the frames to give an area weighted average u-value of 1.6 W/m²K or less.
2. Correct glass thickness is always subject to calculation by the Sub-Contractor.

3. Pane Size: Stress and deflection calculations to be produced based on a pane size and wind loadings of 1.5 kN/m2 to be verified by the structural engineer and curtain wall glazing supplier/installer. Refer to elevation drawing for maximum module sizes.
4. Edge Support: To be supported on all 4 edges (Refer to frame system manufacture for glazing rebate depths details).
5. All glazing in WCs and bathrooms shall have obscured glass to the inner pane.
6. All glass within 800mm from FFL shall be toughened or laminated. (Below 1500mm if within a door or 300mm of a door).
7. All glass and glazing shall conform to:
   7.1. EN 12600:2002 Specification for Impact Performance.
   7.2. BS 6262: Parts 1-7:2005 Code of Practice for Glazing Buildings.
   7.3. BS 952-1:1995 Glass for Glazing Classification.
   7.4. BS EN 1279 Glass in Buildings. Insulating Glass Units.
   7.5. Part 1:2004 Generalities, dimensional tolerances and rules for the system description.
   7.6. Part 2:2002 Long term test method and requirements for moisture penetration.
   7.7. Part 3:2002 Long term test method and requirements for gas leakage rate and for gas concentration tolerances.
   7.8. Part 4:2002 Methods of test for the physical attributes of edge seals.
   7.9. Part 5:2005+A2:2010 Evaluation of conformity.
   7.10. Part 6:2002 Factory production control and periodic tests.
8. Manifestation design and location to be confirmed by the Contract Administrator.
9. Recommendations of the Glass and Glazing Federation should be adhered to.
10. Notes:
    10.1. Heatsoak testing procedure:
        10.1.1. Heatsoak testing is to be carried out where required in accordance with European Standard BS EN 14179: Heat soaked thermally toughened soda lime silicate safety glass. The emphasis of this procedure is to ensure that the glass temperature is maintained at 290°C ± 10°C during the holding phase of the process cycle.
        10.1.2. The heat soak process cycle consists of a heating phase, a holding phase and a cooling phase. In summary the procedure consists of controlled heating of a complete volume of toughened glass from ambient room temperature to a temperature of 290°C ± 10°C and then holding it at that temperature for a minimum period of 2 hours before then allowing it to cool naturally. The procedure is carried out at various locations in audited ovens to ensure that the glass temperature during the holding phase is maintained at 290°C ± 10°C.
    10.2. Thermal safety check requirement:
        10.2.1. As with all laminated on non heat treated glass types we strongly recommend that a thermal safety check is carried out by via the Installer. This should be carried out where blinds, external brise soliel, ceiling trench or similar may trap warm air pockets close to the non heat treated pane. It is to be noted that laminated or non heat treated glass are not compatible in spandrel areas.
    10.3. Full Height Barrier glazing must comply with; BS6180: 2011 Barriers in and about buildings. Code of practice.
    10.4. Please note that if glazed areas form a full height barrier then the glass may need to comply with BS6180:2011 which means that the inner pane may be required to meet relevant POINT, U.D.L and LINE LOADS. If this is the case then the inner pane of glass would have to be a class A non break – either

minimum 8.8mm thick or 10mm toughened or greater depending upon acoustic, wind loading , size & dimension of DGU's.

10.5. Solid infill panels where required are to be 28mm insulated sandwich panels with facings of polyester powder coated aluminium, finished to RAL Colour TBC. The panel facing and core must be confirmed by the CA. Panels to have a rigid edge. Panel U value to be 1.2W/m²k.

10.6. Solid infill panels must comply with the requirements of Class O (National) rating as specified in Building Regulations Approved Document B.

337 Aluminium windows - Ironmongery/ Accessories

1. Dualframe 75 - Low level top hung opening casements: Folding openers.
   1.1. Locking:
      1.1.1. A linked pair of linked folding openers (as manufactured by Caldwell Hardware Ltd.) Folding openers to be fixed with threaded anchor inserts (Primary Fasteners Ltd Tel 0121 247 5191 ref RNS4SH) at no more than 200mm from the corner of the vent, and no more than 800mm apart; tested to a minimum pull out strength of 600N. Self-tapping screws or rivets will not be acceptable as a method of fixing. Caldwell special manual refers.
      1.1.2. SAA Finish.
      1.1.3. The tandem bar should be fitted with pole eyes for operation by a pole. Poles where needed are to be supplied by the specialist contractor, quantity and length to be advised by the CA.
   1.2. Hinges:
      1.2.1. Standard/ Heavy duty stainless steel friction stays, supplied by Hydro Building Systems Limited.
2. Dualframe 75 - High level top hung opening casements: Teleflex winding gear.
   2.1. Locking:
      2.1.1. Teleflex Morse Mk3 250mm chain openers controlled by Midi operators. One operator per pair of opening lifts.Colour finish to be confirmed by Contracts Administrator.
   2.2. Hinges:
      2.2.1. Standard/ Heavy duty stainless steel friction stays, supplied by Hydro Building Systems Limited.
3. The Specialist Contractor is to obtain the written confirmation of the Contract Administrator as to the type and position of all ironmongery before commencing manufacture.

338 Aluminium windows - Trickle ventilation

1. Each window unit is to be fitted with colour-matched powder coated aluminium trickle ventilators, to meet Building Regulations (Part F1, 2010). Ventilator to be secure and adjustable, complete with insect screen. Ventilator to be fitted above the head of the outer frame.
2. Where necessary, a frame extension profile, or extended leg framing, is to be used to ensure that trickle ventilators are clear of internal finishes. Frame extension sections to be of an identical material and finish to framing, and designed to locate in groove within the frame extrusion.
3. Where the window is of insufficient width to accommodate the level of ventilation required by Approved Document F1 the Specialist Contractor shall bring this to the attention of the Contract Administrator.
4. Trickle ventilation shall also comply with Approved Document J and BS5440 Part 2: 2009 with respect to ventilation of gas burning appliances. This requirement shall take precedence over the requirements of Approved Document F1.

339 Aluminium windows - Finish

1. Aluminium sections to be polyester powder-coated to BS EN 12206-1:2004.
2. Colour: MARINE GRADE PPC - RAL Colour TBC.

3. All finishing to be undertaken by Hydro Building Systems Limited prior to delivery to fabricator.

460A Lay light within existing roof

1. Manufacturer: LONSDALE PATENT GLAZING & ROOFLIGHTS. T: 0208 801 4221. W: www.lonsdalemetal.co.uk.
   1.1. Product reference: THERMGUARD TG50 ALUMINIUM ROOF GLAZING SYSTEM.
2. Type: Thermally broken box-bar with continuous carrier rail, pressure plate, basketry and decorative external cover.
3. Form: Pitched flat roof.
4. Minimum pitch: 5°.
5. Sizes:
   5.1. Structural opening width and length to suit the existing aperture.
6. Frame:
   6.1. Material: Extruded aluminium profiles, grade 6063 T6.
   6.2. Finish: Polyester powder coated.
   6.3. Colour:
      6.3.1. Externally: RAL 9005 Pure Black.
      6.3.2. Internally: RAL 9010 White.
7. Thermal performance: 1.6 W/m2K.
8. Glazing details:
   8.1. Type: Double glazed units.
   8.2. Construction:
      8.2.1. Outer pane: 6 mm thick solar control soft low E toughened heat soak tested.
      8.2.2. 16 mm black silicone sealed argon filled cavity with warm edge spacer bar.
      8.2.3. Inner pane: 8.8 mm/ 9.5 mm clear soft low E laminated.
   8.3. Colour: Clear.
9. Operation: Fixed.
10. Air permeability: Independently assessed and achieved BS EN 12207:2016 Class 4.
11. Weather tightness: Independently assessed and achieved BS EN 12208:2000 Class E1650.
12. Fixing: Fixing to steel is with 2no. stainless steel self drilling screws top and bottom or No. 10 x 11/2" wood screws when fixing to timber. Alternatively, single hole fixing shoes are available if required.

650A Metal louvres

1. Manufacturer: GDL AIR SYSTEMS LTD. T: 01457 861538. W: www.grille.co.uk.
   1.1. Product reference: 30 mm WEATHER LOUVRES.
2. Product Code/Size:
   2.1. WG070+4C - Dimension to suit width and height of existing opening.
3. Material: Extruded aluminium grade ENAW 6063T6 to BSEN 755-1 and -9.
   3.1. Finish as delivered: Polyester powder coated to BS 6496. Colour to CA approval.
4. Fire resistance rating: Not required.
5. Number of louvre banks: Single.
6. Louvre blade pitch and angle: Fixed 45° blades.

7. Free area: 50 mm louvre - 48% free area/30 mm louvre - 50% free area.
8. Stiffener bars: Rear mounted blade support mullions required to louvres over 1.2 m in width.
9. Accessories:
    9.1. Insect screen: 23 g expanded aluminium.
    9.2. Frame sealed to structure as clause 810A.
10. Fixing: Rear fixing lugs, as clause 782A.
11. Other requirements:
    11.1. Louvres are to accommodate and be compatible with mechanical equipment/plenums being fitted.

Execution

710 Protection of components

1. General: Do not deliver to site components that cannot be installed immediately or placed in clean, dry floored and covered storage.
2. Stored components: Stack vertical or near vertical on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

710A Protection of components

1. Do not deliver to site components which cannot be put immediately into suitable clean, dry, floored and covered storage. Stack near vertical on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.
2. Any protective films must be removed within 3 months delivery.

730 Priming/ sealing

1. Wood surfaces inaccessible after installation: Prime or seal as specified before fixing components.

750 Building in

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

760 Replacement window installation

1. Standard: In accordance with BS 8213-4.

765A Window installation

1. Upon completion of the installation of each window, all glazing, window frames, handles and all other surfaces are to be cleaned with a mild detergent. All components are to be checked for security of fixings, adequacy of clearances, adjustment of hinges, locks etc. as may be necessary to leave the window/door units in good working order.

770 Damp-proof courses in prepared openings

1. Location: Ensure correct positioning in relation to window frames. Do not displace during fixing operations.

782A Fixing of aluminium frames

1. As section Z20 using appropriate fixings.

2. Window framing to be securely fixed direct to the building structure, no further than 150mm from each corner and at centres not exceeding 600mm, as laid down in procedures issued by the systems company.

810A Sealant joints - External

1. Sealant:
    1.1. Manufacturer: DOW CORNING. T: 01752 202060. W: www.geocel.co.uk.
        1.1.1. Product reference: DOW CORNING 791 LOW MODULUS SILICONE SEALANT.
    1.2. Colour: To CA approval.
    1.3. Primer: As recommended by the sealant manufacturer.
    1.4. Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.

810B Sealant joints - Internal

1. Sealant:
    1.1. Manufacturer: GEOCEL LTD. T: 01752 202060. W: www.geocel.co.uk.
        1.1.1. Product reference: GEOCEL 480 EMULSION ACRYLIC SEALANT.
    1.2. Colour: To CA approval.
    1.3. Primer: As recommended by the sealant manufacturer.
    1.4. Application: As section Z22 to prepared joints. Triangular fillets finished to a flat slightly convex profile.

810C Compressible sealant joints

1. Sealant:
    1.1. Manufacturer: TREMCO ILLBRUCK LTD. T: 01942 251400. W: www.tremco-illbruck.co.uk.
        1.1.1. Product reference: TP600 COMPRIBAND 600.
    1.2. Colour: Anthracite.
    1.3. Primer: As recommended by the sealant manufacturer.
    1.4. Application: As recommended by the sealant manufacturer.

820 Ironmongery

1. Fixing: In accordance with any third-party certification conditions applicable. Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Do not damage ironmongery and adjacent surfaces.
2. Checking/ adjusting/ lubricating: Carry out at Completion and ensure correct functioning.

820A Ironmongery

1. Assemble and fix carefully and accurately using fastenings 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.

Ω End of Section

L20
Doors/ shutters/ hatches

General

110A Evidence of performance

1. The frames are to comply with all relevant British Standard Specifications, Codes of Practice, and Statutory Requirements (including all revisions and amendments), as well as the guides and recommendations laid down by the relevant trade organisation relating to their performance, constituent materials, methods of assembly and use. Any exceptions to the above are to be advised in writing by the specifier.
2. All frames and other sections to be extruded to BS EN 755-9: 2016, Specification 6060 T6 or 6063 T6.
3. All materials and ancillary products are to be used and fitted entirely in accordance with the instructions of the relevant manufacturer.
4. The door systems manufacturer must hold British Standard Kitemark licences for BS4873 “Specification for Aluminium Alloy Windows” and PAS 24-1:2016 “Enhanced Security performance requirements for doorsets and windows in the UK”. Prior to commencement of work on site, the Specialist Contractor shall forward copies of the Kitemark Certificate or equivalent to the Contract Administrator.
5. The Door Fabricator/Installer (Specialist Contractor) is expected to make a pre tender visit to site/inspection of all relevant drawing and documents in order to ascertain all relevant conditions, structural details and site layout. No additional claim will be entertained for items that would be apparent during the pre-tender site visit and/or inspection of documents. The Specialist Contractor must allow in his tender for the replacement of all items specified and/or required.
6. The Specialist Contractor shall allow in his price for a survey visit to site in order to take the dimensions and adjacent structural details of every window and door that is to be replaced.

150 Site dimensions

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

150A Design, site dimensions and survey

1. The units supplied are to be manufactured to suit existing openings.
2. Notwithstanding any information within this Specification, all framing and infills shall be capable of withstanding the design wind loadings calculated in accordance with BS6399 Pt2: 1997or BS EN 1991-1-1 and imposed loads as defined in BS6399 Pt1: 1996 or BS EN 1991-1-4, and the Specialist Contractor shall carry out calculations to demonstrate this.
3. The Specialist Contractor is responsible for ensuring that all new doors are square and central in the opening, and that a perimeter gap shall be provided to allow adequate thermal expansion and contraction of the framing, consistent with the site location and limitations of the perimeter sealant used.
4. The Specialist Contractor shall provide drawings to the Main Contractor depicting all profiles, glazing, weather seals, gasket fixings and sealants to be used and the relationship of the above to the adjacent structural details for each door type.
5. Allow for anomalies and variations in the size of the openings, and for out-of-square openings. This is to include for the manufacture of “specials” as necessary.
6. Door configurations are to be depicted within the attached Door Schedule/Drawings as listed below.
7. The Specialist Contractor is to provide drawings showing the relationship of framing to structure, including all profiles, sealants, fixings, trims and weather seals.

Products

480A Aluminium doorsets with louvre panels

1. Manufacturer: HYDRO BUILDING SYSTEMS LIMITED. T: 01684 853500. W: www.hydro.com.
   1.1. Product reference: STII COMMERCIAL ENTRANCE DOOR.
2. Material:
   2.1. All frames and other sections to be extruded from alloys 6060 T6 or T66 or 6063 T6 in accordance with BS EN 755-9: 2016 or BS EN 12020-2:2016.
   2.2. Billet shall be supplied to the extruder under standard operating instructions, traceable and verified by a Notified Body
   2.3. A supporting EPD from an accredited third party EPD program operator with membership of Eco Platform for the aluminium billet, conforming to ISO 14025, ISO 21930 and EN 15804, must be made available on request. The Embodied Carbon Factor shall apply to Stages A1 to A3 using the avoided burden method and to include Scopes 1, 2 and 3 of the production and distribution process as defined by the GHG Protocol.
   2.4. Aluminium profiles shall be extruded from REDUXA which is a certified, low carbon is new aluminium with a maximum carbon footprint of 4.0 kg CO2-eq per kg aluminium.
   2.5. BES6001.
   2.6. Aluminium systems supplier to have certification to BES6001 (Responsible Sourcing) for design, manufacture and supply, including thermal break and finishing processes.
3. Notwithstanding any information within this Specification, all framing and infills shall be capable of withstanding the design wind loadings calculated in accordance with BS6399 Pt2: 1997or BS EN 1991-1-1 and imposed loads as defined in BS6399 Pt1: 1996 or BS EN 1991-1-4, and the Specialist Contractor shall carry out calculations to demonstrate this.
4. The thermal barrier section is achieved using two separate aluminium extrusions and two glass reinforced polyamide extrusions mechanically jointed to form a single compound profile. The sections forming the doors are to incorporate a thermal break, achieved using a high strength, glass reinforced polyamide barrier to PA6.6 GF25.
5. Ancillary profiles may incorporate a polyurethane resin thermal break.
6. The thermal break is to be applicable to all profiles, including vents, couplers and cills.
7. Commercial/ heavy duty doors:
   7.1. Stormframe STII thermally broken commercial door system.
   7.2. Door leaves to be of mechanical cleated construction and to be pivot hung, incorporating integral rotating anti finger trap hinge stiles.
   7.3. The sections forming the doors are to incorporate a thermal break, achieved using a high strength, glass reinforced polyamide barrier.
   7.4. Drained low threshold ST240/ST241 to be fitted compliant with Part M of the Building Regulations.
   7.5. All fabrication to be strictly in accordance with the system company's Fabrication and Specification Manuals and all current Technical Bulletins.

