

Project Admiral Revision A 14 August

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B

General Matters

B1 GENERAL MATTERS

- 10 These preambles may contain reference to preferred particular brands/models etc., of materials, goods and equipment and the Contractor must make every effort to ensure that as far as such materials, goods and equipment are procurable they are incorporated within the works unless overridden by the Works Schedules.
- 15 All workmanship and materials to be used in the Contract are to be the best of their respective kinds and where a BS or Code of Practice is applicable, whether specifically noted or not, this shall be taken to denote the minimum acceptable standard of material or workmanship.
- 20 It is a requirement that all work shall be carried out in accordance with the best possible building practice and methods.
- 25 All workmanship shall comply with all sections of BS 8000 unless previous agreement is received from the Contract Administrator.
- 30 **BRITISH STANDARD PRODUCTS:** Where any product is specified to comply with a British Standard, it may be substituted at the Contract Administrators discretion by a product complying with a grade or category within a European Community Standard or other international standard recognised in the UK specifying equivalent requirements and assurances in respect of material, safety, reliability, fitness for purpose and, where relevant, appearance.
- 35 The Contract Administrators decision on the use and continued approval of alternative materials, goods and equipment is final.
- 40 All such alternative goods, materials and equipment that are approved for use in the works shall be provided at no extra cost to the Contract.
- 45 Wherever possible, all materials to be incorporated in the Works shall be such that it is compatible with and shall aesthetically match existing materials with which is to replace or repair.
- 60 The Contractor should allow for minor changes in location of service, door swings etc., from property to property and shall not seek additional costs for such minor changes.

B3 FUNGUS/BEETLE ERADICATION

- 05 **GENERALLY:** Comply with the British Wood Preserving Association Code of Practice for remedial treatment (current edition) and BS 5268 Part 5 and Code of Practice 102..
- 10 **SPECIALIST SURVEY:** The Contractor shall arrange for a survey and report to determine the following:
- Presence and extent of any fungal attack to the property
 - Presence and extent of any insect attack to the property
 - Recommended course of action and costs.

20 DRY ROT:

- Do not disturb fruiting bodies. Spray with fungicide, remove carefully and clean down.
- Cut out or strip off and remove all infected timber, plaster and other finishes to at least 600mm beyond the furthest extent of attack or as directed by CA.
- Rake out mortar joints of infected walls to a depth of 15-20mm.
- Dispose of infected material immediately, carefully avoiding contamination of 'clean' work. Burn timber on site without delay or thoroughly spray with preservative and remove to suitable tip. Remove non-combustible material from site.

25 WET ROT:

Cut out all rotten material until sound timber is reached, or as otherwise directed by CA

30 INSECT INFESTATION:

Probe timber, drilling if necessary, to determine extent of damage. Remove timber agreed with CA as being structurally unsound. Scrape and trim back all friable parts of otherwise sound timber. Burn all removed material on site without delay.

35 CLEANING:

Thoroughly clean down all surfaces in affected areas. Remove all loose material, dust and debris and burn or remove from site without delay.

40 BRUSH/SPRAY APPLICATION:

- Liberally apply preservative in flood coats to all surfaces requiring treatment to ensure maximum absorption. Use a coarse, low pressure spray wherever possible.
- Continue applying until the minimum average coverage of the preservative solution recommended by the manufacturer has been achieved.

45 INJECTION OF INSECT INFECTED TIMBER:

In addition to brushing/spraying surfaces, fill insect flight holes with preservative, repeating the operation until lack of absorption indicates saturation of timber. Drill additional holes and inject where necessary to ensure adequate penetration.

GUARANTEES:

The specialist sub-contractor shall, before undertaking any works, satisfy the CA that the following requirements are or can be met:-

- Upon completion of the timber treatment works a 30 year guarantee (unless otherwise agreed by CA) will be provided by the Guarantee Protection Trust (G.P.T.) or other suitable approved body to the CA's approval.
- The sub-contractor shall be a member of the British Wood Preservation Association.
- The sub-contractor shall maintain Product Liability insurance and Public Liability insurance policies to a minimum value of £100,000.00 each.
- Materials and workmanship shall be guaranteed by the manufacturer of the materials for 30 years (unless otherwise agreed by CA) in the event of the sub-contractor ceasing to trade.

C Demolition/ Alteration/ Renovation

C10 Site survey

To be read with Preliminaries/ General conditions.

SURVEYS

- 115 PRELIMINARY SURVEY Project Admiral Generally
- Qualifications of survey author: Member of the Royal Institution of Chartered Surveyors (RICS).
 - Area to be surveyed: External Facades, Windows, Roof and Internal Common Areas.
 - Objectives:
 - Visible or suspected hazards: Record general positions/ forms of visible/ suspected hazards, including suspected asbestos containing materials.
 - Designation of areas within/ adjacent to site: Record boundaries/ type of designation within, or adjacent to, the site, including None.
 - Protected habitats/ species outside designated areas: Record general positions of sightings or evidence of species including.
 - Methodology:
 - Specific requirements: Do not use intrusive survey techniques. Avoid disturbing natural features or wildlife.
 - Permissible survey techniques: Desk study and Site Reconnaissance.
 - Preliminary survey report: Submit.
 - Timing: Within two weeks of completion of survey work.

SURVEY TECHNIQUES

- 210 DESK STUDY Project Admiral
- General: Carry out a study of available information.
 - Scope of study: Obtain and identify all available current Statutory Authority, Statutory Undertaker and Ordnance Survey information regarding the site.
 - Features to be included: All above ground features, and underground services. Identify the locations of all benchmarks and permanent ground markers.
 - Specific requirements as to method: Submit evidence for verification of documents. Do not, without written approval, use information from sources over three years old, or scales smaller than 1:500.
- 280 PHOTOGRAMMETRY
- Features to be included: Complete internal & external photographic survey of Project Admiral.
 - Specific requirements as to method: Internal ceilings of top floor flats.
- 410 BENCH MARKS
- Unrecorded bench marks and other survey information: Give notice when found and notify Ordnance Survey.
- 420 UNFORESEEN HAZARDS
- Unrecorded hazards and hazardous materials: Give notice when found. Do not disturb.
- 430 SURVEY INSTRUMENTS
- Equipment calibration: In accordance with manufacturer's recommendations.
 - Site use calibration: To relevant parts of BS 7334-1, -3, -4, -5 and -8.
 - Calibration: Use only persons accredited by the United Kingdom Accreditation Service (UKAS).

- Calibration compliance: Submit evidence prior to use.
- COMPLETION**

925 PRELIMINARY SURVEY REPORT

- Format: Paper.
 - Copies: Two.
- Report content: Hazards encountered.
- Document sections: Main report.
 - Charts/ Diagrams/ Tabulated data: Not required.
 - Photographs: Required. - Drawings: Not required.
- Audio visual presentation: Not required.
- Other requirements: N/A.

C20 Demolition

To be read with Preliminaries/General conditions

GENERAL REQUIREMENTS**110 DESK STUDY/ SURVEY**

- Scope: Before starting deconstruction/ demolition work, examine available information, and carry out a survey of:
 - the structure or structures to be deconstructed/ demolished, - the site on which the structure or structures stand, and - the surrounding area.
- Report and method statements: Submit, describing:
 - Form, condition and details of the structure or structures, the site, and the surrounding area. Extent: As drawings S01, S02 & WD01 - 04 .
 - Type, location and condition of features of historical, archaeological, geological or ecological importance.
 - 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.
 - Identity and location of services above and below ground, including those required for the Contractor's use, and arrangements for their disconnection and removal.
 - Form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal.
 - Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.
 - Proposed programme of work, including sequence and methods of deconstruction/ demolition.
 - Details of specific pre-weakening required.
 - Arrangements for protection of personnel and the general public, including exclusion of unauthorized persons.
 - Arrangements for control of site transport and traffic.
 - Special requirements: Details of services supplied by the Statutory Authority.
- Format of report: A4 Bound .

120 EXTENT OF DECONSTRUCTION/ DEMOLITION

- General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to existing walls shown on drawings WD01 - 04.

140 BENCH MARKS

- 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

- General: Keep in place and protect the following: As noted on Drawings.

SERVICES AFFECTED BY DECONSTRUCTION/ DEMOLITION**210 SERVICES REGULATIONS**

- 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

- Services affected by deconstruction/ demolition work: Locate and mark positions.
- Mains services marking: Arrange with the appropriate authorities for services to be located and marked.

- 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

- 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.

240 DISCONNECTION OF DRAINS

- General: Locate, disconnect and seal disused foul and surface water drains.
- Sealing: Permanent, and within the site.

250 LIVE FOUL AND SURFACE WATER DRAINS

- Drains and associated manholes, inspection chambers, gullies, vent pipes and fittings:
 - Protect; maintain normal flow during deconstruction/ demolition.
 - Make good any damage arising from deconstruction/ demolition work.
 - Leave clean and in working order at completion of deconstruction/ demolition work.
- Other requirements: Post completion camera survey of RWPs from roof.

260 SERVICE BYPASS CONNECTIONS

- 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.
- Minimum notice to adjoining owners and all affected occupiers: 72 hours, if shutdown is necessary during changeover.

270 SERVICES TO BE RETAINED

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

DECONSTRUCTION/ DEMOLITION WORK**310 WORKMANSHIP**

- Standard: Demolish structures in accordance with BS 6187.
- Operatives:
 - Appropriately skilled and experienced for the type of work.
 - Holding, or in training to obtain, relevant CITB Certificates of Competence.
- 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

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

330 DUST CONTROL

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

340 HEALTH HAZARDS

- 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

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

360 STRUCTURES TO BE RETAINED

- Extent: As drawings WD01 - 04..
- Parts which are to be kept in place: Protect.
- Interface between retained structures and deconstruction/ demolition: Cut away and strip out with care to minimize making good.

370 PARTLY DEMOLISHED STRUCTURES

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

380 DANGEROUS OPENINGS

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

390 ASBESTOS-CONTAINING MATERIALS – KNOWN OCCURRENCES

- General: Materials containing asbestos are known to be present in: Please refer to Asbestos Survey.
- Removal: By contractor licensed by the Health and Safety Executive, and prior to other works starting in these locations.

391 ASBESTOS-CONTAINING MATERIALS – UNKNOWN OCCURRENCES

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

410 UNFORESEEN HAZARDS

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

MATERIALS ARISING**510 CONTRACTOR'S PROPERTY**

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

520 RECYCLED MATERIALS

- 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.
- Evidence of compliance: Submit full details and supporting documentation.
 - Verification: Allow adequate time in programme for verification of compliance.

C40 Cleaning masonry/ concrete

To be read with Preliminaries/ General conditions.

GENERAL/ PREPARATION

- 110 SCOPE OF WORK
- Ground Floor Facing Brick.
- 120 RELATED REPAIR AND REMEDIAL WORKS
- Work to be carried out before cleaning work: Pointing to joints in masonry, as section C41.
- 142 REMOVAL OF FITTINGS
- Timing: Before commencement of cleaning work.
 - Disturbance to surfaces: Minimize.
 - Items for disposal: Carry out site survey and allow for removal of any relevant fittings prior to cleaning including re-fitting after work is complete.
 - Items to be kept for reuse: As per survey.
- 160 PROTECTION
- Surfaces not designated for cleaning: Prevent damage, including marking and staining.
 - Openings: Prevent ingress of water, cleaning agents and detritus.
 - Vents and grilles: Seek instructions before sealing up.
 - Temporary mechanical fastenings: - In masonry: Locate in joints.
 - In other surfaces: Seek instructions.
 - Additional protection: Contractor's choice .
- 175 CONTROL AND DISPOSAL OF WASH WATER AND DETRITUS
- Disposal: Safely. Obtain approvals from relevant Authority.
 - Control of wash water: Collect and divert to prevent ingress and damage to building fabric and adjacent areas.
 - Above and below ground drainage systems: Keep free from detritus and maintain normal operation.
- 180 COLD WEATHER
- Cleaning procedures using water: Do not use when air temperature is at or below 5°C. Protect damp surfaces from frost.
 - Chemical cleaning agents: Do not use when surface temperatures are below those recommended by manufacturer.
- 190 CLEANING GENERALLY
- Operatives: Appropriately trained and experienced for each type of cleaning work. - Evidence of training: Submit on request.
 - Control of cleaning: Confine cleaning processes and materials to designated areas. Prevent wind drift.
 - Detritus: Remove regularly. Dispose of safely.
 - Monitoring: Frequently check results of cleaning compared to approved trial samples. If results established by trials are not achieved, seek instructions.
 - Modifications to cleaning methods and materials: Seek instructions.
- 215 RECORD OF CLEANING WORKS
- Written report: Record cleaning methods and procedures used for each type of surface and deposit.

- Content: Relevant attributes of cleaning methods used including:
 - Equipment and settings.
 - Dwell times.
 - Number of applications.
 - Ambient temperatures.
- Additional documentation: Survey before cleaning: Photogrammetric drawings of each elevation.
- Submission: At completion of cleaning works.

230 TRIAL SAMPLES

- Trial sample reference: To Rear Elevation.
 - Surface: Clay brick.
 - Location/ Size: 1m.
 - Type of soiling:
 - Atmospheric soiling;
 - Biological growths;
 - Bird droppings;
 - Efflorescence;
 - Graffiti;
 - Grease; and
 - Oil.
 - Cleaning methods: Steam followed by Chemical poultices.
- Records: Maintain written records for each trial area, including cleaning methods and conditions, to enable replication of results elsewhere.

PRODUCTS/ EQUIPMENT

300 COMPATIBILITY OF CHEMICAL PRODUCTS

- Products: Compatible and produced by the same manufacturer.

312 SURFACE BIOCIDES

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

352 STEAM CLEANING EQUIPMENT

- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .

362 CHEMICAL AGENTS FOR GRAFITTI REMOVAL

- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.

372 PLAIN POULTICES FOR SALTS REMOVAL

- Poulticing medium manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Softening agent: Deionized water.

APPLICATION

412 REMOVAL OF LOOSELY ADHERED DEPOSITS

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

422 BIOCIDES APPLICATION

- Preparation: Remove loose growths.
- Surfaces: Prevent damage, including abrasion.
- Biocide treatment: Appropriate solutions to kill growths and inhibit further growths. - Dead growths: Remove.

482 STEAM CLEANING

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

495 TESTING pH VALUES FOR CHEMICAL CLEANING

- pH indicator: To distinguish pH values between 1-14.
- Testing before cleaning:
 - Clean rinsing water, wetted surfaces and joints: Test for pH. Record as 'control' values.
- Testing after water rinsing and neutralization:
 - Wetted surfaces and joints: Record pH values.
 - Acceptance criteria: Submit proposals.

500 CHEMICAL CLEANING

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

515 PLAIN POULTICING

- Surfaces: Prevent damage, including abrasion.
- Application: To wetted surfaces. Maintain contact with surfaces as poultice dries out.
- Poultice reinforcement: Hessian.
- Drying: Prevent excessively rapid or localized drying out.
- Spent poultice material: Do not reuse.
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C41 Repairing/ Renovating/ Conserving masonry

To be read with Preliminaries/ General conditions

GENERALLY/ PREPARATION**110 SCOPE OF WORK**

- Schedule: Removal of existing cladding system and all associated brackets, fixings currently installed on the exterior of the Project Admiral, blocks.
- Records of masonry to be repaired: Before starting work, use measurements and photographs as appropriate to record bonding patterns, joint widths, special features, etc.
- Identification of masonry units to be removed, replaced or repaired: Mark clearly, but not indelibly, on face of masonry units or parts of units to be cut out and replaced. Transcribe markings to drawings/ photographs.