481 Aluminium doorsets - Performance

1. Aluminium door system to have been tested to meet Exposure Category shown below as defined by BS 6375:1 2004/2009, and to have achieved the following:
   1.1. Doors (Commercial)

Air Permeability	Water	Wind Resistance	Category

	Penetration		
STII DoorsSingle pivot door with low threshold.			
Class 3.	Class 3A.	Class B5.	1200.

* exposure category varies with width/ height of window and mullion/ transom profile used as these are the only unsupported members. An accurate figure can be obtained from the relevant Euro Stormframe 202e, BS EN 1991-1-4 or BS6399:Part2: 1997 calculations and the profile inertia figures given in the relevant product manual.

482 Aluminium doorsets - Glazing

1. Glazing to doors to be held in place by internal/external glazing beads.
2. Where indicated on the drawings panels to be aluminium faced insulated panels constructed to give a U value no greater than 1.0W/m²k (or less) with a warm edged spacer bar, suitable for a 28mm glazing rebate.
3. Note: Specifier to ensure that final specification for the insulated panels complies with the latest recommendation of Approved Document B.
4. Louvre panels to be manufactured from extruded aluminium Grade AA 6063 to (BS EN 755-9:) Blades to be secured to an outer frame, to be retained within the window/door system by the glazing beads and gaskets.
5. Louvre blades to be individually screwed in place or retained within extruded aluminium holders. The use of plastic retention clips will not be permitted.
6. Louvres to be finished to match window/door framing and include for insect/ bird screen, to suit the airflow required.
7. Notes:
   - 7.1. Thermal safety check requirement:
     - 7.1.1. Solid infill panels where required are to be 28mm insulated sandwich panels with facings of polyester powder coated aluminium, finished to match framing. The panel facing and core must be confirmed by the CA. Panels to have a rigid edge. Panel U value to be 1.0W/m²k.
     - 7.1.2. Solid infill panels must comply with the requirements of Class O (National) rating as specified in Building Regulations Approved Document B.
     - 7.1.3. Louvres to be manufactured from extruded aluminium. Blades to be secured to an outer frame, to be retained within the window/door system by the glazing beads and gaskets.
     - 7.1.4. Louvres to be finished to match window/door framing.
     - 7.1.5. Insect/bird mesh to rear of louvers. Nominal 4mm x 4mm mesh size. Colour black.

483 Aluminium doorsets - Ironmongery/ Accessories

1. STII Doors – TBC by the Contract Administrator.
2. The Specialist Contractor is to obtain written confirmation of the Contract Administrator as to the type and position of all ironmongery before commencing manufacture.

485 Aluminium doorsets - Finish

1. Aluminium sections to be polyester powder-coated to BS EN 12206-1:2004.
2. Colour: TBC by the Contract Administrator.
3. All finishing to be undertaken by TECHNAL prior to delivery to fabricator.

Execution

710 Protection of components

1. General: Do not deliver to site components that cannot be installed immediately or placed in clean, dry, floored and covered storage.
2. Stored components: Stacked on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

750 Fixing doorsets

1. Timing: After associated rooms have been made weathertight and the work of wet trades is finished and dried out.

750A Fixing doorsets

1. As section Z20 using appropriate fixings.
2. Door framing to be securely fixed direct to the building structure, no further than 150mm from each corner and at centres not exceeding 600mm, as laid down in procedures issued by the systems company.
3. Frames are to be positioned to cover the cavity within the reveals, and level with the existing external window line wherever possible, ensuring that they are plumb, level and without bow.
4. All installation shall be in accordance with BS8213 Part 4 2016.
5. The removal of existing doors must be programmed to ensure that units are only removed if they are to be replaced within the same working day. Immediately on removal, the existing windows and doors, together with any debris associated with the removal of existing units, are to be cleared away to an approved tip or storage location. At the end of each working day, the Specialist Contractor shall be responsible for the removal of any debris from the existing units and new materials from site, and shall thoroughly clean the working area in accordance with the requirements of the Schedule of Works.
6. The Specialist Contractor is to ensure that all metal framing materials and all glass is recycled once removed from site.
7. The Specialist Contractor is to make all due allowance to ensure that no damage is caused to the property internally or externally. The Specialist Contractor's attention is drawn specifically to the need to protect soft landscaping and external and internal fabric and finishes. Any damage caused as a result of the replacement of windows and doors will be the Specialist Contractor's liability.
8. The Specialist Contractor shall allow for all necessary making good of all work disturbed.
9. Any gap between the internal frame face and the existing plaster line is to be filled with expanding foam void filler, knifed off flush with the plaster. The foam and a minimum of 15mm of plaster are to be covered with PVCu trims from a product range which carries BBA certification or Kitemarking to BS7619: 2010. Trims to be fixed with acrylic caulking.
10. Integral timber cills and sub frames with any existing doors are to be removed completely with glazing and ventilation intact.
11. Should any glazing be broken on removal, all glass must be immediately cleaned up, both internally and externally.
12. The Specialist Contractor is to allow for necessary measures to protect the occupants, fittings and finishes within the rooms for the duration of the works.
13. Allow for making good work to window/door openings, both internally and externally, including masonry, plaster, cladding and decorative finishes to reveals. No additional allowance will be made for costs associated with making good which would be visible on a site inspection.
14. Allow unclipping all existing telephone cables, aerial cables and the like from existing windows and door frames, and re-clip to surround in a suitable location using new cable clips of appropriate size and colour. Any cables

passing through a frame/structure joint shall be routed through a plastic sleeve, the inner end of which is to be higher than the outer to prevent water penetration along or through the sleeve.

15. Upon completion of the installation of each replacement door, all glazing, handles and all other surfaces are to be cleaned with a mild detergent. All components are to be checked for security of fixings, adequacy of clearances, adjustment of hinges, locks etc. as may be necessary to leave the door units in good working order.

760 Building in

1. General: Not permitted unless indicated on drawings.

780 Damp-proof courses in prepared openings

1. Location: Correctly positioned in relation to door frames. Do not displace during fixing operations.

780A Prepared openings

1. On removal of the existing windows, doors and associated frames, sub frames, cill etc the reveal surfaces of the opening are to be cleaned to remove all existing frame sealant, mastic, beading mortar etc. ready for the installation of the new units.
2. DPC materials are to be repaired/ renewed as necessary and tucked into the new framing.

820A Sealant joints - External

1. Sealant:
    1.1. Manufacturer: DOW CORNING. T: 01752 202060. W: www.geocel.co.uk.
        1.1.1. Product reference: DOW CORNING 791 LOW MODULUS SILICONE SEALANT.
    1.2. Colour: To CA approval.
    1.3. Primer: As recommended by the sealant manufacturer.
    1.4. Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.

820B Sealant joints - Internal

1. Sealant:
    1.1. Manufacturer: GEOCEL LTD. T: 01752 202060. W: www.geocel.co.uk.
        1.1.1. Product reference: GEOCEL 480 EMULSION ACRYLIC SEALANT.
    1.2. Colour: To CA approval.
    1.3. Primer: As recommended by the sealant manufacturer.
    1.4. Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.

830 Fixing ironmongery generally

1. Fasteners: Supplied by ironmongery manufacturer.
    1.1. Finish/ corrosion resistance: To match ironmongery.
2. Holes for components: No larger than required for satisfactory fit/ operation.
3. Adjacent surfaces: Undamaged.
4. Moving parts: Adjusted, lubricated and functioning correctly at completion.

830A Ironmongery generally

1. Assemble and fix carefully and accurately using fastenings 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.

850A Location of hinges

1. Primary hinges: Where not specified otherwise, positioned with centre lines at 250 mm from top and bottom of door leaf.
2. Third hinge: Position with centre line 250 mm below centre line of top hinge.
3. Hinges for fire resisting doors: Positioned in accordance with door leaf manufcaturer's recommendations.

860A Installation of emergency exit devices

1. Unless stated otherwise, install panic bolts and latches in accordance with BS EN 1125: 2008.
2. Unless stated otherwise, install emergency exit devices in accordance with BS EN 179: 2008.

Ω End of Section

L30
Stairs/ ladders/ walkways/ handrails/ balustrades

Preliminary information/ requirements

130 Site dimensions

1. Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
    1.1. Designated items: New vertical access ladders and new access stair with platform.

Components

310 Proprietary stairs

1. Description: New galvanised steel access stair to high level plant room door.
2. Manufacturer: Contractor's choice to CA approval.
    2.1. Product reference: Contractor's choice to CA approval.
3. Component material, finish as delivered and light reflectance value contrast where applicable
    3.1. Treads: Galvanised steel chequer plate.
        3.1.1. Slip resistance value of integral tread - water wet (minimum): Manufacturer's standard.
        3.1.2. Slip resistance value of integral nosing - water wet (minimum): Not applicable.
        3.1.3. Colour of integral nosing: Not applicable.
    3.2. Risers: Open.
    3.3. Strings: Galvanised steel.
    3.4. Newels: Galvanised steel.
    3.5. Guarding: Galvanised steel.
    3.6. Handrails: Galvanised steel.
        3.6.1. Lower handrail: Not required.
4. Reaction to fire: Manufacturer's standard.
5. Other requirements: 900mm long landing at top of stair outside plant room door with matching handrail and guarding.

410A Fixed steel vertical access ladders

1. Description: New galvanised steel fixed access ladders with walk through grab posts.
2. Manufacturer: LANSFORD ACCESS LTD. T: 01452 520144. W: www.ladders-999.co.uk.
    2.1. Product reference: FIXED VERTICAL ACCESS LADDER & WALKTHROUGH POSTS.
3. Standard: To BS 4211.
4. Safety hoops: Not required.
5. Platforms: Not required.
6. Finish as delivered: Hot-dipped galvanised steel.
7. Reaction to fire: Manufacturer's standard.
8. Other requirements:
    8.1. Ladder length to suit height difference between roofs.

8.2. Ladder to be fixed to masonry construction only and must not have feet/ base plates that bear onto the lead gutter.

9. Fixing: Stand off wall brackets fixed to masonry construction in accordance with the manufacturer's recommendations.

Installation

610 Moisture content

1. Temperature and humidity: Monitor and control internal conditions to achieve specified moisture content in wood components at time of installation.

620 Priming/ Sealing/ Painting

1. Surfaces inaccessible after assembly/installation: Before fixing components, apply full protective/decorative treatment/coating system.

630 Corrosion protection of dissimilar materials

1. Components/ substrates/ fasteners of dissimilar materials: Isolate using washers/ sleeves or other suitable means to separate materials to avoid corrosion and/ or staining.

640 Installation generally

1. Fasteners and methods of fixing: To section Z20.
2. Structural members: Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
3. Temporary support: Do not use stairs, walkways or balustrades as temporary support or strutting for other work.
4. Applied finishes: Substrates to be even, dry, sound and free from contaminants. Make good substrate surfaces and prepare/ prime as finish manufacturer's recommendation before application.

Completion

920 Documentation

1. Contents
   1.1. Copies of structural design calculations/ test reports.
   1.2. General product information.
   1.3. Installation information.
   1.4. Inspection and maintenance reports.
2. Number of copies: 2.
3. Submission: Two weeks after request by the Contract Administrator.

Ω End of Section

M20
Plastered/ rendered/ roughcast coatings

Types of coating

110 Cement:lime:sand

1. Description: MAKING GOOD EXISTING RENDER.
2. Substrate: Existing masonry walls.
    2.1. Preparation: Stipple keying coat.
3. Cement: lime:sand mortar:
    3.1. Type: Ready-to-use mortar or ready-mixed lime:sand.
    3.2. Pigment: Not required.
4. Undercoats
    4.1. Mix (cement:lime:sand): 1:0.5:4–4.5 (where final coat thrown) or 1:1:5-6 (where final coat trowelled).
        4.1.1. Cement type: Ordinary Portland Cement.
    4.2. Thickness (excluding dubbing out and keys): First coat 8-12 mm (exclusive of keys) and second coat 6-10 mm.
5. Final coat
    5.1. Mix (cement:lime:sand): 1:1:5–6.
        5.1.1. Cement type: White Portland.
        5.1.2. Other requirements: None.
    5.2. Thickness: 6–8 mm.
    5.3. Finish: Plain.
6. Accessories:
    6.1. Plastic angle, bell cast and stop beads.
    6.2. Diagonal reinforcement mesh at every corner of each window and door.

160A Proprietary cement gauged render to external walls

1. Manufacturer: SAS (EUROPE) LTD. T: 01647 24620. W: www.sas-europe.com.
    1.1. Product reference: PROREND EIFS.
2. Refer to PROREND EIFS specification section below.
    2.1. Colour: To CA approval from the ProRend EIFS standard colour range.
    2.2. Other requirements: See clause 809A.

210 Lightweight gypsum plaster

1. Description: FOR MAKING GOOD EXISTING WALLS.
2. Substrate: Existing masonry.
    2.1. Preparation: Bonding agent recommended by plaster manufacturer.
3. Manufacturer: BRITISH GYPSUM LTD. T: 0870 545 6356. W: www.british-gypsum.com.
4. Undercoats: To BS EN 13279-1.
    4.1. Product reference: THISTLE HARDWALL UNDERCOAT PLASTER.

4.2. Thickness (excluding dubbing out and keys): To match existing thickness.

5. Final coat: Finish plaster to BS EN 13279-1.
   5.1. Product reference: THISTLE MULTI-FINISH.
   5.2. Thickness: 2-3 mm.
   5.3. Finish: Smooth.
6. Accessories: As clause 634.

General

421 Scaffolding

1. General: Prevent putlog holes and other breaks in coatings.

Materials and marking of mortar

430 Ready-to-use cement gauged mortars

1. Time and temperature limitations: Use within limits prescribed by mortar manufacturer
   1.1. Retempering: Restore workability with water only within prescribed time limits.

438 Cements for mortars

1. Cement: To BS EN 197-1.
   1.1. Types: Portland cement, CEM I.
2. Portland slag cement, CEM II.
3. Portland fly ash cement, CEM II.
   3.1. Strength class: 32.5, 42.5 or 52.5.
4. White cement: To BS EN 197-1.
   4.1. Type: Portland cement, CEM1.
   4.2. Strength class: 52.5.
5. Sulfate resisting Portland cement: To BS EN 197-1.
   5.1. Strength class: 42.5.

440 Sand for cement gauged mortars

1. Standard: To BS EN 13139.
   1.1. Grading: 0/2 or 0/4 (CP or MP); Category 2 fines.
2. Colour and texture: Consistent. Obtain from one source.

445 Pigment for coloured mortars

1. Standard: To BS EN 12878.

449 Admixtures for cement gauged mortars

1. Suitable admixtures: Select from:
   1.1. Air entraining (plasticizing) admixtures: To BS EN 934-2 and compatible with other mortar constituents.
   1.2. Other admixtures: Submit proposals.
2. Prohibited admixtures: Calcium chloride and any admixture containing calcium chloride.

450 Chloride content of mortars

1. Chloride content (maximum): 0.1% by dry mass.

495 Mixing

1. Render mortars (site prepared)
    1.1. Batching: By volume. Use clean and accurate gauge boxes or buckets.
    1.2. Mix proportions: Based on damp sand. Adjust for dry sand.
    1.3. Lime:sand: Mix thoroughly. Allow to stand, without drying out, for at least 16 hours before using.
2. Mixes: Of uniform consistence and free from lumps. Do not retemper or reconstitute mixes.
3. Contamination: Prevent intermixing with other materials.

497 Cold weather

1. General: Do not use frozen materials or apply coatings on frozen or frost bound substrates.
2. 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.
3. Internal work: Take precautions to enable internal coating work to proceed without detriment when air temperature is below 3°C.

Preparing substrates

510 Suitability of substrates

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

527 Raking out for key

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

531 Roughening for key

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

538 Stipple key

1. Materials
    1.1. Cement: To BS EN 197-1.
    1.2. Sand: Clean, coarse.
    1.3. Admixture: SBR bonding agent, Agrément certified.
2. Mix proportions (cement:sand): 1:1.5–2.
3. Consistency: Thick slurry, well stirred.
4. Application: Brushed and stippled to form deep, close textured key.
5. Curing: Controlled to achieve a firm bond to substrate.

541 Bonding agent application

1. General: Apply evenly to substrate to achieve effective bond of plaster/ render coat. Protect adjacent joinery and other surfaces.

551 Removal and renewal of existing plaster/ render

1. Location and extent: Agree, at least on a provisional basis, before work commences. Minimize extent of removal and renewal.

556 Removing defective existing render

1. Render for removal: Detached, hollow, soft, friable, badly cracked, affected by effloresence or otherwise damaged.
2. Removing defective render: Cut out to regular rectangular areas with straight edges.
    2.1. Horizontal and vertical edges: Square cut or slightly undercut.
    2.2. Bottom edges to external render: Do not undercut.
    2.3. Render with imitation joints: Cut back to joint lines.
3. Cracks
    3.1. Fine hairline cracking/ crazing: Leave.
    3.2. Other cracks: Cracks 1-2 mm wide: Scribe ready for filling with nonhydraulic lime putty
4. Dust and loose material: Remove from exposed substrates and edges.

568 Existing damp affected plaster/ render

1. Plaster affected by rising damp: Remove to a height of 300 mm above highest point reached by damp or 1 m above dpc, whichever is higher.
2. Perished and salt contaminated masonry
    2.1. Mortar joints: Rake out.
    2.2. Masonry units: Submit proposals.
3. Faults in substrate (structural deficiencies, additional sources of damp, etc.): Submit proposals.
4. Drying out substrates: Establish drying conditions. Leave walls to dry for as long as possible before plastering.
5. Dust and loose material: Remove from exposed substrates and edges.

Backings/ beads/ joints

630 Beads/ stops for internal use

1. Standard: In accordance with BS EN 13914-2, Table 2.
2. Material: Stainless steel to BS EN 13658-1.

636 Beads/ stops for external use

1. Standard: In accordance with BS EN 13914-1, Table 4.
2. Material: Plastics/ PVC.

640 Beads/ stops generally

1. Location: External angles and stop ends except where specified otherwise.
2. Corners: Neat mitres at return angles.

3. Fixing: Secure, using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
    3.1. Beads/ stops for external render: Fix mechanically.
4. Finishing: After coatings have been applied, remove surplus material while still wet, from surfaces of beads/ stops exposed to view.

Mouldings/ decorative plasterwork - Not Used

Internal plastering

710 Application generally

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

715 Flatness/ surface regularity

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

718 Junction of new plasterwork with existing

1. New plasterwork: Finish flush with original face of existing plasterwork to form a seamless junction.

720 Dubbing out

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

725 Undercoats generally

1. General: Rule to an even surface. Cross scratch to provide a key for the next coat.
2. Undercoats on metal lathing: Work well into interstices to obtain maximum key.
3. Undercoats gauged with Portland cement: Do not apply next coat until drying shrinkage is substantially complete.

742 Thin coat plaster

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

777 Smooth finish

1. Appearance: A tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks. Avoid water brush, excessive trowelling and over polishing.

External rendering

809A SAS ProRend EIFS - Clause 160A

1. GENERAL:
   1.1. Surface preparation requirements for ProRend renders are the same as for ordinary sand and cement renders. BS EN 13914-1:2005 Design, preparation and application of external rendering and internal plastering Part 1: External rendering and BS 8000 Workmanship on Building Sites Part 10: Code of Practice for Plastering and Rendering.
   1.2. Only clean water fit for drinking should be used for gauging.
   1.3. Scaffolding must be independently tied to allow uninterrupted application.
   1.4. Local weather and site conditions must be taken into account by the applicator before any cement product is applied. Application should not commence if temperatures are anticipated to be below 5°C or above 30°C for the duration of the curing process. When applying in hot weather, it is advisable to ensure that work coincides with the shaded areas of the building. A fine mist spray of water should precede application to very dry substrates in warmer conditions. Protection must be provided when applying ProRend renders in rain or other inclement weather. Cement products should not be applied to substrates which are frost laden or which have recently been subject to significant periods of rain.
   1.5. The quantity of materials required for a given area should be of the same batch number or be thoroughly mixed together.
2. STORAGE - RESIN PRODUCTS AND PRIMERS:
   2.1. Store in dry cool conditions at a temperature greater than 5ºC. Protect from sunlight and sources of direct heat. Containers should be kept sealed when not in use. Containers should be stacked no more than five high.
3. PREPARATION:
   3.1. All surfaces must be clean, suitably dry, sound and free from anything that may interfere with the adhesion of the materials to be applied.
   3.2. Where loose or friable material is present, remove by water jetting. On pre-painted surfaces these areas should be secondary fixed with mechanical fixings.
   3.3. Further advice may also be included in the preceding substrate section.
4. STARTER TRACK:
   4.1. Starter track – plasters beads, manufactured by SAS (Europe) Ltd approved manufacturer, 2.5m long to be fixed to substrate using stainless steel fixings. Spacing should be approximately 500mm apart.
   4.2. Insulation boards should be fixed with 4-6mm of the ProRend Lite. Insulation boards to be installed brick bond style with a minimum of 150mm staggered joints. First boards are installed horizontally on the Starting Bead providing a level base line. Minimum adhesion 60% coverage. Uniform contact of the entire board must be ensured by even pressure application over the whole surface area. All joints to be butted together to remove thermal breaks within ProRend EIFS insulation system. No adhesive to be present between board joints. Time for adhesive to cure as per directions on adhesive.
   4.3. Any damaged or open joints to be filled with Polyurethane expanding foam. Once set foam can be scraped back flush with the insulation board; minimum drying time of 24 hours.
   4.4. Abutments of window and door frames should be sealed all round with a sealing band, before the fixing of the panels ensuring the building is water-tight.

4.5. Mechanical fixings should be used to secondary fix the insulation, a minimum of 10 fixings / m2.
- H1 fixings for masonry and concrete.
- STRU fixings for lightweight and aircrete blocks.
- SW8R fixings for cement particle board on steel studs with SBHT washer

5. INSULATION:

5.1. ProRend EIFS Mineral Wool Slab: 20mm – 200mm thick; 105 kg/m3 average density; thermal conductivity 0.036 W/m°C; flame retardant euroclass A1; blunt edges; thickness increments in 10mm steps. Variations in U value are achieved dependent upon thickness and thermal conductivity of Mineral Wool insulation.

5.2. Dimensional tolerance maximums:
- Length or width: 1 mm.
- Thickness: +/-0.5 mm.
- Defection: 0.5 mm.
- Surface area: 1200 mm x 600 mm.

5.3. Mineral wool to be manufactured by SAS (Europe) Ltd. approved manufacturers.

5.4. Method of fixing: ProRend Lite Adhesive and Ground Mortar.

6. ARRISES AND FEATURE STOPS:

6.1. Please note that scraped finish renders could, during the scraping process, spall away from the nose of some angle beads. A wide range of PVCu plastic beads are manufactured by ProBead UK Ltd. Beads must be installed in conjunction with manufacturer's specifications. T: 01647 24620 (ProBead PVCu beads are available in colours to match all the ProRend renders).

6.1.1. Belcast Bead Ref: 3BC10 or 3BC15.

6.1.2. Angle Bead Ref: SAB6, SAB10 or WAB10.

6.1.3. Expansion Bead Ref: EX6 or EX10.

6.1.4. Stop Bead Ref: 3SB6 or 3SB10.

6.1.5. Noseless Mesh Angle Bead Ref: NMAB.

7. MASKING:

7.1. Masking should be used to give protection to adjacent work and to give clean straight edges. It should be removed immediately after finishing.

8. CEMENT AND SOLVENT PRODUCTS:

8.1. Remove splashes or material from glass or Aluminium immediately as they may etch the surface and leave a permanent mark.

9. PROREND PREP:

9.1. Mix dry mortar ProRend Prep basecoat with tap water into a lump-free homogenous mass. Apply to the substrate in a layer of 6-8 mm. Key ready to receive a subsequent coat of ProRend Float. Allow ProRend Prep basecoat to cure and dry sufficiently.

10. PROREND LITE/ PROMESH GRADE 3:

10.1. Application: mix dry mortar ProRend Lite with tap water, mix into a lump-free homogenous mass. Wait for 2 minutes and mix again. Apply a 3/4mm coat to the Insulation. Embed ProMesh Grade 3 into the applied material; minimum 100mm overlap between mesh. Additional mesh patches should be applied diagonally across corners of opening. No more than 3 layers of mesh in any one location. Overcoat with 2/3mm of ProRend Lite; spatula the surface to give a flat and even finish. The minimum finished thickness is 5mm. Cure for 48 hours before applying other products.

11. PROREND COLOURTEX PRIMER:

11.1. Up to 750ml of clean water can be added to the 16kg container (no more that 5% of total weight). Mix with a drill or whisk for 2/3 minutes ensuring the water is mixed thoroughly. Apply with a roller or brush ensuring complete obliteration of the background. Protect to dry for 24 hours.

12. PROREND COLOURTEX UNIFORM:
    12.1. It is essential that ProRend Colourtex Uniform is mixed before use; add a maximum of 2% water to the material and mix thoroughly with an electric hand mixer (e.g. drill and whisk) to ensure good workability.
    12.2. ProRend Colourtex Uniform should be applied to the backing by traditional methods. A tight coat to the thickness of the largest aggregate within the material is applied using a stainless steel hawk and trowel. A flowing edge should be maintained. Do not interrupt application until a complete section is finished. Leave for approximately 10-30 minutes, depending on drying conditions, the ProRend Colourtex Uniform is finished by rubbing with a smooth plastic float in either horizontal, vertical or circular strokes.
    12.3. ProRend Colourtex Uniform can also be spray applied using the appropriate machinery. ProRend Colourtex Uniform should also be applied by an applicator that has experience with this type of product.
    12.4. Please note that if large areas are to be coated, it is advisable to mix buckets with various batch numbers thoroughly before application.
13. INSTALLATION:
    13.1. All ProRend EIFS Systems shall be installed in accordance with manufacturer's written specification by an approved specialist sub-contractor from SAS (Europe) Ltd. list of applicators.
    13.2. Under no circumstances will any of the SAS products, including ProRend, ProBead and any other specified products, be modified with any additives excluding fresh, clean water as directed by the products labelling. Antifreeze, accelerators, binding agents etc are strictly forbidden.
    13.3. The building substrate shall be clean, stable, dry, sound and appropriately prepared.
    13.4. A horizontal line at the base of the ProRend EIFS system is to be established using the starting bead with fixings as specified.
    13.5. It is the responsibility of the contractor to ensure that the superstructure can withstand the weight of the ProRend EIFS system.
14. CURING AND PROTECTION:
    14.1. Newly applied products that contain solvents must be protected from adverse weather conditions for 24 hours.
    14.2. Polythene or hessian sheeting is recommended during curing and should be arranged to hang clear of the face of the wall in such a way that it does not form a tunnel through which the wind could increase the evaporation of water from the rendering. The polythene or hessian sheeting must not have intermittent contact with the render as this may cause a patchy appearance.
    14.3. SAS (Europe) Ltd. strongly advise the use of one of our recommended applicators who have a close working relationship with us and have full access to our technical support service.

810 Application generally

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

820 Dubbing out rendering

1. General: Correct substrate inaccuracies.

2. Thickness of any one coat (maximum): 16 mm.
    2.1. Total thickness (maximum): 20 mm, otherwise obtain instructions.
3. Mix: As undercoat.
4. Application: Achieve firm bond. Allow each coat to set sufficiently before the next is applied. Comb surface of each coat.

830 Anchored mesh reinforcement

1. Application of first undercoat: Through and round mesh to fully bond with solid substrate.

840 Undercoats generally

1. General: Rule to an even surface. Comb to provide a key for the next coat. Do not penetrate the coat.
2. Undercoats on metal lathing: Work well into interstices to obtain maximum key.

856 Final coat – plain floated finish

1. Finish: Even, open texture free from laitance.

880 Curing and drying

1. General: Prevent premature setting and uneven drying of each coat.
2. Curing coatings: Keep each coat damp by covering with polyethylene sheet and/ or spraying with water.
    2.1. Curing period (minimum): As the render manufacturer's recommendations.
    2.2. Final coat: Hang sheeting clear of the final coat.
3. Drying: Allow each coat to dry thoroughly, with drying shrinkage substantially complete before applying next coat.
4. Protection: Protect from frost and rain.

Ω End of Section

M60
Painting/clear finishing

Coating systems

110A Emulsion paint to internal walls

1. Manufacturer: AKZO NOBEL. T: 0333 222 7070. W: www.duluxtradepaintexpert.co.uk.
    1.1. Product reference: DULUX TRADE DIAMOND MATT.
2. Surfaces: New plastered walls, prepared internal partitions and casings.
    2.1. Preparation: As clauses 400, 580 & 590.
3. Initial coats: Thinned coat: 1 part clean water to 10 parts DULUX TRADE DIAMOND MATT.
    3.1. Number of coats: 1.
4. Finishing coats: DULUX TRADE DIAMOND MATT.
    4.1. Number of coats: 2.
5. Colour: To CA approval.

110BEmulsion paint to internal ceilings

1. Manufacturer: AKZO NOBEL. T: 0333 222 7070. W: www.duluxtradepaintexpert.co.uk.
    1.1. Product reference: DULUX TRADE FLAT MATT.
2. Surfaces: New plasterboard ceilings.
    2.1. Preparation: As clauses 400, 580 & 590.
3. Initial coats: Thinned coat: 1 part clean water to 10 parts DULUX TRADE FLAT MATT.
    3.1. Number of coats: 1.
4. Finishing coats: DULUX TRADE FLAT MATT.
    4.1. Number of coats: 2.
5. Colour: White.

130A Gloss paint for external joinery and metalwork

1. Manufacturer: AKZONOBEL T: +44 (0)333 222 7070. W: www.duluxtradepaintexpert.co.uk.
    1.1. Product reference: DULUX WEATHERSHIELD EXTERIOR HIGH GLOSS.
2. Surfaces: New and existing external joinery and metalwork.
    2.1. Preparation: As clause 400, clause 440, clause 481, clause 511 and clause 521.
3. Initial coats: Appropriate DULUX TRADE WEATHERSHIELD PRESERVATIVE PRIMER.
    3.1. Number of coats: 1.
4. Undercoats: DULUX TRADE WEATHERSHIELD FLEXIBLE EXTERIOR UNDERCOAT.
    4.1. Number of coats: 2.
5. Finishing coats: DULUX TRADE WEATHERSHIELD EXTERIOR HIGH GLOSS.
    5.1. Number of coats: 2.
6. Colour: TBC.
7. Other requirements:
    7.1. Allow appropriate drying times between coats as recommended by the paint manufacturer.

170A Masonry coating

1. Manufacturer: AKZONOBEL T: +44 (0)333 222 7070. W: www.duluxtradepaintexpert.co.uk.
    1.1. Product reference: DULUX TRADE WEATHERSHIELD MAXIMUM EXPOSURE SMOOTH MASONRY PAINT.
2. Surfaces: Existing external render finish.
    2.1. Preparation: As clause 400, clause 440, clause 570 and clause 622.
3. Initial coats: Thinned coat: 1 part clean water to 5 parts DULUX TRADE WEATHERSHIELD MAXIMUM EXPOSURE SMOOTH MASONRY PAINT.
    3.1. Number of coats: 1.
4. Undercoats: DULUX TRADE WEATHERSHIELD MAXIMUM EXPOSURE SMOOTH MASONRY PAINT.
    4.1. Number of coats: 1.
5. Finishing coats: DULUX TRADE WEATHERSHIELD MAXIMUM EXPOSURE SMOOTH MASONRY PAINT.
    5.1. Number of coats: 2.
6. Colour: TBC.
7. Other requirements:
    7.1. Allow appropriate drying times between coats as recommended by the paint manufacturer.

Generally

210 Coating materials

1. Manufacturers: Obtain materials from any of the following:
2. AKZONOBEL - DULUX TRADE.
3. Selected manufacturers: Submit names before commencement of coating work.

215 Handling and storage

1. Coating materials: Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number.
2. Materials from more than one batch: Store separately. Allocate to distinct parts or areas of the work.

220 Compatibility

1. Coating materials selected by contractor
    1.1. Recommended by their manufacturers for the particular surface and conditions of exposure.
    1.2. Compatible with each other.
    1.3. Compatible with and not inhibiting performance of preservative/fire-retardant pretreatments.

280 Protection

1. 'Wet paint' signs and barriers: Provide where necessary to protect other operatives and general public, and to prevent damage to freshly applied coatings.

320 Inspection by coating manufacturers

1. General: Permit manufacturers to inspect work in progress and take samples of their materials from site if requested.

Preparation

400 Preparation generally

1. Standard: In accordance with BS 6150.
2. Refer to any pre-existing CDM Health and Safety File.
3. Refer to CDM Construction Phase Plan where applicable.
4. Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
5. Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
6. Substrates: Sufficiently dry in depth to suit coating.
7. Efflorescence salts: Remove.
8. Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
9. Surface irregularities: Remove.
10. Joints, cracks, holes and other depressions: Fill flush with surface, to provide smooth finish.
11. Dust, particles and residues from preparation: Remove and dispose of safely.
12. Water based stoppers and fillers
    - 12.1. Apply before priming unless recommended otherwise by manufacturer.
    - 12.2. If applied after priming: Patch prime.
13. Oil based stoppers and fillers: Apply after priming.
14. Doors, opening windows and other moving parts
    - 14.1. Ease, if necessary, before coating.
    - 14.2. Prime resulting bare areas.

420 Fixtures and fittings

1. Removal: Before commencing work remove: Coverplates, grilles and other surface mounted fixtures.
2. Replacement: Refurbish as necessary, refit when coating is dry.

425 Ironmongery

1. Removal: Before commencing work: Remove ironmongery from surfaces to be coated.
2. Hinges: Remove as necessary.
3. Replacement: Refurbishment as necessary; refit when coating is dry.

430 Existing ironmongery

1. Refurbishment: Remove old coating marks. Clean and polish.

440 Previously coated surfaces generally

1. Preparation: In accordance with BS 6150, clause 11.5.
2. Contaminated or hazardous surfaces: Give notice of:
    - 2.1. Coatings suspected of containing lead.
    - 2.2. Substrates suspected of containing asbestos or other hazardous materials.
    - 2.3. Significant rot, corrosion or other degradation of substrates.

3. Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
4. Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
5. Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
6. Alkali affected coatings: Completely remove.
7. Retained coatings
    7.1. Thoroughly clean to remove dirt, grease and contaminants.
    7.2. Gloss-coated surfaces: Provide key.
8. Partly removed coatings
    8.1. Additional preparatory coats: Apply to restore original coating thicknesses.
    8.2. Junctions: Provide flush surface.
9. Completely stripped surfaces: Prepare as for uncoated surfaces.

461 Previously coated wood

1. Degraded or weathered surface wood: Take back to provide suitable substrate.
2. Degraded substrate wood: Repair with sound material of same species.
3. Exposed resinous areas and knots: Apply two coats of knotting.

471 Preprimed wood

1. Areas of defective primer: Take back to bare wood and reprime.

481 Uncoated wood

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

490Previously coated steel

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

500 Preprimed steel

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

511 Galvanized, sherardized and electroplated steel

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

521 Uncoated steel – manual cleaning

1. Oil and grease: Remove.
2. Corrosion, loose scale, welding slag and spatter: Remove.
3. Residual rust: Treat with a proprietary removal solution.
4. Primer: Apply as soon as possible.

541 Uncoated aluminium/ copper/ lead

1. Surface corrosion: Remove and lightly key surface.
2. Pretreatment: Etching primer if recommended by coating system manufacturer.

570 Uncoated masonry/ Rendering

1. Loose and flaking material: remove.

580 Uncoated plaster

1. Nibs, trowel marks and plaster splashes: Scrape off.
2. Overtrowelled 'polished' areas: Key lightly.

590 Uncoated plasterboard

1. Depressions around fixings: Fill with stoppers/ fillers

622 Organic growths

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

631 Previously painted window frames

1. Paint encroaching beyond glass sight line: Remove.
2. Loose and defective putty: Remove.
3. Putty cavities and junctions between previously painted surfaces and glass: Clean thoroughly.
4. Finishing
    - 4.1. Patch prime, reputty as necessary, and allow to set.
    - 4.2. Seal and coat as soon as fully set.

Application

711 Coating generally

1. Application standard: In accordance with BS 6150, clause 9.
2. Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
3. Surfaces: Clean and dry at time of application.
4. Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
5. Overpainting: Do not paint over intumescent strips or silicone mastics.
6. Priming coats
    - 6.1. Thickness: To suit surface porosity.
    - 6.2. Application: As soon as possible on same day as preparation is completed.

7. Finish
    7.1. Even, smooth and of uniform colour.
    7.2. Free from brush marks, sags, runs and other defects.
    7.3. Cut in neatly.
8. Doors, opening windows and other moving parts: Ease before coating and between coats.

720 Priming joinery

1. Preservative treated timber: Retreat cut surfaces with two flood coats of a suitable preservative before priming.
2. End grain: Coat liberally allow to soak in, and recoat.

730 Workshop coating of concealed joinery surfaces

1. General: Apply coatings to all surfaces of components.

731 Site-coating of concealed joinery surfaces

1. General: After priming, apply additional coatings to surfaces that will be concealed when fixed in place.
    1.1. Components: All.
    1.2. Additional coatings: One undercoat.

740 Concealed metal surfaces

1. General: Apply additional coatings to surfaces that will be concealed when component is fixed in place.

780 Bead glazing to coated wood

1. Before glazing: Apply first two coats to rebates and beads.

790 Linseed oil putty glazing

1. Setting: Allow putty to set for seven days.
2. Sealing
    2.1. Within a further 14 days, seal with a solvent-borne primer.
    2.2. Fully protect putty with coating system as soon as it is sufficiently hard.
    2.3. Extend finishing coats on to glass up to sight line.

800 Glazing

1. Etched, sand blasted and ground glass: Treat or mask edges before coating to protect from contamination by oily constituents of coating materials.

Ω End of Section

P10
Sundry insulation/ proofing work REVISED

Types of insulation

125A Insulation laid between ceiling ties/ joists

1. Manufacturer: KNAUF INSULATION LTD. T: 01744 766000. W: www.knaufinsulation.co.uk.
    1.1. Product reference: KNAUF INSULATION LOFT ROLL 44.
2. Material: Glass mineral wool.
3. Recycled content: Not applicable.
4. Thickness: 100 mm.
5. Installation requirements
    5.1. Installation standard: To BS 5803-5.
    5.2. Joints: Butted, no gaps.
    5.3. Insulation at perimeter: Carried over wall plates.
    5.4. Eaves ventilation: Unobstructed.
    5.5. Service holes: Sealed, and debris removed before laying insulation.
    5.6. Electric cables overlaid by insulation: Sized accordingly.
    5.7. Water cistern platforms: Not appliable.

135A Insulation laid across ceiling ties/ joists

1. Manufacturer: KNAUF INSULATION LTD. T: 01744 766000. W: www.knaufinsulation.co.uk.
    1.1. Product reference: KNAUF INSULATION LOFT ROLL 44.
2. Material: Glass mineral wool.
3. Recycled content: Not applicable.
4. Thickness: 200 mm.
5. Installation requirements
    5.1. Installation standard: To BS 5803-5.
    5.2. Insulation widths: Widest practical.
    5.3. Laid direction: At right angles to ties/ joists.
    5.4. Joints: Butted, no gaps.
    5.5. Insulation: Fitted neatly around rafter ends and extended over wall plates.
    5.6. Service holes: Sealed, and debris removed before laying insulation.
    5.7. Eaves ventilation: Unobstructed.
    5.8. Electric cables overlaid by insulation: Sized accordingly.
    5.9. Water cistern platforms: Not applicable.

140A Insulation fitted between rafters

1. Manufacturer: KINGSPAN INSULATION LTD. T: 01544 388601. W: www.kingspaninsulation.co.uk.
    1.1. Product reference: KOOLTHERM K107 PITCHED ROOF BOARD.
2. Material: Premium performance rigid thermoset phenolic insulation.

2.1. Facing: Low emissivity composite foil.

3. Recycled content: Not applicable.
4. Thickness: 100 mm.
5. Installation requirements:
   5.1. General: Insulation to be friction fitted between rafters with no gaps.
   5.2. Joints: Butted, no gaps.
   5.3. Fasteners: Used where necessary to retain insulation and/ or prevent slumping.
   5.4. Air space above insulation: Not restricted.
   5.5. Eaves ventilation: Unobstructed.

145A Insulation fitted over rafters ADDED

1. Manufacturer: KINGSPAN INSULATION. T: 01544 388601. W: www.kingspan.com.
   1.1. Product reference: KOOLTHERM K107 PITCHED ROOF BOARD.
2. Material: Premium performance rigid thermoset phenolic insulation manufactured with a blowing agent that has zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP).
3. Facing: Low emissivity composite foil.
4. Recycled content: None permitted.
5. Thickness: 100mm.
6. Face size (length x width): 2400mm x 1200mm.
7. Installation requirements:
   7.1. Joints: Butted, no gaps.
8. Other requirements:
   8.1. KINGSPAN AIR-CELL INSULATION TAPE to be used to all board joints on the top side.

165 Insulation to eaves ADDED

1. Manufacturer: ROCKWOOL LTD. T: 01656 862302. W: www.rockwool.co.uk.
   1.1. Product reference: ROCKWOOL ROLL.
2. Material: Mineral quilt.
3. Recycled content: Not applicable.
4. Thickness: 300 mm.
5. Installation: Continuous with roof insulation, with no gaps.

190A Insulation fitted between studs ADDED

1. Manufacturer: KINGSPAN INSULATION LTD. T: 01544 388601. W: www.kingspaninsulation.co.uk.
   1.1. Product reference: KOOLTHERM K112 FRAMING BOARD.
2. Material: Premium performance rigid thermoset phenolic insulation.
   2.1. Facing: Low emissivity composite foil.
3. Recycled content: Not applicable.
4. Thickness: 100 mm.
5. Installation requirements:
   5.1. Joints: Butted, no gaps.

5.2. Fasteners: Use where necessary to retain insulation and/ or prevent slumping.

6. Other requirements: KINGSPAN AIR-CELL INSULATION TAPE to be used to all board joints.

260A Insulation fitted within framed plasterboard covers, ducts and pugging

1. Manufacturer: ROCKWOOL LTD. T: 01656 862302. W: www.rockwool.co.uk.
   1.1. Product reference: ROCKWOOL ROLL BATTS.
2. Density (minimum): 10 kg/m3.
3. Thickness: 100 mm.
4. Installation requirements:
   4.1. Joints: Butted, no gaps.
   4.2. Service holes: Sealed, and debris removed before laying insulation.

310 Air and vapour control layer ADDED

1. Description: Vapour control layer below warm roof insulation.
2. Manufacturer: DUPONT TYVEK. T: 01174 529050. W: www.dupont.co.uk.
   2.1. Product reference: DUPONT AIRGUARD CONTROL
3. Minimum vapour resistance: 26 MN s/g.
4. Installation requirements
   4.1. Setting out: Joints minimized.
   4.2. Method of fixing: In accordance with the manufacturer's recommendations and installation instructions.
   4.3. Joints: At supports only, lapped 150 mm minimum.
   4.4. Openings: Membrane fixed to reveals.
   4.5. Joints and edges: Sealed with TYVEK double-sided tape with vapour resistivity not less than the air and vapour control layer.
5. Penetrations: Sealed.

Ω End of Section

P12
Fire-stopping systems

General

140A Fire stopping system to multiple service penetrations to large openings within ceiling voids

1. Panel material: Mineral wool intumescent coated rigid batts as clause 365A.
    1.1. Thickness: 50 mm.
    1.2. Number of layers: 1.
    1.3. Framing: As recommended by the batt manufacturer.
2. Finish: Not required.
3. Sealant: Trowel grade mastic or cartridge fire resistant sealant as clause 390A.
4. Colour: As manufactured.

140B Fire stopping system to multiple service penetrations small gaps within internal partitions within ceiling voids

1. Material: Silicone sealant as clause 338A, 338B, 390A and 390B.
    1.1. Thickness: To suit application.
    1.2. Number of layers: To suit application.
    1.3. Framing: Not required.
2. Finish: Not required.
3. Colour: As manufactured.

140C Fire stopping system to multiple service penetrations - pipe collars to plastic pipes penetrating internal partitions within ceiling voids

1. Material: Pipe collars as clause 338A, 370A, 375A, 375B, 375C, 385A, 390A and 390B.
    1.1. Size: To suit plastic pipe.
    1.2. Framing: Not required.
2. Finish: Not required.
3. Colour: As manufactured.

160A Linear gap sealing for gaps in fire separating construction

1. Application:
    1.1. Linear gaps in fire separating walls and floors.
    1.2. Gaps behind fire resistant door casings and window frames.
2. Fire resistance: Refer to drawings.
3. Sealant: Intumescent foam as clause 335A.

160B Linear gap sealing for low movement joints

1. Application:
    1.1. Construction joints in fire separating walls and floors.
    1.2. Glazing applications including curtain walls.

2. Fire resistance: Refer to drawings.
3. Sealant: Intumescent foam as clause 390A.

160C Linear gap sealing for flexible joints

1. Application:
    1.1. Construction joints in fire separating walls and floors.
    1.2. Glazing applications including curtain walls.
2. Fire resistance: Refer to drawings.
3. Sealant: Intumescent foam as clause 390A.

160D Linear gap sealing for joints in fire separating construction

1. Application:
    1.1. Linear gaps in fire separating walls and floors.
    1.2. Deflection joints above non-loadbearing fire resistant walls/ partitions.
    1.3. Linear gaps behind structural steel.
    1.4. Gaps behind fire resistant door casings and window frames.
2. Fire resistance: Refer to drawings.
3. Material: Laminate joint seal as clause 360A.

161 Fire stopping sample panel

1. Sample frequency: Up to 3no. panels.
2. Panels: Timber framed 500 x 500mm to incorporate an example firestopping detail for the following penetration types:
    2.1. Insulated metal pipes.
    2.2. Metal pipe.
    2.3. Plastic pipe.
    2.4. Blank void (50 x 50mm).
    2.5. Joint (30mm wide).
    2.6. Single cable.
    2.7. Bunch of cables.
    2.8. Cable tray.
    2.9. Steel trunking.
    2.10. Batt details, Type A and Type B.

System performance

210A Design

1. Design: Complete the design of the fire stopping system in accordance with manufacturer's recommendations. Design assistance and site support to be provided by chosen supplier by sending a technical specialist/ representative to site to assist in design, specification and training.
2. Proposals: Submit drawings, technical information, calculations, engineering judgements where required and manufacturer's literature indicating fire performance appropriate to applications, durability, air and smoke tightness performance and where required acoustic performances.

240A Fire resistance of compartment walls

1. Fire resistance:
   1.1. Rating: To BS 476-20: 1987 to be 30/30, 60/60 or 120/120 minutes.
   1.2. Rating to BS EN 1366-1, -3 to be 30/30, 60/60 or 120/120 minutes.
2. Smoke resistance:
   2.1. Air leakage rate (maximum): 5 m3/hr/m2.

Products

305A Product certification

1. Certification: For products specified generically, submit evidence of compliance with the specification.
2. Acceptable evidence:
   2.1. CE marking.
   2.2. Test reports and/ or assessments by NAMAS approved laboratories. Tests to be representative of end use application.
   2.3. Test reports/ assessments by approved laboratories from EU member states. Tests to be representative of end use application.
   2.4. Engineering judgements by manufacturer to be under the terms of the Passive Fire Protection Federation 'Guide to Undertaking Assessments in lieu of Fire Tests'.

335A Intumescent foam

1. Manufacturer: HILTI (GT. BRITAIN) LTD. T: 0800 886 100. W: www.hilti.co.uk.
   1.1. Product reference: FLEXIBLE FIRESTOP FOAM CFS-F FX.
2. Technical Data:
   2.1. Substrates: Masonry (150 mm +), Drywall (100 mm +), Concrete floors (150 mm +).
   2.2. Maximum apertures: 600 x 600 mm drywall penetrations must be framed and lined.
   2.3. A graphite and PU based, two part, intumescent sealant. For permanent sealing of medium and large penetrations in walls and floors and for use in concrete, porous concrete, masonry and partition walls from 100 mm to 200 mm thickness depending on opening type and size, floors of 150 mm.
   2.4. Tested to BS 476: Part 20: 1987 and BS EN 1366-3:2004.
   2.5. CE marked.
   2.6. Fire Resistance: Up to 2 hours.
3. Seal thickness:
   3.1. Blank: Seal at least 100 mm thick.
   3.2. Cables: Single up to 80 mm, bunch up to 100 mm - seal 150 - 200 mm thick.
   3.3. Insulated metal pipe: Up to 114 mm - seal 150 mm plus, thick.
   3.4. Plastic pipe: Up to 40 mm 0 seal 200 mm plus, thick, (with HILTI FIRESTOP BANDAGE CFS-B 50 - 110 mm pipe - seal 200 mm +).
   3.5. Suitable penetrations: blank seal, cables less than 80 mm, bunched cables max. 100 mm (max. single cable 21 mm), up to 32 mm PVC thin wall pipes, small steel/plastic conduits up to 16 mm.
   3.6. Approvals: ETA-10/0109.
   3.7. Repenetration: Easy.
   3.8. Approx. tack-free time (at 23°C/ 50% rel.humidity): 5 min.

3.9. Approx. curing time: 10 min.

3.10. Application temperature range: 10 - 35°C.

3.11. Temperature resistance range: -30 - 60°C.

338A Pressure exerting intumescent sealant

1. Manufacturer: HILTI (GT. BRITAIN) LTD. T: 0800 886 100. W: www.hilti.co.uk.
   1.1. Product reference: FIRESTOP INTUMESCENT SEALANT CFS-IS.
2. Technical data:
   2.1. Substrates: Masonry (150 mm +), drywall (100 mm +), concrete floors (150 mm +).
   2.2. Maximum apertures: 150 x 150 mm (or equivalent area).
   2.3. Seal thickness and backing: 25 mm to each face, backed with tightly compressed mineral wool to fill remainder of void thickness.
   2.4. Suitable penetrations: blank seal, cables less than 80 mm, bunched cables max. 100 mm (max. single cable 21 mm), upto 32 mm PVC thin wall pipes, small steel/plastic conduits upto 16 mm.
   2.5. A gunnable mastic paste for firestopping single and bunched cable penetrations through solid walls and floors and partitions.
   2.6. Tested to EN 1366-3: 2004.
   2.7. Fire resistance: up to 2 hours.
   2.8. Age tested as defined in the DafStb guidelines, with subsequent fire testing.
   2.9. Acoustically tested.
   2.10. Chemical basis: Water-based acrylic sealant.
   2.11. Volume shrinkage: 10 - 20%.
   2.12. Intumescent: Yes.
   2.13. Curetime (at23°/50%r.H):~3mm/72h.
   2.14. Application temperature range: 5°C - 40°C.
   2.15. Storage and transportation temperature - range: 5°C - 25°C.
   2.16. Shelf life (@73°C/ 23°C and 50% humidity): 12 months.
   2.17. Reaction to fire classification according to EN 13501-1: Class E.
   2.18. Approvals: ETA-10/0406.