120 SITE INSPECTION

- Purpose: To confirm type and extent of repair/ renovation/ conservation work shown on drawings and described in survey reports and schedules of work.
- Parties involved: Contractor's representative.
- Timing: At least 5 working days before starting each section of work.
- Instructions issued during inspection: Confirm in writing, with drawings and schedules as required, before commencing work.

125 REMOVAL OF FITTINGS/ FIXTURES

- Items to be removed, and reinstated on completion of repair work: Soil and waste pipes to external facades (provide temporary disposal system during works).
 - Identification: Attach labels or otherwise mark items using durable, non-permanent means, to identify location and describe refixing instructions, where applicable.
 - Treatment following removal: Ensure all soil and waste pipes are checked for leaks and structural stability - replace any that are not suitable.
 - Storage: Protect against damage, and store until required. Storage location: On site.
 - Reinstatement: Refit in original locations using original installation methods.
- Items unsuitable or not required for reuse: External Windows & doors, Existing High Pressure Laminate Rainscreen Cladding Panels including insulation and fixing brackets, gas pipework. - Disposal: Submit proposals.
- Masonry fabric and surfaces: Do not damage during removal and replacement of fittings/ fixtures.

130 REMOVAL OF PLANT GROWTHS FROM MASONRY

- Plants, root systems and associated soil/ debris: Carefully remove from joints, voids and facework.
- Removal of roots: Where growths cannot be removed completely without disturbing masonry seek instructions.
- Unwanted plants close to masonry: Where removal of root system is not possible or desirable, cut through stem as close to the ground as possible. Remove bark from stump and apply herbicide paste. Leave stump to wither.

140 RECORD OF WORK

- - General: Record work carried out to masonry clearly and accurately using written descriptions, sketches, drawings and photographs, as necessary.
 - Specific records: Photogrammetric survey drawings marked up to show removal of cladding system.
 - Documentation: Submit on completion of the work.
 - Number of sets: One.
- WORKMANSHIP GENERALLY**
- 150 POWER TOOLS
 - Usage for removal of mortar: Permitted only with prior approval .
- 155 PUTLOG SCAFFOLDING
 - Usage: Permitted .
- 160 PROTECTION OF MASONRY UNITS AND MASONRY
 - Masonry units: Prevent overstressing during transit, storage, handling and fixing. Store on level bearers clear of the ground, separated with resilient spacers. Protect from adverse weather and keep dry. Prevent soiling, chipping and contamination. Lift units at designed lifting points, where provided.
 - Masonry: Prevent damage, particularly to arrises, projecting features and delicate, friable surfaces. Prevent mortar/ grout splashes and other staining and marking on facework. Protect using suitable non staining slats, boards, tarpaulins, etc. Remove protection on completion of the work.
- 165 STRUCTURAL STABILITY
 - General: Maintain stability of masonry. Report defects, including signs of movement that are exposed or become apparent during the removal of masonry units.
- 170 DISTURBANCE TO RETAINED MASONRY
 - Retained masonry in the vicinity of repair works: Disturb as little as possible.
 - Existing retained masonry: Do not cut or adjust to accommodate new or reused units.
 - Retained loose masonry units and those vulnerable to movement during repair works: Prop or wedge so as to be firmly and correctly positioned.
- 180 WORKMANSHIP
 - Skill and experience of site operatives: Appropriate for types of work on which they are employed.
 - Documentary evidence: Submit on request.
- 185 ADVERSE WEATHER
 - General: Do not use frozen materials or lay masonry units on frozen surfaces.
 - Air temperature: Do not bed masonry units or repoint:
 - In cement gauged mortars when ambient air temperature is at or below 3°C and falling or unless it is at least 1°C and rising, unless mortar has a minimum temperature of 4°C when laid and the masonry is adequately protected.
 - In hydraulic lime: sand mortars when ambient air temperature is at or below 5°C and falling or unless it is at least 3°C and rising.
 - In non-hydraulic lime:sand mortars in cold weather, unless approval is given.
 - Temperature of the work: Maintain above freezing until mortar has fully set.
 - Rain, snow and dew: Protect masonry by covering during precipitation, and at all times when work is not proceeding.

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- Hot conditions and drying winds: Prevent masonry from drying out rapidly.
- New mortar damaged by frost: Rake out and replace.

MATERIALS/ PRODUCTION/ ACCESSORIES

220 RECORDING PROFILES

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

260 BRICKS

Manufacturer: Contractor Proposals.

- Product reference: Contractor Proposals. Size: To match existing.
- Special shapes: To match existing.
- Recycled content: 30% (minimum) to BS EN ISO 14021.

281 FIXINGS For Replacement Brick Walls to Ground Floor as Required

- Type: Submit proposals.
- Material: Austenitic stainless steel.
- Size, strength and number: As necessary to resist loads likely to occur during the life of the building, and to prevent lateral displacement or pulling apart of the construction.

DISMANTLING/ REBUILDING

310 DISMANTLING MASONRY FOR REUSE

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

320 REBUILDING As Required to Ground Floor Masonry Walls

- Replacement materials: Bricks as clause 260.
- Mortar: As section Z21.
 - Mix: 1:3:12 white cement:lime:sand.
 - Sand source/ type: Well graded crushed stone to approval.
- Fixings: Cramps and dowels as clause 281.
- Rebuilding: To match previous face and joint lines, joint widths and bonding. Adequately bonded to retained work/ backing masonry, as appropriate.
- Joint surfaces: Dampen, as necessary, to control suction.
- Laying masonry units: On a full bed of mortar; perpend joints filled.
- Exposed faces: Remove mortar and grout splashes immediately.
- Joints: Recessed weathered, with brushed finish as clause 860.
- Other requirements: None.

REPLACEMENTS AND INSERTIONS

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- 330 PREPARATION FOR REPLACEMENT MASONRY
 - Defective material: Carefully remove to the extent agreed. Do not disturb, damage or mark adjacent retained masonry.
 - Existing metal fixings, frame members, etc: Report when exposed.
 - Redundant metal fixings: Remove.
 - Recesses: Remove projections and loose material; leave joint surfaces in a suitable condition to receive replacement units. Protect from adverse weather if units are not to be placed immediately.
- 365 REPLACEMENT OF BRICKS As Required to Ground Floor Masonry Walls
 - Bricks: Clay as clause 260.
 - Mortar: As section Z21.
 - Mix: 1:3:12 white cement:lime:sand.
 - Sand source/ type: Well graded crushed stone to approval.
 - Fixings: Not required.
 - Joints: Double-struck.
 - Other requirements: None.
- 410 CORRODED METAL FIXINGS
 - Removal: Cut out carefully, causing the least possible disturbance to surrounding masonry. Remove associated rust debris.
 - Replacement: Compatible fixings as clause 281.

MORTAR REPAIRS

- 510 PREPARATION FOR MORTAR REPAIRS
 - Repair area: Scribe area of masonry to be removed using straight horizontal and vertical lines parallel to joints. Where repair area abuts joints, maintain existing joint widths and do not bridge joints.
 - Decayed masonry: Cut back carefully to a minimum depth of 20 mm to a sound background. Where the depth of removal exceeds 50 mm, seek instructions.
 - Precautions: Do not weaken masonry by removing excessive material. Do not damage adjacent masonry.
 - Top and vertical reveals of repair area: Undercut.
- 520 MORTAR REPAIRS To Ground Floor as Required
 - Undercoats: As section Z21.
 - Mix: As finishing coat, without stone dust.
 - Sand source/ type: Fine sand to approval.
 - Building up: In layers where necessary, each layer not exceeding 12 mm.
 - Finishing coat: To match approved samples. - Mix: 1:7-8 masonry cement:sand.
 - Sand source/ type: Fine sand to approval.
 - Finished thickness: 6 mm.
 - Finish: Felt faced float as clause 555.
 - Reinforcement: Not required.
- 540 APPLYING MORTAR
 - Surfaces to receive mortar: Clean, and free from dust and debris. Dampen to control suction.
 - Applying coats: Build up in layers to specified thickness. Apply mortar firmly, ensuring good adhesion with no voids. Form a mechanical key to undercoats by combing or scratching to produce evenly spaced lines.

- Allow each layer to achieve an initial set before applying subsequent coats. Prevent each layer from drying out rapidly by covering immediately with plastics sheeting and/ or dampening intermittently with clean water.
- Finishing mortar coat: Form accurately to required planes/ profiles, and finish flush with adjacent masonry.
- Protection: Protect completed repairs from adverse weather until mortar has set.

555 FLOAT FINISH TO MORTAR REPAIRS

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

GROUTING RUBBLE FILLED CORES

710 PREPARATION FOR GROUTING

- Grouting holes: Drill in joints at horizontal and vertical centres to suit coursing and to achieve an effective distribution of grout so that, on completion, all voids in masonry are filled.
- Maximum height of each grout pour: Regulate to prevent disruption to masonry.
- Open joints in masonry: Seal with an approved temporary material to prevent leaking of grout. Leave weep holes every two or three courses to assist in flushing out dust and debris, and to prove effectiveness of grouting. Locate temporary seal back from facework to allow for specified repointing. Seek instructions if repointing precedes grouting.

712 FLUSHING OUT

Timing: Before grouting.

- Requirement: Flush out core of masonry walls using clean water delivered under moderate pressure through grouting holes.

720 HAND GROUTING TO EXTERNAL WALLS

- Grout mix: 1:2:0.5:4 non hydraulic lime: pulverised fuel ash: white cement:blended sands, subject to site trials.
- Method: Direct grout into open joints using clay cups formed against masonry surface. Pour grout to refusal; allow to set; break off excess mortar and brush down masonry face.

740 APPLICATION OF GROUTING

- Grouting: Continuous operation during each lift. Allow grout to set before commencing subsequent lifts.
- Monitoring: Monitor grouting carefully and continuously at each delivery point (flow and delivery pressure), and at adjacent/ opposite wall faces, to ensure that there is an effective distribution of grout with no leaking, staining, or disruption to the masonry.
- Temporary seals: Remove on completion of grouting and leave joints in a suitable condition for repointing.

POINTING/ REPOINTING

810 PREPARATION FOR REPOINTING

- Existing mortar: Working from top of wall downwards, remove mortar carefully, without damaging adjacent masonry or widening joints, to a minimum depth of 30 mm.
 - Loose or friable mortar: Seek instructions when mortar beyond specified recess depth is loose or friable and/ or if cavities are found.
- Raked joints: Remove dust and debris.

-
- 820 POINTING BRICK CLADDING PANELS
 - Preparation of joints: Carefully brush away loose mortar.
 - Mortar: As section Z21.
 - Mix: 1:3:12 white cement:lime:sand.
 - Sand source/ type: Crushed stone fine pointing sand to approval.
 - Joints profile/ finish: Double struck.
 - Other requirements: Grout deep voids as clause 720.
- 840 POINTING WITH TOOLS/ IRONS
 - General: Press mortar well into joints using pointing tools/ irons that fit into the joints, so that they are fully filled.
 - Face of masonry: Keep clear of mortar. Use suitable temporary adhesive tape on each side of joints where necessary. Finish joints neatly.
- 860 BRUSHED FINISH TO JOINTS
 - Timing: After initial mortar set has taken place remove laitance and excess fines by brushing, to give a coarse texture. Do not compact mortar.

F Masonry

F10 Brick/ block walling

To be read with Preliminaries/ General conditions.

TYPES OF WALLING**355 CONCRETE COMMON BLOCKWORK IN PARTITIONS**

- Blocks: To BS EN 771-3.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Configuration: Group 1.
 - Compressive strength:
 - Mean value: 10.4 N/mm².
 - Characteristic value: 10.4 N/mm².
 - Category: I.
 - Freeze/ Thaw resistance: Frost resistant.
 - Thermal properties: Thermal conductivity: 1.4 W/mK.
 - Recycled content: 50% (minimum) to BS EN ISO 14021.
 - Work sizes (length x width x height): 440 x 100 x 215 mm. Tolerance category: D1.
 - Special shapes: None.
 - Additional requirements: None.
- Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: 1:1:5 sulphate resisting cement:lime:sand.
 - Additional requirements: Bond strength: 0.15 N/mm².
- Bond: Half lap stretcher.

TESTING**415 FRESH MORTAR CEMENT CONTENT**

- Test method: BREMORTEST in accordance with Building Research Establishment Information Paper 8/89 .
- Test specimens: Test mortar for the following wall types: F10/ 355 .
- Results: Submit.

WORKMANSHIP GENERALLY**440 CONDITIONING OF CONCRETE BRICKS/ BLOCKS**

- Autoclaved concrete bricks/ blocks delivered warm from manufacturing process: Do not use.
- Age of non-autoclaved concrete bricks/ blocks: Do not use until at least four weeks old.
- Avoidance of suction in concrete bricks/ blocks: Do not wet. - Use of water retaining mortar admixture: Submit details.

460 MORTAR GROUPS

- Mix proportions: For a specified group select a mix design from the following: -
 - Group 1:
 - 1:0–0.25:3 (Portland cement:lime:sand with or without air entraining additive).
 - 1:3 (Portland cement:sand and air entraining additive).
 - Group 2:
 - 1:0.5:4–5 (Portland cement:lime:sand with or without air entraining additive).
 - 1:3 (masonry cement:sand containing Portland cement and lime in approximate ratio 1:1, and an air entraining additive).
 - 1:2.5–3.5 (masonry cement:sand containing Portland cement and inorganic materials other than lime and air entraining additive).

- 1:3–4 (Portland cement:sand and air entraining additive).
- Group 3:
 - 1:1:5–6 (Portland cement:lime:sand with or without air entraining additive).
 - 1:3.5–4 (masonry cement:sand containing Portland cement and lime in approximate ratio 1:1, and an air entraining additive).
 - 1:4–5 (masonry cement:sand containing Portland cement and inorganic materials other than lime and air entraining additive).
 - 1:5–6 (Portland cement:sand and air entraining additive).
- Group 4:
 - 1:2:8–9 (Portland cement:lime:sand with or without air entraining additive).
 - 1:4.5 (masonry cement:sand containing Portland cement and lime in approximate ratio 1:1, and an air entraining additive).
 - 1:5.5–6.5 (masonry cement:sand containing Portland cement and inorganic materials other than lime and air entraining additive).
 - 1:7–8 (Portland cement:sand and air entraining additive).
- Batching: Mix proportions by volume.
- Mortar type: Continuous throughout any one type of masonry work.

500 LAYING GENERALLY

- Mortar joints: Fill vertical joints. Lay bricks, solid and cellular blocks on a full bed.
- AAC block thin mortar adhesive and gypsum block adhesive joints: Fill vertical joints. Lay blocks on a full bed.
- Clay block joints:
 - Thin layer mortar: Lay blocks on a full bed.
 - Interlocking perpend: Butted.
- Bond where not specified: Half lap stretcher.
- Vertical joints in brick and concrete block facework: Even widths. Plumb at every fifth cross joint.