338B Fire resisting acoustic mastic

1. Manufacturer: HILTI (GT. BRITAIN) LTD. T: 0800 886 100. W: www.hilti.co.uk.
   1.1. Product reference: FIRESTOP ACRYLIC SEALANT CFS-S ACR.
2. Technical data:
   2.1. Substrates: Masonry (100 mm +), drywall (100 mm +), concrete floors (150 mm +)
   2.2. Approvals: BS 476-20.
   2.3. Chemical basis: Water-based acrylic sealant.
   2.4. Approx. cure time: 3 mm/ 3 days at 75°F/24°C, 50% relative humidity.
   2.5. Approx. tack-free time (ventilated at 77°F, 80% re.humidity): 20 min.
   2.6. Movement: +/- 12.5% (ISO 11600).
   2.7. Acoustic performance: Test report available.
   2.8. Shelf life: 24 Months, at 77°F/25°C, 50% relative humidity.

2.9. Application temperature range: 5°C - 40°C.

2.10. Temperature resistance range: -30 - 80°C.

2.11. Storage and transportation temperature range: 5 - 25°C.

2.12. LEED VOC: 75 g/l.

2.13. Complementary products: Mineral wool.

2.14. Mold and mildew performance: Class 0 (ASTM G21-96) and Class 0 (EN ISO 846).

2.15. Re-penetration: Not possible.

2.16. Can be painted: Yes.

340A Fire compound

1. Manufacturer: HILTI (GT. BRITAIN) LTD. T: 0800 886 100. W: www.hilti.co.uk.
   1.1. Product reference: HIGH STRENGTH STRUCTURAL FIRESTOP COMPOUND CP 638.
2. A fire resistant, gypsum based mortar with thermal insulating properties used to seal medium to very large penetrations and provide load bearing properties. Designed for use in walls and floors, in concrete, porous concrete and masonry.
3. Applications:
   3.1. Cables and cable tray.
   3.2. Combustible pipes.
   3.3. Non combustible pipes.
   3.4. Ductwork dampers.
   3.5. Suitable for unreinforced spans up to 1600 mm.
4. Tested to BS 476: Pt 20:1987.
5. Fire Resistance: 1 - 4 hours.
6. Installation Requirements:
   6.1. Before handling, read Material Safety Data Sheet and product label for safe usage and health information.
   6.2. Clean penetration. Pre-moisten sides of penetration.
   6.3. Add clean water to separate container. Then slowly add CP 638 to water while stirring by hand or power mixer to ensure smooth, lump-free mix.
   6.4. Work prepared mortar into opening by trowelling, pouring, or pumping with suitable pump.
   6.5. Use forms for large openings.
   6.6. Fasten identification plate.

360A Stone wool insulation for fire stopping linear and trapezodial firestops

1. Manufacturer: ROCKWOOL LTD. T: 0845 241 2586. W: www.rockwool.co.uk.
   1.1. Product reference: LINEAR FIRESTOP 2A.
   1.2. Thickness (minimum 5% compression): To suit depth of void. Width: To suit depth of void.
   1.3. Length: 1000 mm.
2. Trapezoidal Firestops: ROCKWOOL LINEAR FIRESTOP 28.
3. Accessories: ROCKWOOL ACOUSTIC INTUMESCENT.
4. Other Requirements:
   4.1. Fit as rectangular pieces tightly butt jointed and compressed by at least 5% in thickness.

4.2. Up to 3 layers may be used. Single layer firestopping will always be preferred, with multi-layer methods limited to those occasions where building tolerances demand practicality. All layers should be installed simultaneously. The height of void should not exceed the width of the Firestop.

4.3. Gaps associated with perimeter floor slab/wall firestopping should be firestopped using ROCKWOOL SP Firestop Systems.

4.4. All firestopping over compartment walls and similar construction gaps to be made using ROCKWOOL Linear and Trapezoidal Firestop Systems, supplied by ROCKWOOL Ltd, to meet the requirements of BS 476: Part 20: 1987 for the evaluation criteria of stability, integrity and insulation performance in accordance with Building Research Establishment Assessment No. CC 82633.

4.5. Fix certification labelling to both faces of the installation detailing, the name of the installer, date of installation, name of the system installed, and level fire resistance provided.

365AMineral wool rigid batts - Ablative coated

1. Manufacturer: HILTI (GT. BRITAIN) LTD. T: 0800 886 100. W: www.hilti.co.uk.
   1.1. Product reference: CFS-CT HDB FIRESTOP BOARD.
2. Technical data:
   2.1. Maximum 1200mm x 1000mm wide in walls and 1000mm x 800mm in floors.
   2.2. Substrates: Masonry; Concrete, Gypsum board; Aerated concret).
   2.3. Maximum apertures: 1200mm x 1000mm wide in walls and 1000mm x 800mm in floors.

370APipe collar - Concealed intumescent

1. Manufacturer: HILTI (GT. BRITAIN) LTD. T: 0800 886 100. W: www.hilti.co.uk.
   1.1. Product reference: FIRESTOP COLLAR CFS-C P.
2. Applications:
   2.1. Sealing flammable pipes from 50mm to 250mm in diameter.
   2.2. Pipe Materials: PVC, PVC-U, PE, PE-HD, PE-X, PP, ABS, Al-composite.
3. Technical data:
   3.1. Substrates: Masonry (150 mm +), Drywall (100 mm +), Concrete floors (150 mm +).
   Maximum apertures: Upto 250 mm diameter. Maximum apertures: Upto 250 mm diameter. Seal thickness and backing: Fill aperture around pipe with mortar or seal with 25 mm (drywall)/15 mm (masonry)/10 mm (floors) Firestop Acrylic Sealant CFS-S ARC on both sides backed with tightly packed mineral wool or CP637 fire compound.
   3.2. Fixings: Lugs - Upto 60 mm 2 lugs, 90 mm 3 lugs, 125 4 lugs, 160 mm 6 lugs, 200 mm 8 lugs, 225 mm 10 lugs, 250 12 lugs.
   3.3. Vertical walls: Both sides (drywall with M8 threaded rods, floors, underside only.
   3.4. Suitable penetrations: Masonry/drywall (100 mm +): PVC-U/PE typically upto 160 mm, PP typically upto 110 mm, masonry (150 mm +): PVC-U/PE/PP typically upto 250 mm, typical concrete floors (150 mm +), PVC-U/PE typically upto 250 mm, PP typically upto 125 mm.
   3.5. Galvanised sheet steel housing containing intumescent material, which foams and expands in a fire to seal flammable pipes ranging in diameter from 32mm to 250 mm with pipe wall thickness from 1.8 to 22.8 mm. PVC, PP, PE, ABS, Pneumatic tube conveyors, and pipes with acoustic insulation. To be used on solid walls and floors and partition walls.
   3.6. Tested to BS 476 Pt 20;1987 and BS EN 1366-3: 2004 CE marked.
   3.7. Fire resistance: up to 4 hours.
   3.8. Approvals: ETA-10/0404.

375A Pipe collar - Insulated wrap

1. Manufacturer: HILTI (GT. BRITAIN) LTD. T: 0800 886 100. W: www.hilti.co.uk.
    1.1. Product reference: FIRESTOP WRAP STRIP CFS-W EL.
2. Applications:
    2.1. Sealing flammable pipes from 50mm to 160mm in diameter.
    2.2. Pipe Materials: PE, PE-HD, PVC-U, PVC, PVC-C.
3. Technical data:
    3.1. Base materials: Aerated concrete, concrete, masonry, drywall.
    3.2. Approvals: ETA-10/0405.
    3.3. Application temperature range: -5 - 50°C.
    3.4. Temperature resistance range: -20 - 100°C.
    3.5. Reaction to fire class (EN 13501-1): E.
    3.6. Dimensions (LxWxH): 10000 x 45 x 5mm.
    3.7. Can be painted: No.

375B Pipe collar - Insulated wrap

1. Manufacturer: HILTI (GT. BRITAIN) LTD. T: 0800 886 100. W: www.hilti.co.uk.
    1.1. Product reference: FIRESTOP WRAP STRIP CFS-W SG.
2. Applications:
    2.1. Sealing flammable pipes from 50mm to 160mm in diameter.
    2.2. Pipe Materials: PE, PE-HD, PVC-U, PVC, PVC-C.
3. Technical data:
    3.1. Base materials: Aerated concrete, concrete, masonry, drywall.
    3.2. Approvals: ETA-10/0405.
    3.3. Application temperature range: -5 - 50°C.
    3.4. Temperature resistance range: -20 - 100°C.
    3.5. Reaction to fire class (EN 13501-1): E.
    3.6. Dimensions (LxWxH): 10000 x 45 x 5mm.
    3.7. Can be painted: No.

375C Pipe collar - Insulated wrap intumescent fire sleeves

1. Manufacturer: HILTI (GT. BRITAIN) LTD. T: 0800 886 100. W: www.hilti.co.uk.
    1.1. Product reference: INTUMESCENT FIRE SLEEVE CP 645.
2. Fire rated insulation sleeve for firestopping insulated metal pipes, plastic pipes where they penetrate solid walls and floors and partitions and Hilti CP 670 fire safety board. CP 645 is cut to fit service and wall thickness to manufacturer's instructions.
3. Tested to BS 476 Pt 20: 1987 and EN 1366: 3.
4. Fire Resistance: Up to 2 hours.
5. Age tested as defined in the DafStb guidelines, with subsequent fire testing.
6. Applications:
    6.1. Sealing flammable pipes from 50mm to 160mm in diameter.

6.2. Pipe Materials: PE, PE-HD, PVC-U, PVC, PVC-C.

7. Technical data:
   7.1. Substrates: Masonry (150 mm +), drywall (100 mm +), concrete floors (150 mm +).
   7.2. Maximum apertures: 150 x 150 mm (or equivalent area - i.e. 2,250 mm long, 10 mm wide joint, or 100 x 225 mm, or 50 x 450 mm.
   7.3. Seal thickness and backing: 25 mm to each face, backed with tightly compressed mineral wool to fill remained of void thickness.
   7.4. Suitable penetrations: Blank seal, cables less than 80 mm, bunched cable max. 100 mm (max. single cable 21 mm), upto 32 mm PVC thin wall pipes, small steel/plastic conduits upto 16 mm.
   7.5. Storage and transportation temperature - range: -5 - 50°C.
   7.6. Expansion temperature: > 180°C.
   7.7. Expansion ratio: 1:15 load expansion, load = 5g/cm3.
   7.8. Compatibility other Hilti firestop products: Hilti Firestop Acrylic Sealant CFS-ACR.

381A Cable collar - Surface mounted intumescent

1. Manufacturer: HILTI (GT. BRITAIN) LTD. T: 0800 886 100. W: www.hilti.co.uk.
   1.1. Product reference: FIRESTOP CABLE COLLAR CFS-CC.
2. Applications:
   2.1. Flexible solution for single cables, cable bundles, cable trays, conduits in concrete, masonry and drywall applications.
   2.2. For new and existing penetrations in floors and walls.
   2.3. Especially suitable for renovation projects under difficult conditions.
   2.4. Can be used to seal old/ damaged fire compartment penetrations without removing the existing material.
3. Technical data:
   3.1. Substrates: Masonry, drywall, concrete, aerated concrete.
   3.2. Approvals: ETA-16/0382.
   3.3. Application temperature range: 5°C - 40°C.
   3.4. Temperature resistance range: -15°C - 60°C.
   3.5. Reaction to fire class (EN 13501-1): E.
   3.6. Complementary products: CFS-FIL, CFS-F FX, CFS-P BA, CP 633 M10.

385ASealant backing material

1. Backing to be used with fire rated sealants and mastics to control depth of applied sealants and mastics. To also provide additional insulation against heat penetration where required.
   1.1. Product reference: FR MINERAL WOOL 100 kg/m3 density.

390A Sealant - Fire resisting silicone

1. Manufacturer: HILTI (GT. BRITAIN) LTD. T: 0800 886 100. W: www.hilti.co.uk.
   1.1. Product reference: FLEXIBLE FIRESTOP SEALANT CP 606.
2. Colour: White.

390BSealant - Fire resisting silicone

1. Manufacturer: HILTI (GT. BRITAIN) LTD. T: 0800 886 100. W: www.hilti.co.uk.

1.1. Product reference: HILTI FIRESTOP SILICONE SEALANT CFS S SIL (CP 601S).

2. Technical data:
   2.1. For sealing metal pipe and duct penetrations through solid floors and walls and partition walls particularly where movement accommodation of up to + 25% is required.
   2.2. Sealant width and thickness to be in accordance with manufacturers written instructions.
   2.3. Standard: To ISO 11600.
   2.4. Tested to EN 1366-3.
   2.5. CE marked.

Execution

620A Workmanship generally

1. Standard: Installation by LPCB or FIRAS accredited contractors with a minimum of 3 years experience. Evidence of accreditation to be presented to Main contractor and architect before work commences. Firestop Contractor shall also be able to show that they have undergone Installation training from the manufacturer of the products & systems used.
2. Gaps: All gaps and imperfections of fit between building elements and services to provide fire resistance and resist the passage of smoke. All to be in accordance with manufacturer's written instructions.
3. Labelling: All firestopped service penetrations to be labelled with a unique reference number to aid traceability and must indicate date of installation, date inspected and name of installer.
4. Recording of penetration seals: installer to provide records of locations of all Firestop seals and all necessary data for completion of health and safety file.
5. Adjacent surfaces: Prevent overrun of sealants and mortars onto finished surfaces.

650Installing flexible intumescent gap sealer

1. Fitting of strips: Compress strips and fit into gap so that, as they decompress, the strips wedge themselves in the void.
2. Shrink wrapping: Application as recommended by the strip manufacturer.
3. Joints
   3.1. Ends of strips: Fit intumescent 'end piece' at both ends of run of fire stop laminate.
   3.2. Joints between strips: Fit two intumescent 'end pieces' at each butt joint.

660A Applying intumescent foam

1. New Joints/openings: Remove builders debris, mortar droppings and grease.
2. Old Joints/openings: Clean and remove existing sealing systems.
3. Services: clean cables, trays and pipes of dust and grease.
4. Priming: None required.
5. Openings in walls up to 145 mm thick: frame opening with strips of plasterboard to provide minimum depth of 100 mm.
6. Application: Fill joint/opening to approximately half depth, Hilti Firestop Foam CFS F FX to expand to face of joint/opening to give 100 mm depth for 60 minutes fire resistance or 150 mm for 120 minutes fire resistance.
7. Trimming: cut back if required.

670A Applying fire rated mortar

1. Installers: use trained and 3rd party accredited installers as recommended by manufacturer of mortar.

2. Sequence: Install mortar after services have been permanently installed, allowing access to remote corners. Co-ordinate installation with mechanical and electrical service installers. Dampers to be fitted in line with floor or wall, with builders frames and to be held rigidly in position by adequate supporting framework.
3. Base material suitability: Remove loose builders material, degrease and ensure that opening bounded by suitable structural elements.
4. Shuttering: Install suitable shuttering panels to opening, providing adequate support for wet weight of mortar.
5. Support framework: Install support framework as recommended by manufacturer and in accordance with said manufacturer's recommendations where required.
6. Temperature: Do not apply mortar when it could be damaged by frost.
7. Powder /:water ratio: To manufacturer's recommendations. Contractor to submit proposals and manufacturer's written instructions.
8. Mortar Cure: Do not disturb mortar before final set has taken place.
9. Load bearing: Only permit foot traffic after curing has taken place and only when manufacturer's written evidence has been provided to prove suitability.
10. Shuttering: Remove combustible shuttering after mortar has cured.

680Installing intumescent pillows

1. Number of pillows (per m² of opening): Number necessary to achieve fire resistance.
2. Orientation of bags: As recommended by the pillow manufacturer.

690Applying intumescent putty

1. Sequence: Install putty after services are permanently installed.
2. Loose dust and combustible materials: Do not disturb putty before final set has taken place.

710A Installing insulated batt

1. Installing batts: Fit tight into void between the floor or wall and the penetrating services. All cut edges to be coated with CP 606 acoustic intumescent mastic before jointing.
2. Supporting of batts and services: refer to manufacturer's instruction for suitable support frame where required and fixing details for support of batt and services where required (eg dampers).
3. Face of batts: Flush with the surface of wall, floor or soffit.
4. Joints: Seal and close butt joints with CP 606 acoustic intumescent mastic, to both faces, around perimeter of the batt ensuring that all gaps between the batt and surrounding edges are fully filled.
5. Joints to be kept to minimum.
6. Gaps between services and bulkhead: For non-combustible services seal wit appropriate fire resisting sealant. Combustible services to be sealed with appropriate Intumescent sealing product as per manufacturer's recommendations and supporting test evidence.

730AFixing pipe collars

1. Collar fixing: secured with metal fire rated anchors as recommended by manufacturer.
2. Gap around pipe: Gap to be between10 and 30 mm and sealed with backing foam and Hilti Firestop Acrylic Sealant CFS S ACR to depth recommended by manufacturer. Wider gaps to be filled with Hilti CP 637 fire rated mortar. Wide gaps can be sealed with Hilti CFS CT fire safety board and Hilti Collars mounted thereafter. Contractor to submit proposals based on manufacturers recommendations.