520 ACCURACY

- Courses: Level and true to line.
- Faces, angles and features: Plumb.
- Permissible deviations:
 - Position in plan of any point in relation to the specified building reference line and/ or point at the same level ± 10 mm.
 - Straightness in any 5 m length ± 5 mm.
 - Verticality up to 3 m height ± 10 mm.
 - Verticality up to 7 m height ± 14 mm.
 - Overall thickness of walls ± 10 mm.
 - Level of bed joints up to 5 m (brick masonry) ± 11 mm.
 - Level of bed joints up to 5 m (block masonry) ± 13 mm.

535 HEIGHT OF LIFTS IN WALLING USING CEMENT GAUGED OR HYDRAULIC LIME MORTAR

- Quoins and advance work: Rack back.
- Lift height (maximum): 1.2 m above any other part of work at any time.
- Daily lift height (maximum): 1.5 m for any one leaf.

545 LEVELLING OF SEPARATE LEAVES

- Locations for equal levelling of cavity wall leaves: As follows:
 - Every course containing vertical twist type ties or other rigid ties.
 - Every third tie course for double triangle/ butterfly ties.
 - Courses in which lintels are to be bedded.

560 COURSING BRICKWORK

- Gauge: Four brick courses including bed joints to 300 mm.

561 COURSING BRICKWORK WITH EXISTING

- Gauge: Line up with existing brick courses.

595 LINTELS

- Bearing: Ensure full length masonry units occur immediately under lintel ends.

610 SUPPORT OF EXISTING WORK

- Joint above inserted lintel or masonry: Fully consolidated with semidry mortar to support existing structure.

620 BLOCK BONDING NEW WALLS TO EXISTING

- Pocket requirements: Formed as follows:
 - Width: Full thickness of new wall.
 - Depth (minimum): 100 mm.
 - Vertical spacing:
 - Brick to brick: 4 courses high at 8 course centres.
 - Block to block: Every other course.
- Pocket joints: Fully filled with mortar.

635 JOINTING

- Profile: Consistent in appearance.

645 ACCESSIBLE JOINTS NOT EXPOSED TO VIEW

- Jointing: Struck flush as work proceeds.

671 FIRE STOPPING

- Avoidance of fire and smoke penetration: Fit tightly between cavity barriers and masonry. Leave no gaps.

690 ADVERSE WEATHER

- General: Do not use frozen materials or lay on frozen surfaces.
- Air temperature requirements: Do not lay bricks/ blocks:
 - In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.
 - In hydraulic lime:sand mortars when at or below 5°C and falling or below 3°C and rising. - In thin joint mortar glue when outside the limits set by the mortar manufacturer.
- Temperature of walling during curing: Above freezing until hardened.
- Newly erected walling: Protect at all times from:
 - Rain and snow.
 - Drying out too rapidly in hot conditions and in drying winds.

ADDITIONAL REQUIREMENTS FOR FACEWORK

710 THE TERM FACEWORK

- Definition: Applicable in this specification to brick/ block walling finished fair.
 - Painted facework: The only requirement to be waived is that relating to colour.

730 BRICK/ CONCRETE BLOCK SAMPLES

- General: Before placing orders with suppliers submit for approval of appearance labelled samples of the following: Blocks as in clause F10/355 .
- Selection of samples: Representative of the range in variation of appearance.

750 COLOUR CONSISTENCY OF MASONRY UNITS

- Colour range: Submit proposals of methods taken to ensure that units are of consistent and even appearance within deliveries.
- Conformity: Check each delivery for consistency of appearance with previous deliveries and with approved reference panels; do not use if variation is excessive.
- Finished work: Free from patches, horizontal stripes and racking back marks.

760 APPEARANCE

- Brick/ block selection: Do not use units with damaged faces or arrises.
- Cut masonry units: Where cut faces or edges are exposed cut with table masonry saw.
- Quality control: Lay masonry units to match relevant reference panels.
 - Setting out: To produce satisfactory junctions and joints with built-in elements and components.
 - Coursing: Evenly spaced using gauge rods.
- Lifts: Complete in one operation.
- Methods of protecting facework: Submit proposals.

800 TOOTHED BOND

- New and existing facework in same plane: Bond together at every course to achieve continuity.

830 CLEANLINESS

- Facework: Keep clean.
- Mortar on facework: Allow to dry before removing with stiff bristled brush.
- Removal of marks and stains: Rubbing not permitted.

F30 Accessories/ sundry items for brick/ block/ stone walling

To be read with Preliminaries/ General Conditions.

REINFORCING/ FIXING ACCESSORIES**241 WALL STARTERS/ CONNECTORS**

- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Material/ finish: Austenitic stainless steel.
- Sizes: Standard kit comprising a 2400mm long 36/8 channel, six SP36 ties and five plugs and screws.

255A WIND POSTS To Roof Parapets as per Drawing WD06 Detail 08

- Manufacturer: Contractor's choice.
 - Product reference: Parapet Posts.
- Material: Austenitic stainless steel - material/ coating reference 1 to BS EN 845-1.
- Sizes: To Structural Engineer's Design.
- Fixings (complete with washers and shims): As per Manufacturer's recommendations - fixings to existing wall upstand and roof slab.

FLEXIBLE DAMP PROOF COURSES/ CAVITY TRAYS**320A DAMP PROOF COURSE - POLYETHYLENE**

- Standard: To BS 6515.
- Manufacturer: Contractor's choice.
 - Product reference: 100mm & 215mm wide rolls of DPC (Polyethylene). Water Permeability - 0.00036 kg m²h atm. Tensile Strength 1.266 kg/mm². Tearing Elasticity - 800%. Temperature scale from -50 to +80°C ..
 - Placement: Carefully unrolled and laid on mortar bed in accordance with good building practice. Observe the guidance of BS8000. Part 3 1989. DPC to be stepped to suit site levels. Keep joints to a minimum. Clearly lap joints 150mm. Ensure edges do not project into cavity. Observe manufacturer's instructions which accompany every consignment.

INSTALLATION OF DPCS/ CAVITY TRAYS**415 HORIZONTAL DPCS**

- Placement: In continuous lengths on full even bed of fresh mortar, with 100 mm laps at joints and full laps at angles.
- Width: At least full width of leaf unless otherwise specified. Edges of dpc not covered with mortar or projecting into cavity.
- Overlying construction: Immediately cover with full even bed of mortar to receive next masonry course.
- Overall finished joint thickness: As close to normal as practicable.

455 COPING/ CAPPING DPCS

- Placement: Bed in one operation to ensure maximum bond between masonry units, mortar and dpc.
- Dpcs crossing cavity: Provide rigid support to prevent sagging.

465 SEALING DPCS Generally

- Overlaps and junctions: Seal with Adhesive recommended by dpc manufacturer.

560 VERTICAL DPCS GENERALLY

- Form: In one piece wherever possible.
 - Joints: Upper part overlapping lower not less than 100 mm.
- 570 JAMB DPCS AT OPENINGS
- Joint with cavity tray/ lintel at head: Full underlap.
 - Joint with sill/ horizontal dpc at base: Full overlap.
 - Projection into cavity: Not less than 25 mm.
 - Relationship with frame: In full contact.

JOINTS

- 630 UNEXPOSED CONTRACTION JOINTS
- Formation: Close butt as work proceeds.
- 650 POINTING IN FLASHINGS
- Joint preparation: Free of debris and lightly wetted.
 - Pointing mortar: As for adjacent walling.
 - Placement: Fill joint and finish flush.
- 655 POINTING IN ASPHALT SKIRTINGS
- Joint preparation: Free of debris and lightly wetted.
 - Pointing mortar: 1:4 cement: sand incorporating a bonding agent.
 - Colour: Match adjacent work.
 - Placement: Fill joint and finish flush.
- 660 PINNING UP TO SOFFITS
- Top joint of loadbearing walls: Fill and consolidate with mortar.
- 670 TOPS OF NONLOADBEARING WALLS
- Restraints: 75 x 100 mm channel of galvanized steel sheet to BS EN 10346 fixed to metal deck with self-tapping screws at 600 mm centres .
 - - Fixing: Secure to soffit.
 - Joint filler: Contractor's Choice .
 - Placement: Full, no gaps.