740A Inserting sealant backing material

1. Preparation: Removed debris from service penetration.
2. New Joints: press in manufacturer's recommended backing material to give recess to match required depth of fire rated sealant as listed in manufacturer's written instructions.
3. Old Joints: Remove all existing sealing material and treat as new.

Completion

750A Applying capping sealant

1. De-greasing: Contractors choice.
2. Priming: check manufacturer's recommendations and contractor to submit proposals.
3. Depth of Sealant: Minimum depth is 6mm. Required depth to be obtained from manufacturer and in accordance with written instructions and appropriate for joint width, required fire rating and/or acoustic rating.
4. Finishing: Joint to be tooled to ensure correct adhesion to joint sides and to achieve suitable appearance.
5. Temperature: Do not apply sealants with out manufacturer's application temperature recommendations. Water based sealants to be protected from frost.

910A Cleaning

1. Masking Tapes: all forms of masking and surface protection to be removed.
2. Cleaning: Clean off splashes and droppings. Wipe down finishes.
3. Waste: Off cuts, empty cartridges and general waste from firestopping operations to be disposed of in accordance with site requirements.

920 Inspection

1. Notice for inspection (minimum): 5 working days.

Ω End of Section

P21
Door/ window ironmongery

Pre-tender

10 Quantities and locations

1. Quantities and locations of ironmongery are to be agreed with the CA. Refer to Provisional Sums .
2. Fixing: As sections L10 and L20.

General

120 Ironmongery range selected by Contractor

1. Source: Single co-ordinated range.
2. Notification: Submit details of selected range, manufacturer and/ or supplier.
3. Principal material/ finish: Polished stainless steel, grade 1.4301 (304).
4. Items unavailable within selected range: Submit proposals.

141 Sample boards

1. General: Before placing orders with suppliers submit a sample board, containing labelled samples of ironmongery and showing methods of fixing.
2. Range: Include pull handle, push plate, lever handle, thumb turn, door stop, finger protector and escutcheon .
   2.1. Conformity: Retain board on site in an approved location for the duration of the Contract. Ensure conformity of ironmongery as delivered with labelled samples.

180 Strength class or category of duty for door ironmongery

1. Requirement: To DD 171.
2. General: Durability of ironmongery components to be compatible with stated category of duty of each door leaf.
   2.1. Exclusions: Ironmongery with specific duty or 'category of use' defined elsewhere.
   2.2. Documentation: Before placing orders with suppliers submit documentation showing product compliance with stated category of duty.

Door hanging devices - Not Used

Window hanging devices - Not Used

Door operating devices - Not Used

Door securing devices - Not Used

Window securing devices - Not Used

Door furniture - Not Used

Window furniture - Not Used

Ω End of Section

R10
Rainwater drainage systems

General

110 Gravity rainwater drainage system

1. Rainwater outlets: Proprietary.
2. Gutters: Aluminium.
3. Pipework: Aluminium.
4. Below ground drainage: Not applicable.
5. Disposal: To existing surface water drainage system.
6. Controls: Not applicable.
7. Accessories: None.

System performance

210 Design

1. Design: Complete the design of the rainwater drainage system.
2. Standard
   - 2.1. To BS EN 12056-3, clauses 3–7, Annex A and National Annexes.
   - 2.2. To BS EN 12056-5, clauses 3, 4, 6 and 11.
3. Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

221 Collection and distribution of rainwater

1. General: Complete, and without leakage or noise nuisance.

230A Design parameters - general

1. Roof and gutter construction and finish: Refer to drawings.
2. Design rate of rainfall: As BS EN 12056-3, National Annex NB.2.
3. Available capacity of existing below ground drainage (maximum): TBC.

Products

311A Aluminium gutters

1. Standard: Agrément certified.
2. Manufacturer: MARLEY ALUTEC. T: 01234 359438. W: www.marleyalutec.co.uk.
   - 2.1. Product reference: 125 mm TRADITIONAL MOULDED OGEE ALUMINIUM GUTTER SYSTEM.
3. Nominal size: 139 mm x 102 mm x 1830 mm.
4. Type/ Finish Type/ Grade: 6063 TF alloy/ Polyester powder coated to BS 6496:1984.
5. Colour: Heritage Black.
6. Gutter position:

6.1. Gutters must be installed level or to a fall of 1:600. The gutter should not be positioned at a level which causes rainfall to overshoot the gutter, i.e. too low, or where it is damaged by the high velocity impact of sliding snow, i.e. too high.

7. Fixings:
   7.1. Fix fascia brackets with Alutec 32mm x No. 10 roundhead screws, code SC201. Drilling pilot holes first is recommended.
   7.2. To ensure the long term durability of aluminium gutter systems, it is vitally important to ensure that the fixing components are equally durable and capable of providing the necessary support.
   7.3. Only the recommended austenitic stainless steel screws must be used to fix gutters, whether direct, fascia or rafter bracket fixed.
   7.4. If fixing to fascia boards made of materials other than wood or Alutec aluminium composites, please call the Alutec Technical Services Department.
8. Jointing:
   8.1. Joint sealing must not be carried out in wet weather or in temperatures below 5oC or above 40oC. Joint surfaces must be perfectly clean and dry. Use a clean cloth and solvent cleaner SC108 to remove all traces of dirt or grease, which may not be visible.
   8.2. Ensure that the gutter joint sockets/spigots are correctly aligned with each other to ensure free thermal movement within the gutter joint.
   8.3. Only Alutec high performance low modulus sealant SC101 must be used. Use of other sealants may result in early joint failure. Sealant over nine months old must not be used.
9. Accessories:
   9.1. 125 mm UNION.
   9.2. 125 mm FASCIA BRACKETS.
   9.3. 125 mm 90° INTERNAL ANGLE.
   9.4. 125 mm 90° EXTERNAL ANGLE.
   9.5. 125mm 102 mm x 102 mm OUTLET.
   9.6. 125 mm LEFT HAND EXTERNAL STOP END.
   9.7. 125 mm RIGHT HAND INTERNAL STOP END.
10. Other requirements: The Contractor shall allow for all necessary accessories from the list above to each gutter in order to complete the installation.

370A Aluminium pipework

1. Standard: Agrément certified.
2. Manufacturer: MARLEY ALUTEC. T: 01234 359438. W: www.marleyalutec.co.uk.
   2.1. Product reference: 102 mm TRADITIONAL ALUMINIUM EARED SQUARE DOWNPIPES.
3. Nominal size: 102 mm x 102 mm x 3000 mm.
4. Type/ Finish Type/ Grade: 6063 TF alloy/ Polyester powder coated to BS 6496:1984.
5. Colour: Heritage Black.
6. Fixings: Screw the eared cast sockets using Alter number 16 x 70 mm hex insert dome head, code SC208 with appropriate wall plugs. When fixed in this way, intermediate pipe clips are not required. However, additional pipe clips must be fitted adjacent to inline bends and branches.
7. Jointing:

7.1. Joint sealing must not be carried out in wet weather or in temperatures below 5°C or above 40°C. Joint surfaces must be perfectly clean and dry. Use a clean cloth and Alutec solvent cleaner, code SC108 to remove all traces of dirt or grease, which may not be visible.

7.2. All joints to pipes with cast sockets must be sealed, including at the gutter outlet with Alutec sealant, code SC101. Access to seal the rear of the socket can be made easier by attaching a flexible piece of tube to the end of the sealant gun nozzle. Ensure to allow for a 3-4mm expansion gap between pipe lengths.

7.3. Pipe off cuts can be utilised by fitting a pipe socket to a square cut end of pipe. Ensure that a bead of Alutec sealant, code SC101 is placed within the internal recess of the pipe socket, prior to driving the socket onto the end of the pipe with a rubber/wooden mallet.

8. Accessories:

8.1. 102 mm EARED PIPE SOCKETS.

8.2. 102 mm EARED SQUARE ACCESS PIPE.

8.3. 102 mm SQUARE BENDS.

8.4. 102 mm SQUARE BRANCHES.

8.5. 102 mm EARED SQUARE SHOES.

8.6. 102 mm SQUARE FIXED OFFSETS.

8.7. 102 mm SQUARE ADJUSTABLE EAVES OFFSETS.

8.8. 102 mm SQUARE PIPE CLIPS.

8.9. 102 mm SQUARE STANDARD HOPPER HEADS.

9. Other requirements: The Contractor shall allow for all necessary accessories from the list above to each downpipe position in order to complete the installation.

Custom made products - Not Used

Execution

600 Preparation

1. Work to be completed before commencing work specified in this section

1.1. Below ground drainage. Alternatively, make temporary arrangements for dispersal of rainwater without damage or disfigurement of the building fabric and surroundings.

1.2. Painting of surfaces which will be concealed or inaccessible.

605Installation generally

1. Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
2. Plastics and galvanized steel pipes: Do not bend.
3. Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
4. Protection

4.1. Fit purpose made temporary caps to prevent ingress of debris.

4.2. Fit access covers, cleaning eyes and blanking plates as the work proceeds.

610 Fixing and jointing gutters

1. Joints: Sealed with Alutec high performance low modulus sealant SC101.
2. Brackets: Securely fixed.

2.1. Fixings: Screwed into fascia board

2.1.1. Fixing centres: 915 mm.

2.2. Additional brackets: Where necessary to maintain support and stability, provide at joints in gutters and near angles and outlets.

3. Roofing underlay: Dressed into gutter.

615 Setting out eaves gutters - to falls

1. Setting out: To true line and even gradient to prevent ponding or backfall. Position high points of gutters as close as practical to the roof and low points not more than 50 mm below the roof.
2. Outlets: Align with connections to below ground drainage.

630 Installing rainwater outlets

1. Fixing: Secure. Fix before connecting pipework.
   1.1. Method: As recommended by the manufacturer.
2. Junctions between outlets and pipework: Accommodate movement in structure and pipework.

635 Fixing pipework

1. Pipework: Fix securely, plumb and/ or true to line.
2. Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.
3. Externally socketed pipes and fittings: Fix with sockets facing upstream.
4. Additional supports: Provide as necessary to support junctions and changes in direction.
5. Vertical pipes
   5.1. Provide a loadbearing support at least at every storey level.
   5.2. Tighten fixings as work proceeds so that every storey is self supporting.
   5.3. Wedge joints in unsealed metal pipes to prevent rattling.
6. Wall and floor penetrations: Isolate pipework from structure.
   6.1. Pipe sleeves: As section P31.
   6.2. Masking plates: Fix at penetrations if visible in the finished work.
7. Expansion joint pipe sockets: Fix rigidly to buildings. Elsewhere, provide brackets and fixings that allow pipes to slide.

640 Fixing vertical pipework

1. Bracket fixings: As recommended by the RWP manufacturer.
2. Distance between bracket fixing centres (maximum): As recommended by the RWP manufacturer.

650 Jointing pipework and gutters

1. General: Joint with materials and fittings that will make effective and durable connections.
2. Jointing differing pipework and gutter systems: Use adaptors intended for the purpose.
3. Cut ends of pipes and gutters: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.
4. Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
5. Junctions: Form with fittings intended for the purpose.
6. Jointing material: Strike off flush. Do not allow it to project into bore of pipes and fittings.
7. Surplus flux, solvent jointing materials and cement: Remove.

660 Jointing external pipework

1. Jointing: As recommended by the RWP manufacturer.

675 Cutting coated pipework and gutters

1. Cutting: Recoat bare metal.

690 Electrical continuity - pipework

1. Joints in metal pipes with flexible couplings: Clips (or suitable standard pipe couplings) supplied for earth bonding by pipework manufacturer to ensure electrical continuity.

695 Electrical continuity - gutters

1. Joints in metal gutters: Purpose made links supplied by the gutter manufacturer to ensure electrical continuity.

700 Access for testing and maintenance

1. General: Install pipework and gutters with adequate clearance to permit testing, cleaning and maintenance, including painting where necessary.
2. Access fittings and rodding eyes: Position so that they are not obstructed.

Completion

900 Testing generally

1. Dates for testing: Give notice.
    1.1. Period of notice (minimum): Inform the Contract Administrator sufficiently in advance to give a reasonable opportunity to observe tests.
2. Preparation
    2.1. Pipework: Complete, securely fixed, free from defects, obstruction and debris before testing.
3. Testing
    3.1. Supply clean water, assistance and apparatus.
    3.2. Do not use smoke to trace leaks.
4. Records: Submit a record of tests.

910 Gutter test

1. Preparation: Temporarily block all outlets.
2. Testing: Fill gutters to overflow level and after 5 minutes closely inspect for leakage.

915 Maintenance instructions

1. General: At completion, submit printed instructions recommending procedures for maintenance of the rainwater installation, including full details of recommended inspection, cleaning and repair procedures.

920 Immediately before handover

1. Construction rubbish, debris, swarf, temporary caps and fine dust which may enter the rainwater system: Remove. Do not sweep or flush into the rainwater system.
2. Access covers, rodding eyes, outlet gratings and the like: Secure complete with fixings.

Ω End of Section

Z10
Purpose made joinery

To be read with preliminaries/ general conditions.

110 Fabrication

1. Standard: To BS 1186-2.
2. Sections: Accurate in profile and length, and free from twist and bowing. Formed out of solid unless shown otherwise.
   2.1. Machined surfaces: Smooth and free from tearing, wooliness, chip bruising and other machining defects.
3. Joints: Tight and close fitting.
4. Assembled components: Rigid. Free from distortion.
5. Screws: Provide pilot holes.
   5.1. Screws of 8 gauge (4 mm diameter) or more and screws into hardwood: Provide clearance holes.
   5.2. Countersink screws: Heads sunk at least 2 mm below surfaces visible in completed work.
6. Adhesives: Compatible with wood preservatives applied and end uses of timber.

120 Cross section dimensions of timber

1. General: Dimensions on drawings are finished sizes.
2. Maximum permitted deviations from finished sizes
   2.1. Softwood sections: To BS EN 1313-1:-
      2.1.1. Clause 6 for sawn sections.
   2.2. Hardwood sections: To BS EN 1313-2:-
      2.2.1. Clause 6 for sawn sections.
      2.2.2. Clause NA.3 for further processed sections.

130 Preservative treated wood

1. Cutting and machining: Completed as far as possible before treatment.
2. Extensively processed timber: Retreat timber sawn lengthways, thicknessed, planed, ploughed, etc.
3. Surfaces exposed by minor cutting and/ or drilling: Treat as recommended by main treatment solution manufacturer.

140 Moisture content

1. Wood and wood based products: Maintained within range specified for the component during manufacture and storage.

210 Laminated plastics veneered boards/ panels

1. Fabrication: To British Laminated Plastics Fabricators Association Ltd (BLF) fabricating standards.
2. Balancing veneer: From decorative veneer manufacturer and of similar composition. Applied to reverse side of core material.
3. Finished components: Free from defects, including bow, twist, scratches, chipping, cracks, pimpling, indentations, glue marks, staining and variations in colour and pattern.
4. Joints visible in completed work: Tight butted, true and flush.

220 Wood veneered boards/ panels

1. Core material and veneers: Conditioned before bonding.
2. Setting out: Veneer features and grain pattern aligned regularly and symmetrically unless instructed otherwise.
3. Balancing veneer: Applied to reverse side of core material.
    3.1. Moisture and temperature movement characteristics: As facing veneer.
4. Veneer edges: Tight butted and flush, with no gaps.
5. Tolerance of veneer thickness (maximum): ± 0.5 mm.
6. Finished components: Free from defects, including bow, twist, scratches, chipping, splits, blebs, indentations, glue marks and staining.
7. Surface finish: Fine, smooth, free from sanding marks.

250 Finishing

1. Surfaces: Smooth, even and suitable to receive finishes.
    1.1. Arrises: Eased unless shown otherwise on drawings.
2. End grain in external components: Sealed with primer or sealer as section M60 and allowed to dry before assembly.

Ω End of Section

Z11
Purpose made metalwork

To be read with preliminaries/ general conditions.

310 Materials generally

1. Grades of metals, section dimensions and properties: To appropriate British Standards. When not specified, select grades and sections appropriate for the purpose.
2. Prefinished metal: May be used if methods of fabrication do not damage or alter appearance of finish, and finish is adequately protected.
3. Fasteners: To appropriate British Standards and, unless specified otherwise, of same metal as component being fastened, with matching coating or finish.

320 Steel long and flat products

1. Hot rolled structural steels (excluding structural hollow sections and tubes): To BS EN 10025-1.
2. Fine grain steels, including special steels: To BS EN 10025-3 and -4.
3. Steels with improved atmospheric corrosion resistance: To BS EN 10025-5.

330 Steel plate, sheet and strip

1. Plates and wide flats, high yield strength steel: To BS EN 10025-6.

340 Hot rolled steel plate, sheet and strip

1. Flat products, high yield strength for cold forming: To BS EN 10149-1, -2 and -3.
2. Carbon steel sheet and strip for cold forming: To BS EN 10111.
3. Narrow strip, formable steel and steel for general engineering purposes: To BS 1449-1.8 and BS 1449-1.14.

350 Cold rolled steel plate, sheet and strip

1. Steel sections: To BS EN 10162.
2. Flat products, high yield strength micro-alloyed steels for cold forming: To BS EN 10268.
3. Carbon steel flat products for cold forming: To BS EN 10130 and BS EN 10131.
4. Uncoated carbon steel narrow strip for cold forming: To BS EN 10139 and BS EN 10140.
5. Narrow strip steel for general engineering purposes: To BS EN 10132-1, -2, and -3.
6. Carbon steel flat products for vitreous enamelling: To BS EN 10209.

360 Coated steel flat products

1. Hot dip zinc coated carbon steel sheet and strip for cold forming: To BS EN 10346 and BS EN 10143.
2. Hot dip zinc coated structural steel sheet and strip: To BS EN 10143 and BS EN 10346.
3. Hot dip zinc-aluminium (za) coated sheet and strip: To BS EN 10346.
4. Hot dip aluminium-zinc (az) coated sheet and strip: To BS EN 10346.
5. Organic coated flat products: To BS EN 10169.

370 Steel structural hollow sections (SHS)

1. Non alloy and fine grain steels, hot finished: To BS EN 10210-1 and -2.

2. Non-alloy and fine grain steels, cold formed welded: To BS EN 10219-2.
3. Weather resistant steels, hot finished: To BS 7668.

380 Other steel sections

1. Equal flange tees: To BS EN 10055.
2. Equal and unequal angles: To BS EN 10056-1 and -2.
3. Wire, carbon steel for general engineering purposes: To BS 1052.
4. Wire and wire products, general: To BS EN 10218-2.
5. Tubes
    5.1. Seamless circular: To BS EN 10297-1.
    5.2. Seamless cold drawn: To BS EN 10305-1.
    5.3. Welded and cold sized square and rectangular: To BS EN 10305-5.
    5.4. Welded circular: To BS EN 10296-1.
    5.5. Welded cold drawn: To BS EN 10305-2.
    5.6. Welded cold sized: To BS EN 10305-3.

400 Stainless steel products

1. Chemical composition and physical properties: To BS EN 10088-1.
2. Sheet, strip and plate: To BS EN 10088-2.
3. Semi-finished products bars, rods and sections: To BS EN 10088-3.
4. Wire: To BS EN 1088-3.
5. Tubes
    5.1. Welded circular: To BS EN 10296-2.
    5.2. Seamless circular: To BS EN 10297-2.

410 Aluminium alloy products

1. Designations
    1.1. Designation system, chemical composition and forms: To BS EN 573-1, -2, -3 and -5.
    1.2. Temper designations: To BS EN 515.
2. Sheet, strip and plate: To BS EN 485-1 to -4.
3. Cold drawn rods, bars and tubes: To BS EN 754-1 and -2.
4. Extruded rods, bars, tubes and profiles: To BS EN 755-1 and -2.
5. Drawn wire: To BS EN 1301-1, -2 and -3.
6. Rivet, bolt and screw stock: To BS 1473.
7. Structural sections: To BS 1161.

420 Copper alloy products

1. Sheet, strip, plate and circles for general purposes: To BS EN 1652.
2. Sheet and strip for building purposes: To BS EN 1172.
3. Rods: To BS EN 12163.
4. Profiles and rectangular bars: To BS EN 12167.
5. Wire: To BS EN 12166.

6. Tubes: To BS EN 12449.

Fabrication

515 Fabrication generally

1. Contact between dissimilar metals in components: Avoid.
2. Finished components: Rigid and free from distortion, cracks, burrs and sharp arrises.
   2.1. Moving parts: Free moving without binding.
3. Corner junctions of identical sections: Mitre.

520 Cold formed work

1. Profiles: Accurate, with straight arrises.

527A Welding steel

1. Welding procedures:
   1.1. Method and standard: Metal arc welding to BS EN 1011-1 and -2.
   1.2. Welding Procedure Specification (WPS): Not required.
2. Preparation:
   2.1. Joint preparation: Clean thoroughly.
   2.2. Surfaces of materials that will be self-finished and visible in the completed work: Protect from weld splatter.
3. Jointing:
   3.1. Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
   3.2. Dissimilar metals: Welding not permitted.
   3.3. Strength requirements: Welds to achieve design loads.
   3.4. Heat straightening: Submit proposals.
   3.5. Complex assemblies: Agree priority for welding members to minimise distortion caused by subsequent welds.
   3.6. Tack welds: Use only for temporary attachment.
   3.7. Jigs: Provide to support and restrain members during welding.
   3.8. Filler plates: Submit proposals.
   3.9. Lap joints: Minimum 5 x metal thickness or 25 mm, which ever is greater.
   3.10. Weld terminations: Clean and sound.

527B Welding stainless steel

1. Welding procedures:
   1.1. Method and standard: TIG welding to BS EN 1011-3.
   1.2. Welding Procedure Specification (WPS): Not required.
2. Preparation:
   2.1. Joint preparation: Clean thoroughly.
   2.2. Surfaces of materials that will be self-finished and visible in the completed work: Protect from weld splatter.
3. Jointing:

3.1. Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
3.2. Dissimilar metals: Welding not permitted.
3.3. Strength requirements: Weld to achieve design loads.
3.4. Heat straightening: Submit proposals.
3.5. Complex assemblies: Agree priority for welding members to minimise distortion caused by subsequent welds.
3.6. Tack welds: Use only for temporary attachment.
3.7. Jigs: Provide to support and restrain members during welding.
3.8. Filler plates: Submit proposals.
3.9. Lap joints: Minimum 5 x metal thickness or 25 mm, whichever is greater.
3.10. Weld terminations: Clean and sound.

527C Welding aluminium alloys

1. Welding procedures:
   1.1. Method and standard: TIG or MIG welding to BS EN 1011-4.
   1.2. Welding Procedure Specification (WPS): Not required.
2. Preparation:
   2.1. Joint preparation: Clean thoroughly.
   2.2. Surfaces of materials that will be self-finished and visible in the completed work: Protect from weld splatter.
3. Jointing:
   3.1. Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
   3.2. Dissimilar metals: Welding not permitted.
   3.3. Strength requirements: Welds to achieve design loads.
   3.4. Heat straightening: Submit proposals.
   3.5. Complex assemblies: Agree priority for welding members to minimise distortion caused by subsequent welds.
   3.6. Tack welds: Use only for temporary attachment.
   3.7. Jigs: Provide to support and restrain members during welding.
   3.8. Filler plates: Submit proposals.
   3.9. Lap joints: Minimum 5 x metal thickness or 25 mm, whichever is greater.
   3.10. Weld terminations: Clean and sound.

530 Stainless steel fabrication

1. Guillotining or punching: Do not use for metal thicknesses greater that 10 mm.
2. Thermal cutting
   2.1. Carbonation in the heat affected zone: Remove, after cutting.
3. Bending
   3.1. Plates or bars: Cold bending radius not less than material thickness.
   3.2. Tubes: Cold bending radius not less than 2 x tube diameter.
4. Welding: In addition to general welding requirements:
   4.1. Protect adjacent surfaces from weld spatter.

4.2. Pickle all welds before post fabrication treatments.

5. Protection: Provide protection to fabricated components during transit and on site.

555 Brazing

1. Standard: To BS EN 14324.
2. Testing
   2.1. Destructive testing: To BS EN 12797.
   2.2. Nondestructive testing: To BS EN 12799.

Finishing

710 Finishing welded and brazed joints visible in complete work

1. Standard: To BS EN ISO 8501-3.
   1.1. Preparation grade: P1.
2. Butt joints: Smooth, and flush with adjacent surfaces.
3. Fillet joints: Neat.
4. Grinding: Grind smooth where indicated on drawings.

745 Preparation for application of coatings

1. General: Complete fabrication, and drill fixing holes before applying coatings.
2. Paint, grease, flux, rust, burrs and sharp arrises: Remove.

750 Liquid organic coating for aluminium alloy components

1. Standard: To BS 4842.

760 Zinc and cadmium plating of iron and steel surfaces

1. Zinc plating: To BS EN ISO 2081.
2. Cadmium plating: To BS EN ISO 2082.

770 Chromium plating

1. Standard: To BS EN ISO 1456.

780 Galvanizing

1. Standard: To BS EN ISO 1461.
2. Preparation
   2.1. Vent and drain holes: Provide in accordance with BS EN ISO 14713-1 and -2. Seal after sections have been drained and cooled.
   2.2. Components subjected to cold working stresses: Heat treat to relieve stresses before galvanizing.
   2.3. Welding slag: Remove.
   2.4. Component cleaning: To BS EN ISO 8501-3.
   2.5. Grade: St 2½.

Completion

910 Documentation

1. Submit
    1.1. Manufacturer's maintenance instructions.
    1.2. Guarantees, warranties, test certificates, record schedules and log books.

920 Completion

1. Protection: Remove.
2. Cleaning and maintenance: Carry out in accordance with procedures detailed in fabricators' guarantees.

Ω End of Section

Z12
Preservative/ flame-retardant treatment

To be read with preliminaries/ general conditions.

110 Treatment application

1. Timing: After cutting and machining timber, and before assembling components.
2. Processor: WPA Benchmark-accredited for the specified treated components.

120 Commodity specifications

1. Standard: In accordance with the Wood Protection Association (WPA) publication 'Code of practice: Industrial Wood Preservation'.

130 Preservative treatment solution strengths/ treatment cycles

1. General: Select to achieve specified service life and to suit treatability of specified wood species.

140 Copper-organic preservative treatment

1. Solution
    - 1.1. Manufacturer: Submit proposals.
        - 1.1.1. Product reference: Submit proposals.
    - 1.2. Colour: Contractor's choice.
    - 1.3. Application: High-pressure impregnation.
2. Moisture content of wood
    - 2.1. At time of treatment: Not more than 28%.
    - 2.2. After treatment: Timber to be surface dry before using.

150 Water-based organic preservative treatment

1. Solution
    - 1.1. Manufacturer: Submit proposals.
        - 1.1.1. Product reference: Submit proposals.
    - 1.2. Application: High-pressure impregnation.
2. Moisture content of wood
    - 2.1. At time of treatment: Not more than 28%.
    - 2.2. After treatment: Timber to be surface dry before use.

160 Organic solvent preservative treatment

1. Solution
    - 1.1. Manufacturer: Submit proposals.
        - 1.1.1. Product reference: Submit proposals.
    - 1.2. Application: Double vacuum and low-pressure impregnation, or immersion.
2. Moisture content of wood
    - 2.1. At time of treatment: As specified for the timber/ component at time of fixing.

2.2. After treatment: Timber to be surface dry before use.

165 Water-based microemulsion preservative treatment

1. Solution
   1.1. Manufacturer: Submit proposals.
      1.1.1. Product reference: Submit proposals.
   1.2. Application: Double vacuum and low-pressure impregnation.
2. Moisture content of wood
   2.1. At time of treatment: As specified for the timber/ component at time of fixing.
   2.2. After treatment: Timber to be surface dry before use.

167 Boron compound preservative treatment

1. Solution
   1.1. Manufacturer: Submit proposals.
      1.1.1. Product reference: Submit proposals.
   1.2. Application: High-pressure impregnation.
2. Moisture content of wood
   2.1. At time of treatment: Not more than 28%.
   2.2. After treatment: Timber to be surface dry before using.

210 Flame-retardant treatment

1. Standard: In accordance with the Wood Protection Association (WPA) publication 'Industrial flame retardant treatment of wood and wood-based panel products'.
2. Solution type: INT 1, INT 2 or EXT to suit application.
   2.1. Manufacturer: Submit proposals.
      2.1.1. Product reference: Submit proposals.
   2.2. Application: Vacuum and pressure impregnation.
3. Moisture content of wood
   3.1. At time of treatment: As specified for the timber/ component at time of fixing.
   3.2. After treatment (INT1 only): Timber to be re-dried slowly at temperatures not exceeding 60°C to minimize distortion and degradation.

610 Making good to preservative treatment on site

1. Preservative solution: Compatible with off-site treatment.
2. Application: In accordance with preservative manufacturer's recommendations.

620 Making good to flame-retardant treatment on site

1. Flame-retardant: Compatible with off-site treatment.
2. Application: In accordance with flame-retardant manufacturer's recommendations.

Ω End of Section

Z20
Fixings and adhesives

Products

310 Fasteners generally

1. Materials: To have:
    1.1. Bimetallic corrosion resistance appropriate to items being fixed.
    1.2. Atmospheric corrosion resistance appropriate to fixing location.
2. Appearance: Submit samples on request.

320 Packings

1. Materials: Noncompressible, corrosion proof.
2. Area of packings: Sufficient to transfer loads.

330 Nailed timber fasteners

1. Nails
    1.1. Steel: To BS 1202-1 or BS EN 10230-1.
    1.2. Copper: To BS EN 1202-2.
    1.3. Aluminium: To BS 1202-3.

340 Masonry fixings

1. Light duty: Plugs and screws.
2. Heavy duty: Expansion anchors or chemical anchors.

350 Plugs

1. Type: Proprietary types to suit substrate, loads to be supported and conditions expected in use.

360 Anchors

1. Types
    1.1. Expansion: For use in substrate strong enough to resist forces generated by expansion of anchor.
    1.2. Adhesive or chemical
        1.2.1. For use in substrate where expansion of anchor would fracture substrate.
        1.2.2. For use in irregular substrate where expansion anchors cannot transfer load on anchor.
    1.3. Cavity: For use where the anchor is retained by toggles of the plug locking onto the inside face of the cavity.

370 Wood screws

1. Type
    1.1. Wood screws (traditional pattern).
        1.1.1. Standard: To BS 1210.
    1.2. Wood screws.
        1.2.1. Pattern: Parallel, fully threaded shank or twin thread types.

2. Washers and screw cups: Where required are to be of same material as screw.

380 Miscellaneous screws

1. Type: To suit the fixing requirement of the components and substrate.
    1.1. Pattern: Self-tapping, metallic drive screws, or power driven screws.
2. Washers and screw cups: Where required to be of same material as screw.

390 Adhesives

1. Standards
    1.1. Hot-setting phenolic and aminoplastic: To BS 1203.
    1.2. Thermosetting wood adhesives: To BS EN 12765.
    1.3. Thermoplastic adhesives: To BS EN 204.

410 Powder actuated fixing systems

1. Types of fastener, accessories and consumables: As recommended by tool manufacturer.

Execution

610 Fixing generally

1. Integrity of supported components: Select types, sizes, quantities and spacings of fixings, fasteners and packings to retain supported components without distortion or loss of support.
2. Components, substrates, fixings and fasteners of dissimilar metals: Isolate with washers/ sleeves to avoid bimetallic corrosion.
3. Appearance: Fixings to be in straight lines at regular centres.

620 Fixing through finishes

1. Penetration of fasteners and plugs into substrate: To achieve a secure fixing.

630 Fixing packings

1. Function: To take up tolerances and prevent distortion of materials and components.
2. Limits: Do not use packings beyond thicknesses recommended by fixings and fasteners manufacturer.
3. Locations: Not within zones to be filled with sealant.

640 Fixing cramps

1. Cramp positions: Maximum 150 mm from each end of frame sections and at 600 mm maximum centres.
2. Fasteners: Fix cramps to frames with screws of same material as cramps.
3. Fixings in masonry work: Fully bed in mortar.

650 Nailed timber fixing

1. Penetration: Drive fully in without splitting or crushing timber.
2. Surfaces visible in completed work: Punch nail heads below wrot surfaces.
3. Nailed timber joints: Two nails per joint (minimum), opposed skew driven.

660 Screw fixing

1. Finished level of countersunk screw heads

1.1. Exposed: Flush with timber surface.

1.2. Concealed (holes filled or stopped): Sink minimum 2 mm below surface.

670 Pelleted countersunk screw fixing

1. Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
2. Pellets: Cut from matching timber, match grain and glue in to full depth of hole.
3. Finished level of pellets: Flush with surface.

680 Plugged countersunk screw fixing

1. Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
2. Plugs: Glue in to full depth of hole.
3. Finished level of plugs: Projecting above surface.

690 Using powder actuated fixing systems

1. Powder actuated fixing tools: To BS 4078-2 and Kitemark certified.
2. Operatives: Trained and certified as competent by tool manufacturer.

700 Applying adhesives

1. Surfaces: Clean. Adjust regularity and texture to suit bonding and gap filling characteristics of adhesive.
2. Support and clamping during setting: Provide as necessary. Do not mark surfaces of or distort components being fixed.
3. Finished adhesive joints: Fully bonded. Free of surplus adhesive.

Ω End of Section

Z21
Mortars

Cement gauged mortars

110 Cement gauged mortar mixes

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

120 Sand for site made cement gauged masonry mortars

1. Standard: To BS EN 13139.
2. Grading: 0/2 (FP or MP).
    2.1. Fines content where the proportion of sand in a mortar mix is specified as a range (e.g. 1:1: 5-6):
        2.1.1. Lower proportion of sand: Use category 3 fines.
        2.1.2. Higher proportion of sand: Use category 2 fines.
3. Sand for facework mortar: Maintain consistent colour and texture. Obtain from one source.