F31 Precast concrete sills/ lintels/ copings/ features

To be read with Preliminaries/ General conditions.

TYPES OF COMPONENT

105A PRECAST LINTELS

- " Concrete: Components manufacturer's 'proprietary' concrete.
- Identity: Manufacturer's mix reference.
"Conformity: To BS 8500-2 and the recommendations of BS 8500-1 Annex A4 for the specified exposure class.
- Evidence: Submit third party certification from a UKAS accredited laboratory. "Exposure class: XC4 and XF3.
- Strength class (cylinder/ cube): C28/35.
"Reinforced components: Submit proposals for type of reinforcement and cover.
- " Matching sample for finish to visible faces: As reference sample.
- " Other requirements: Cast-in 25x2.5mm water bars.
- " Standard: To BS 5642-1.
Material: [Precast concrete] .
Manufacturer: [Contractor's choice] .
- Product reference: [Contractor's choice] .
Dimensions: Contractor Designed .
Finish: [Faced] .
Mortar for bedding/ jointing: Cement gauged as section Z21.
- Standard: [To BS EN 998-2] .
- Mix: [As clause F10/110] .
- Additional requirements: [As mortar to F10/110] .
Joints: Flush.
- Bedding one piece sills: Leave bed joints open except under end bearings and masonry mullions. On completion, point to match adjacent work

125 SUBSTITUTION OF PROPRIETARY CONCRETE FOR DESIGNATED CONCRETE

- Concrete: Component manufacturer's 'proprietary' concrete.
- Substitution: Submit proposals for each substitution, including:
 - Identity of concrete: Submit labelled sample .
 - Performance: Limiting values for w/c ratio, cement/ combination content or, alternatively the Exposure class to BS 8500, to which concrete conforms.
 - Reinforcement: Type and cover.
 - Evidence of performance: Third party certification by body from a UKAS accredited laboratory.

130 CONCEALED PRECAST LINTELS

- Standard: To BS EN 845-2.
- Verification of performance: Submit calculations or test certificates.

140 CONCEALED PRECAST LINTELS

- Concrete: Designated to BS 8500-2: Minimum RC30.
 - Aggregate size (maximum): 20 mm.
- Configuration:
 - Clear span up to 900 mm:
 - Section: 140 mm deep x width of wall.
 - Bearing: 150 mm at both ends.
 - Reinforcement: One 12 mm carbon steel bar for each 105 mm of wall thickness.
 - Clear span 900 mm to 1800 mm:
 - Section: 215 mm deep x width of wall.
 - Bearing: 225 mm at both ends.
 - Reinforcement: One 16 mm carbon steel bar for each 105 mm of wall thickness.
- Cover to reinforcement (nominal): 20 mm minimum.

GENERAL REQUIREMENTS**220 CONCRETE GENERALLY**

- Specification: To BS 8500-2 and BS EN 206-1.
- Producer: Currently certified by a body accredited by UKAS to BS EN 45011 or BS EN ISO/IEC 17065 for product conformity certification of ready-mixed concrete.
- Chloride class of concrete:
 - Excluding SRPC: C1 0.40.
 - Using SRPC: C1 0.20.
 - Reinforced and heat cured: C1 0.10. - Prestressed: C1 0.10.
- Admixtures containing calcium chloride: Not allowed.

250 REINFORCEMENT

- Carbon steel reinforcement: As appropriate to BS 4449, BS 4482 and BS 4483. - Cutting and bending: To BS 8666.
- Galvanized reinforcement: Galvanized to BS EN ISO 1461 after cutting. Chromate treated.
- Stainless steel reinforcement: To BS 6744. - Designation 1.4301.
 - Cutting and bending: To BS 8666.
- Non structural reinforcement: Include to resist shrinkage and handling stresses.
- Bimetallic corrosion and staining: Prevent by appropriate selection and use of materials.
- Condition at time of placement: Clean, free of corrosive pitting, loose materials and substances that adversely affect reinforcement, concrete, or bond between the two.
- Fixing: Accurate and secure.
 - Method: Wire tying, approved steel clips or tack welding if permitted.
 - Concrete cover: Maintain free of all tying wire or clips.

255 QUALITY ASSURANCE OF REINFORCEMENT

Reinforcement to BS 4449, BS 4483, BS 6744: Obtain valid certificates of approval for product conformity issued by the UK Certification Authority for Reinforcing Steels.

261 CUTTING

- Cutting of precast concrete components: Not permitted.

262 RECORDS

- Records for each type of component: Maintain details including:
 - Unique identification number.
 - Identification of the producer.
 - Identification of the place of production.
 - Correlation with records of mixes, including batch numbers.
 - Date of each stage of manufacture.
 - Dates and results of all tests, checks and inspections.
 - Dimensions related to specified levels of accuracy.
 - Specific location in the finished work.
 - Weight of the unit.
 - Damage and making good.
 - Any other pertinent data, e.g. if unit is a production control unit.
- Availability of records for inspection: On request.

390 INSPECTION

- Completed components: Give notice when ready to be inspected at factory.

INSTALLATION**420 LAYING**

- Mortar for bedding and jointing: As section Z21. - Type: Site batched and mixed.
 - Mix: 1:1:5 sulphate resisting cement:lime:sand. - Packing: If required use slate.
- Bedding components: On full bed of mortar.
- Removal of marks, stains and extraneous mortar on visible faces: Rubbing not permitted.

430 SUPPORT OF EXISTING WORK OVER NEW LINTELS

- Joint above lintels: Fully fill and compact with semidry mortar.

440 ONE PIECE SILLS/ THRESHOLDS

- Bed joints: Leave clear of mortar except at end bearings and beneath masonry mullions.
 - On completion: Point with mortar to match adjacent work.

G Structural/Carcassing metal/timber

G12 Isolated structural metal members

To be read with Preliminaries/ General conditions.

PRODUCTS**320 STEEL**

- Steel: To BS EN 10210-1.
 - Grade: S275J0.
 - Section properties and dimensions: To BS EN 10210-2.
 - Surface condition: Free from heavy pitting and rust, burrs, sharp edges and flame cutting dross.

330 PROPRIETARY WINDPOSTS

- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Loading: As per Structural Engineer's Recommendations).
- Finish as delivered: Galvanized to BS EN ISO 1461.
- Other requirements: As per Structural Engineer's Recommendations.

340 BOLT ASSEMBLIES

- Designation: Hexagon head bolts to BS EN ISO 4014, grade A .
- Property class: As per Structural Engineer's Recommendations.
- Size: As shown on drawings.
- Nuts and washers: Material grade and finish to suit bolts.
- Coating applied by manufacturer: None.
- Other requirements: Diameter of washers in contact with timber faces to be minimum 3 times bolt diameter, with a thickness not less than 0.25 times bolt diameter.

350 PROPRIETARY ANCHORS TO CONCRETE

- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Anchor type: Shield expansion anchor.
- Material: Carbon steel
- Coating applied by manufacturer: None.

FABRICATION**510 FABRICATION OF STEEL MEMBERS**

- Cuts and holes: Accurate and neat.
- Welding: Metal arc method to BS EN 1011-2.
 - Welded joints: Fully fused, with mechanical properties not less than those of the parent metal.
 - Site welding: Not permitted.
- Joints: Location and layout of fastenings as drawing .

EXECUTION**610 INSTALLATION**

- Accuracy: Members positioned true to line and level using, if necessary, steel packs of sufficient area to allow full transfer of loads to bearing surfaces.
- Fixing: Use washers under bolt heads and nuts.
 - Tapered washers: Provide under bolt heads and nuts bearing on sloping surfaces. Match taper to slope angle and align correctly.

620 BONDED ANCHORS

- Holes: Clean and free from dust at time of installing anchor.
- Permeable sleeves: Use in conditions where otherwise the loss of bonding agent would be unacceptably high.
- Other requirements: 24 hours after installation, tighten anchors in masonry to installation torque + ???%. Report movements..

630 SITE TESTING OF ANCHORS TO MASONRY

- Standard: To BS 5080.
- Preliminary tests: Not required.
- Proof tests: Test 10% of working fixings to 1.5 times working load.
- Test results: Report failures and seek instructions.

640 PREPARATION AND PRIMING

- Sequence of working: Fabricate, prepare, prime.
- Surfaces inaccessible after assembly: Apply full treatment and coating system including, if necessary, local application of site coatings.
- Galvanized/ sherardized fasteners: After steelwork erection and before applying site coatings, thoroughly degrease and clean. Etch prime.

650 SHOP PRIMING TO WIND POSTS

- Preparation: To BS EN ISO 12944-4. Remove fins, burrs, sharp edges and weld spatter and clean out crevices.
 - Surface finish: Manually cleaned to BS EN ISO 8501-1, grade St 2 .
 - Prepared surfaces: Keep in a dry atmosphere and apply first coating without delay.
- Priming:
 - Primer: High build zinc phosphate epoxy.
Number of coats: Two.
Dry film thickness (minimum): First coat 20 micrometres, second coat 60 micrometres..
 - Application: To BS EN ISO 12944-7.
- Other requirements: Confirm that proposed primer is suitable for use on hand cleaned steel..

COMPLETION

910 STEEL TO TIMBER JOINTS

- General: Inspect accessible bolted and coach screwed joints and tighten fasteners if necessary.
 - Timing: Immediately prior to installation of finishes, on Completion, and at end of Defects Rectification or Liability Period.
 - Confirmation: Give notice when inspections and adjustments have been made.

G20 Carpentry/ timber framing/ first fixing

To be read with Preliminaries/ General conditions.

GENERAL**105 TIMBER PROCUREMENT**

- Timber (including timber for wood based products): Obtained from well managed forests/ plantations in accordance with:
 - The laws governing forest management in the producer country or countries.
 - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
 - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied, or
 - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.

150 STRENGTH GRADING OF TIMBER

- Grader: A company currently registered under a third party quality assurance scheme operated by a certification body approved by the UK Timber Grading Committee.

160 GRADING AND MARKING OF SOFTWOOD

- 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 'DRY' or 'KD' (kiln dried).
- Timber graded undried (green) and specified for installation at higher moisture contents: Clearly marked as 'WET' or 'GRN'.
- Structural timber members cut from large graded sections: Regraded to approval and marked accordingly.

PRODUCTS**230 STRUCTURAL SOFTWOOD (STRENGTH CLASS NOT SPECIFIED) GENERALLY**

- Species: European redwood.
- Grading standard: To the appropriate standard or rules for the specified grade and so marked. - Grade: GS to BS 4978, J&P No. 1 to WWPA Rules.
- Treatment:
 - Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8.
Design service life: 40 years.
 - Fire retardant treatment: Fire retardant impregnation to NBS section Z12 and Wood Protection Association Commodity Specification FR3, Type HR.

270 UNGRADED SOFTWOOD FOR FRAMING TO UPSTANDS

- Quality of timber: Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
- Surface finish: Sawn.
- Treatment:
 - Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8.
 - Design service life: 40 years.

- Fire retardant treatment: Fire retardant impregnation to NBS section Z12 and Wood Protection Association Commodity Specification FR2, Type DI.
- 311 NON-STRUCTURAL PLYWOOD FOR PARAPET COPING AND ROOF UPSTANDS
- Standard: To an approved national standard.
 - Thickness: 18mm.
 - Appearance class to BS EN 635: II.
 - Use class to BS EN 335: .
 - Bonding quality to BS EN 314-2: Class 3.
 - Finish: Sanded.
 - Edges: Square.
 - Treatment:
 - Preservative treatment: Plywood is to be WBP standard..
Design service life: 30 years.
 - Fire retardant treatment: Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C2,.

WORKMANSHIP GENERALLY

- 402 CROSS SECTION DIMENSIONS OF NONSTRUCTURAL SOFTWOOD
- Dimensions: Dimensions in this specification and shown on drawings are finished sizes.
 - Maximum permitted deviations from finished sizes: As stated in BS EN 1313-1, clause 6 for sawn sections.
- 420 WARPING OF TIMBER
- Bow, spring, twist and cup: Not greater than the limits set down in BS 4978 or BS EN 14081-1 for softwood, or BS 5756 for hardwood.
- 430 SELECTION AND USE OF TIMBER
- Timber members damaged, crushed or split beyond the limits permitted by their grading: Do not use.
- 435 NOTCHES, HOLES AND JOINTS IN TIMBER
- Notches and holes:
 - General: Avoid if possible.
 - Sizes: Minimum needed to accommodate services.
 - Position: Do not locate near knots or other defects.
 - In same joist: Minimum 100 mm apart horizontally.
 - Notches in joists:
 - Position: Locate at top. Form by sawing down to a drilled hole.
 - Depth (maximum): 0.15 x joist depth.
 - Distance from supports: Between 0.1 and 0.2 x span.
 - Holes in joists:
 - Position: Locate on neutral axis.
 - Diameter (maximum): 0.25 x joist depth.
 - Centres (minimum): 3 x diameter of largest hole.
 - Distance from supports: Between 0.25 and 0.4 of span.
 - Notches in roof rafters, struts and truss members: Not permitted.
 - Holes in struts and columns: Locate on neutral axis.
 - Diameter (maximum): 0.25 x minimum width of member.
 - Centres (minimum): 3 x diameter of largest hole.
 - Distance from ends: Between 0.25 and 0.4 of span.
 - Scarf joints, finger joints and splice plates: Do not use without approval.
- 440 PROCESSING TREATED TIMBER

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

450 MOISTURE CONTENT

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

451 MOISTURE CONTENT TESTING

- Procedure: When instructed, test timber sections with an approved electrical moisture meter.
- Test sample: Test 5% but not less than 10 lengths of each cross-section in the centre of the length.
- Test results: 90% of values obtained to be within the specified range. Provide records of all tests.

510 PROTECTION

- Generally: Keep timber dry and do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.
- 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.
- Trussed rafters: Keep vertical during handling and storage.

ERECTION AND INSTALLATION**770 ADDITIONAL SUPPORTS**

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

775 BEARINGS

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

795 TRIMMING OPENINGS

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

H Cladding/Covering

H71 Lead sheet coverings/ flashings

To be read with Preliminaries/ General conditions.

TYPES OF LEADWORK

- 420 COVER FLASHINGS To Junction of Mastic Asphalt Roof and Parapet Walls
- Lead:
 - Thickness: 1.75 or 1.80 mm (Code 4).
 - Dimensions:
 - Lengths: Not more than 1500 mm.
 - End to end joints: Laps of not less than 100 mm.
 - Cover: Overlap to upstand of not less than 75 mm.
 - Fixing: Lead wedges into bed joint, clips to lead upstand at laps and 500 mm centres.
- 470 FLASHINGS Generally
- Lead:
 - Thickness: 1.75 or 1.80 mm (Code 4).
 - Dimensions:
 - Lengths: Not more than 1500 mm.
 - Fixing: Fixing: Nail top edge at 150 mm centres and welt edge. Clip bottom edge at laps and 500 mm centres..