131 Ready-Mixed lime:sand for cement gauged masonry mortars

1. Standard: To BS EN 998-2.
2. Lime: Nonhydraulic to BS EN 459-1.
    2.1. Type: CL 90S.
3. Pigments for coloured mortars: To BS EN 12878.

135 Site made lime:sand for cement gauged masonry mortars

1. Permitted use: Where a special colour is not required and in lieu of factory made ready-mixed material.
2. Lime: Nonhydraulic to BS EN 459-1.
    2.1. Type: CL 90S.
3. Mixing: Thoroughly mix lime with sand, in the dry state. Add water and mix again. Allow to stand, without drying out, for at least 16 hours before using.

160 Cements for mortars

1. Cement: To BS EN 197-1 and CE marked.
    1.1. Types: Portland cement, CEM I.
        1.1.1. Portland limestone cement, CEM II/A-L or CEM II/A-LL.
2. Portland slag cement, CEM II/B-S.
3. Portland fly ash cement, CEM II/B-V.
    3.1. Strength class: 32.5, 42.5 or 52.5.
4. White cement: To BS EN 197-1 and CE marked.
    4.1. Type: Portland cement, CEM I.
    4.2. Strength class: 52.5.
5. Sulfate resisting Portland cement
    5.1. Type: To BS EN 197-1 Sulfate resisting Portland cement, CEM I/SR and CE marked.
6. To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.

6.1. Strength class: 32.5, 42.5 or 52.5.

7. Masonry cement: To BS EN 413-1 and CE marked.
   7.1. Class: MC 12.5.

180 Admixtures for site made cement gauged mortars

1. Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
2. Other admixtures: Submit proposals.
3. Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

190 Retarded ready to use cement gauged mortar

1. Standard: To BS EN 998-2.
2. Lime for cement:lime:sand mortars: Nonhydraulic to BS EN 459-1.
   2.1. Type: CL 90S.
3. Pigments for coloured mortars: To BS EN 12878.
4. Time and temperature limitations: Use within limits prescribed by mortar manufacturer.
   4.1. Retempering: Restore workability with water only within prescribed time limits.

200Storage of cement gauged mortar materials

1. Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases.
2. Factory made ready-mixed lime:sand/ ready to use retarded mortars: Keep in covered containers to prevent drying out or wetting.
3. Bagged cement/ hydrated lime: Store off the ground in dry conditions.

210 Making cement gauged mortars

1. Batching: By volume. Use clean and accurate gauge boxes or buckets.
   1.1. Mix proportions: Based on dry sand. Allow for bulking of damp sand.
2. Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
   2.1. Mortars containing air entraining admixtures: Mix mechanically. Do not overmix.
3. Working time (maximum): Two hours at normal temperatures.
4. Contamination: Prevent intermixing with other materials.

Lime:sand mortars

310 Lime:sand mortar mixes

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

320 Sand for lime:sand masonry mortars

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

345 Admixtures for hydraulic lime:sand mortars

1. Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
2. Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

350 Storage of lime:sand mortar materials

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

360 Making lime:sand mortars generally

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

390 Knocking up nonhydraulic lime:sand mortars

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

400 Making hydraulic lime:sand mortars

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

Ω End of Section

Z22
Sealants

Products

310 Joints

1. Description: Generally.
2. Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.

Execution

610 Suitability of joints

1. Presealing checks
    1.1. Joint dimensions: Within limits specified for the sealant.
    1.2. Substrate quality: Surfaces regular, undamaged and stable.
2. Joints not fit to receive sealant: Submit proposals for rectification.

620 Preparing joints

1. Surfaces to which sealant must adhere
    1.1. Remove temporary coatings, tapes, loosely adhering material, dust, oil, grease, surface water and contaminants that may affect bond.
    1.2. Clean using materials and methods recommended by sealant manufacturer.
2. Vulnerable surfaces adjacent to joints: Mask to prevent staining or smearing with primer or sealant.
3. Backing strip and/ or bond breaker installation: Insert into joint to correct depth, without stretching or twisting, leaving no gaps.
4. Protection: Keep joints clean and protect from damage until sealant is applied.

630 Applying sealants

1. Substrate: Dry (unless recommended otherwise) and unaffected by frost, ice or snow.
2. Environmental conditions: Do not dry or raise temperature of joints by heating.
3. Sealant application: Fill joints completely and neatly, ensuring firm adhesion to substrates.
4. Sealant profiles
    4.1. Butt and lap joints: Slightly concave.
    4.2. Fillet joints: Flat or slightly convex.
5. Protection: Protect finished joints from contamination or damage until sealant has cured.

Ω End of Section

Z31
Powder coatings

To be read with preliminaries/ general conditions.

120 Powder coating materials

1. Manufacturer: Obtain from one only of the following: Contractors choice to CA approval.
2. Selected manufacturer: Submit details before commencement of powder coating including:
   - 2.1. Name and contact details.
   - 2.2. Details of accreditation schemes.
   - 2.3. Technical data of product including current Agrément certificates.

210 Working procedures

1. Comply with the follow following standards.
   - 1.1. Aluminium components: To BS 6496 or BS EN 12206-1.
   - 1.2. Steel components: To BS EN 13438.
   - 1.3. Safety standards: To British Coatings Federation 'Code of safe practice: Powder coating. Application of coating powders by electrostatic spraying'.
   - 1.4. Health and safety guidance: Health and Safety Executive 'Reducing risk associated with using coating powders - employers' web page.

220 Powder coating applicators

1. Applicator requirements
   - 1.1. Approved by powder coating manufacturer.
   - 1.2. Currently certified to BS EN ISO 9001.
   - 1.3. Comply with quality procedures, guarantee conditions, standards and tests required by powder coating manufacturer.
   - 1.4. Selected applicator: Submit details before commencement of powder coating including:
     - 1.4.1. Name and contact details.
     - 1.4.2. Details of accreditation schemes.

225 Guarantees

1. Powder coating manufacturer and applicator guarantees
   - 1.1. Submit sample copies before commencement of powder coating.
   - 1.2. Submit signed project specific copies on completion of work.

230 Control samples

1. Sequence: Prior to ordering materials for the works, obtain approval of appearance for:
   - 1.1. Powder coated samples: Of various grades and forms of background metal to be used, showing any colour, texture and gloss variation.
   - 1.2. Fabrication samples: Showing joint assembly, how powder coating is affected and how any cut metal edges are finished and protected.

1.3. Where manual application is required, controlled samples should be coated and inspected for colour and gloss stability.

2. Samples to include the following information
   2.1. Product reference.
   2.2. Colour.
   2.3. Reference number.
   2.4. Name.
   2.5. Gloss level.

235 Independent inspection at plant

1. Requirement: Contractors/ suppliers of the following designated components must commission an approved Independent Inspection Authority to carry out acceptance inspections to confirm that powder coating application complies with this specification.
   1.1. Designated components: Al.
2. Acceptance inspections: Carry out for each variation of colour and finish of each component work package at applicator's plant prior to any fabrication of units, in accordance with the following:
   2.1. Where three of more production runs are required for application of coatings, not less than three acceptance inspections must be carried out in accordance with BS 6001-1, general inspection level 2, with an acceptance quality limit of 1%.
   2.2. Where less than three production runs are required for application of coatings, one acceptance inspection must be carried out in accordance with BS 6001-2, with a limiting quality of 5% where the probability of acceptance is 10%.
3. Components failing inspection: Reprocess or replace and reinspect.
4. Inspection reports: Independent Inspection Authority must submit copies.

240 Qualicoat quality assurance system

1. Requirement: Powder and coating application to the following designated components is to be tested and approved in accordance with the Qualicoat system.
   1.1. Designated components: All.

250 Component design

1. Condition of components to be powder coated
   1.1. To comply with relevant recommendations of BS 4479-1, -3, and -4.
   1.2. Of suitable size to fit plant capacity.
   1.3. Of suitable thickness to withstand oven curing.

310 Pretreatment of aluminium components

1. Condition of components to be pretreated
   1.1. Free from corrosion and damage.
   1.2. All welding and jointing completed and finish off as specified.
   1.3. Free from impurities including soil, grease and oil.
   1.4. Suitable for and compatible with the pretreatment process.
2. Conversion coating requirements
   2.1. Chromate system: To BS 6496 or BS EN 12206-1.

2.2. Chromate-free system: To BS EN 12206-1. Submit details before using.

3. Rinsing requirements: Use demineralized water. Drain and dry.

320 Pretreatment of steel components

1. Condition of components to be pretreated
   1.1. Free from corrosion and damage.
   1.2. All welding and jointing completed and finish off as specified.
   1.3. Free from impurities including soil, grease and oil.
   1.4. Suitable for and compatible with the pretreatment process.
2. Conversion coating requirements: To BS EN 13438.
3. Rinsing requirements: Use demineralized water. Drain and dry.

330 Pretreatment for protection in aggressive environments

1. Minimum thickness of 60 microns across significant and/ or primary surfaces.
2. Minimum thickness of 25 microns on non-significant and/ or secondary faces ensuring a coherent film layer.
3. All cut edges, drilled holes and mitres to be fully sealed.
4. Cleaning and maintenance: Carried out once every three to twelve months (dependent on proximity to pollutant).

430 Extent of powder coatings

1. Application: To visible component surfaces, and concealed surfaces requiring protection. Coated surfaces will be deemed 'significant surfaces' for relevant BS 6496 or BS EN 13438 performance requirements.

435 Application of powder coatings

1. Surfaces to receive powder coatings: Free from dust or powder deposits.
2. Powder colours: Obtain from one batch of one manufacturer.
3. Commencement of powder coating: To be continuous from pretreatment.
4. Components to be installed on site in order of application.
5. Jig points: Not visible on coated components.
6. Curing: Controlled to attain metal temperatures and hold periods recommended by powder coating manufacturer.
7. Stripping and recoating of components: Only acceptable by prior agreement of powder coating manufacturer. Stripping, pretreatment and powder coating are to be in accordance with manufacturer's requirements.
8. Overcoating of components: Not acceptable.

440 Performance and appearance of powder coatings

1. For aluminium components
   1.1. Standard: To BS 6496 or BS EN 12206-1.
2. For steel components
   2.1. Standard: To BS EN 13438.
3. Visual inspection after powder coating: Significant surface viewing distances to be as specified in the relevant Standard, unless specified otherwise.
4. Colour and gloss levels: To conform with approved samples.

450 Aluminium alloy fabrications

1. Units may be assembled
    1.1. Before powder coating.
    1.2. From components powder coated after cutting to size.
    1.3. Where approved, from components powder coated before cutting to size.
2. Exposure of uncoated background metal: Not acceptable.
3. Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.

460 Steel fabrications

1. Unit assembly: Wherever practical, before powder coating.
2. Exposure of uncoated background metal: Not acceptable.
3. Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.

470 Fixings

1. Exposed metal fixings: Powder coat together with components, or coat with matching repair paint system applied in accordance with the powder coating manufacturer's recommendations.

480 Damaged components – repair or replacement

1. Before delivery to site: Check all components for damage to powder coatings. Replace damaged components.
2. Site damage: Submit proposals for repair or replacement.

510 Protection

1. Powder coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
2. Protective coverings must be
    2.1. Resistant to weather conditions.
    2.2. Partially removable to suit building in and access to fixing points.
3. Protective tapes in contact with powder coatings must be
    3.1. Low tack, self adhesive and light in colour.
    3.2. Applied and removed in accordance with tape and powder coating manufacturers' recommendations. Do not use solvents to remove residues as these are detrimental to the coating.
4. Inspection of protection: Carry out monthly. Promptly repair any deterioration or deficiency.

520 Protection in hazardous locations

1. Minimum thickness of 60 microns across significant and/ or primary surfaces.
2. Minimum thickness of 25 microns on non-significant and/ or secondary faces ensuring a coherent film layer.
3. All cut edges, drilled holes and mitres to be fully sealed.
4. Cleaning: Carried out once every three to twelve months (dependent on proximity to pollutant).

535 Documentation

1. Submit the following information for each batch of powder coated components
    1.1. Supplier.

1.2. Trade name.

1.3. Colour.

1.4. Type of powder.

1.5. Method of application.

1.6. Batch and reference number.

1.7. Statutory requirements.

1.8. Test certificates.

1.9. Maintenance instructions.

540 Completion

1. Protection: Remove any protective coverings.
2. Cleaning and maintenance of powder coatings: Carry out in accordance with procedures detailed in powder coating manufacturer and applicator guarantees.

Ω End of Section

Z33
Anodizing

To be read with preliminaries/ general conditions.

110 Anodic coating

1. Anodizer: Select one only of the following: Contractor's choice to CA approval.
2. Selected anodizer: Submit details before commencement of anodizing, including:
   - 2.1. Name and contact details.
   - 2.2. Details of accreditation schemes.
   - 2.3. Technical data of product including current Agrément certificates.

210 Working procedures

1. Standard: To BS 3987 for anodic coatings on wrought aluminium.

220 Anodizer requirements

1. Processing
   - 1.1. Approved: By the Aluminium Finishing Association.
   - 1.2. Certified: To BS EN ISO 9001.
   - 1.3. Anodizing plant: Each anodizer to use only one plant.

230 Guarantees

1. Anodizer guarantees: Submit sample copies before commencement of anodizing.
2. Project specific guarantees: Submit signed copies on completion of work.
3. Guarantees to cover
   - 3.1. Life expectancy.
   - 3.2. Colour: Opacity and consistency.
   - 3.3. Texture: Gloss, satin or matt.
   - 3.4. Quality of coating.

240 Control samples

1. Sequence: Prior to ordering materials for the works, obtain approval of appearance for:
   - 1.1. Anodic coated samples: Showing colour and texture variation.
   - 1.2. Fabrication samples: Showing joint assembly, how anodic coating is affected and how cut metal edges are finished and protected.

250 Independent inspection at plant

1. Requirement: Contractors/ suppliers of the following designated components must commission an approved Independent Inspection Authority to carry out acceptance inspections to confirm that anodic coating application complies with this specification.
   - 1.1. Designated components: All.
2. Acceptance inspections: Carry out for each variation of colour and finish of each component work package at anodizer's plant prior to any fabrication of units, in accordance with the following:

2.1. Where three of more production runs are required for application of coatings, not less than three acceptance inspections must be carried out in accordance with BS 6001-1, general inspection level 2, with an acceptance quality limit of 1%.

2.2. Where less than three production runs are required for application of coatings, one acceptance inspection must be carried out in accordance with BS 6001-2, with a limiting quality of 5% where the probability of acceptance is 10%.

3. Components failing inspection: Reprocess or replace and reinspect.
4. Inspection reports: Independent Inspection Authority must submit copies.

255 Quality assurance system

1. Requirement: Powder and coating application to the following designated components is to be tested and approved in accordance with the Qualanod system.
   1.1. Designated components: All.

270 Component design

1. Condition of components to be anodized
   1.1. To comply with relevant recommendations of BS 4479-1, and -5.
   1.2. Of suitable size to fit plant capacity.

310 Pretreatment

1. Condition of components to be anodized
   1.1. Free from corrosion and damage.
   1.2. Suitable for and compatible with the pretreatment and anodizing process.
2. Process: In accordance with the specification requirements for the finish.

410 Extent of anodic coatings

1. Application: To visible component surfaces, and concealed surfaces requiring protection. Coated surfaces will be deemed ‘significant surfaces’ for relevant BS 3987 performance requirements.

420 Application of anodic coatings

1. Surfaces to receive anodic coatings: Clean.
2. Commencement of anodic coating: To be continuous from pretreatment.
3. Jig points: To be agreed. Not on visible areas of anodic coated components.
4. Use of touch-up paint: Not acceptable.

430 Performance and appearance of anodic coatings

1. Standard: To BS 3987.
2. Visual inspection after anodizing: Significant surfaces to be free from visible coating/ defects when viewed from a distance of not less than 5 m for external and 3 m for internal applications.

440 Fabrication

1. Units may be assembled
   1.1. Before anodizing, providing sufficient drainage holes are included in components to fully drain components.
   1.2. From components anodized after cutting to size.

1.3. Where approved, from components anodized before cutting to size.

1.4. Exposure of uncoated background metal: Not acceptable.

1.5. Assembly sealants: Compatible with anodic coatings. Obtain approval of colour if sealants are visible after fabrication.

450 Damaged components – repair/ replacement

1. Before delivery to site: Check all components for damage to anodic coatings. Replace damaged components.
2. Site damage: Submit proposals for repair or replacement.

510 Protection

1. Anodic coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
2. Protective coverings: Must be:
   2.1. Resistant to weather conditions.
   2.2. Partially removable to suit building in and access to fixing points.
3. Protective tapes in contact with anodizing to be
   3.1. Low tack, self adhesive and light in colour.
   3.2. Applied and removed in accordance with tape and anodizers recommendations.
4. Inspection of protection: Carry out weekly. Promptly repair any deterioration or deficiency.

530 Documentation

1. Submit the following information for each batch of anodic coated components
   1.1. Supplier.
   1.2. Trade name.
   1.3. Colour (if required).
   1.4. Batch and reference number.
   1.5. Statutory requirements.

540 Completion

1. Protection: Remove.
2. Cleaning and maintenance of anodic coatings: Carry out in accordance with procedures detailed in anodizer's guarantees.

Ω End of Section

Specification created using NBS Chorus