GENERAL REQUIREMENTS/ PREPARATORY WORK

- 510 WORKMANSHIP GENERALLY
- Standard: To BS 6915 and latest edition of 'Rolled lead sheet. The complete manual' published by the Lead Sheet Association.
 - Fabrication and fixing: To provide a secure, free draining and completely weathertight installation.
 - Operatives: Trained in the application of lead coverings/ flashings. Submit records of experience on request.
 - Preforming: Measure, mark, cut and form lead prior to assembly wherever possible.
 - Marking out: With pencil, chalk or crayon. Do not use scribes or other sharp instruments without approval.
 - Bossing and forming: Straight and regular bends, leaving sheets free from ripples, kinks, buckling and cracks.
 - Solder: Use only where specified.
 - Sharp metal edges: Fold under or remove as work proceeds.
 - Finished work: Fully supported, adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress.
 - Protection: Prevent staining, discolouration and damage by subsequent works.
- 515 LEADWELDING
- In situ lead welding: Not permitted.
- 555 LAYOUT
- Setting out of longitudinal and cross joints: Submit proposals.
- 610 SUITABILITY OF SUBSTRATES
- Condition: Dry and free of dust, debris, grease and other deleterious matter.
- 630 PLYWOOD UNDERLAY

- Standard: Manufactured to an approved national standard and to BS EN 636, section 8 (plywood for use in humid conditions).
 - Sheet size: 2400 or 1200 x 1200 mm and 6 mm thick.
- Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.
- Laying: Cross joints staggered and a 0.5 to 1 mm gap between boards.
- 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.
 - Nail heads: Set flush or just below the surface.

640 TIMBER FOR USE WITH LEADWORK

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

FIXING LEAD

705 HEAD FIXING LEAD SHEET

- 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.
- 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

- Nails to timber substrates: Copper clout nails to BS 1202-2, or stainless steel (austenitic) clout nails to BS 1202-1.
 - Shank type: Annular ringed, helical threaded or serrated.
 - Shank diameter: Not less than 2.65 mm for light duty or 3.35 mm for heavy duty. - Length: Not less than 20 mm or equal to substrate thickness.
- Screws to concrete or masonry substrates: Brass or stainless steel to BS 1210, tables 3 or 4.
 - Diameter: Not less than 3.35 mm.
 - Length: Not less than 19 mm.
 - Washers and plastic plugs: Compatible with screws and lead.
- Screws to composite metal decks: Self tapping as recommended by the deck and lead manufacturer/ supplier for clips.

715 CLIPS

- Manufacturer: Contractor's choice.
- Material:
 - Lead clips: Cut from sheets of same thickness/ code as sheet being secured.
 - Copper clips:
 - Thickness: 0.70 mm.
 - Temper: BS EN 1172, designation R220 in welts, seams and rolls, R240 elsewhere; dipped in solder if exposed to view.
 - Stainless steel clips:
 - Thickness: 0.71 mm.
 - Grade: BS EN 10088, 1.4301(304) terne coated if exposed to view.
- Dimensions:
 - Width: 50 mm where not continuous. - Length: To suit detail.
- 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.
- Fixing lead sheet: Welt clips around edges and turn over 25 mm.

770 WEDGE FIXING INTO JOINTS/ CHASES

- Joint/ chase: Rake out to a depth of not less than 25 mm.
- Lead: Dress into joint/chase.
 - 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.
- Sealant: Submit proposals.
 - Application: As section Z22.

JOINTING LEAD

810 FORMING DETAILS

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

847 HOLLOW ROLL JOINTS

- Joint allowance: 125 mm overcloak and 100 mm undercloak.
- Copper or stainless steel clips: Fix to substrate at not more than 450 mm centres.
- Overcloak: Welt with clips around undercloak to form a roll of consistent cross section.

860 DRIPS WITH SPLASH LAPS

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

880 WELTED JOINTS

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

970 PATINATION OIL

- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Location: All lead work including all flashings.
- Application: As soon as practical, apply a smear coating to lead, evenly in one direction and in dry conditions.

H72 Aluminium strip/ sheet coverings/ flashings

To be read with Preliminaries/ General conditions.

TYPES OF ALUMINIUM WORK

- 470 MISCELLANEOUS FLASHINGS Window Cills
- Aluminium: Coated sheet/ strip.
 - Alloy designation: EN AW-1050A.
 - Temper: O.
 - Finish: Polyvinylidene fluoride (PVDF) coating. - Thickness: 2mm.
 - Dimensions:
 - Lengths: Not more than 2 m.
 - Fixing: Welt top and bottom edges and secure with clips at 450 mm centres.
- 480 MISCELLANEOUS FLASHINGS Parapet Coping at Roof
- " Drawing reference(s): WD06 Detail 08
 - " Manufacturer and reference: Alumasc Exterior Building Products Skyline Coping System or Equivalent
 - " Material/grade: Aluminium
 - " Shape: Parapet
 - " Size: As per Drawing WD06 Detail 08
 - " Gauge: 3 mm.
 - " Finish/Colour: Polyester powder coated to BS 6496 – Colour TBC
 - " Accessories: 90° corners " Other requirements:
 - A. Life expectancy of aluminium: 40 years
 - B. Fixing straps are pressed 3mm aluminium with extruded EPDM seals bonded to the top surface
 - C. All fabricated fittings (90° corners) to be mitred, welded and have a smooth finish on the front face
 - D. A waterproof membrane will be required beneath the Skyline Coping to provide an effective seal
 - E. Coefficient of linear thermal expansion is $23 \times 10^{-6} \text{mm/m/}^{\circ}\text{C}$
 - " Method of jointing: Butt strap
 - " Method of support/fixing: [Fixed direct to structure at centres to be determined Fixed to framework]

GENERAL REQUIREMENTS/ PREPARATORY WORK

- 510 WORKMANSHIP GENERALLY
- Standard: Generally to CP 143-15.
 - Fabrication and fixing: To provide a secure, free draining and completely weathertight installation.
 - Operatives: Trained in the application of aluminium coverings/ flashings. Submit records of experience on request.

- Measuring, marking, cutting and forming: Prior to assembly wherever possible.
 - Marking out: With pencil, chalk or crayon. Do not use scribes or other sharp instruments without approval.
 - 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.
 - Surface protection: Fully coat surfaces to be embedded in concrete or mortar with high build bitumen based paint, after folding.
 - Sharp metal edges: Fold under or remove as work proceeds.
 - Joints: Do not use sealants to attain waterproofing.
 - Finished aluminium work: Fully supported, adequately fixed to resist wind uplift and able to accommodate thermal movement without distortion or stress.
 - Protection: Prevent staining, discolouration and damage by subsequent works.
- 515 WELDING
- In situ welding: Not permitted.
- 525 COATED ALUMINIUM STRIP/ SHEET
- Manufacturer: Alumasc or Equivalent. -
Product reference: Skyline.
- 535 INTEGRITY OF ALUMINIUM
- Requirement: Design coverings/ flashings and methods of attachment to prevent loss of weather tightness and permanent deformation due to wind pressure or suction.
 - Wind loads: Calculate wind loads in accordance with BS 6399:Part 2.
 - Structural requirements:
 - Generally: As section B50.
 - Modifications: None.
 - Design: Complete in accordance with the designated code of practice to satisfy specified performance criteria.
- 555 LAYOUT
- Setting out of longitudinal and cross joints: Submit proposals.
- 560 CONTROL SAMPLES
- General: Complete areas of finished work and obtain approval of appearance before proceeding:
 - Size: Corner Section extending 1.5m each way.
 - Location: Contractor's choice.
- 610 SUITABILITY OF SUBSTRATES
- Condition: Dry and free of dust, debris, grease and other deleterious matter.
- 630 PLYWOOD UNDERLAY
- Standard: Manufactured to an approved national standard and to BS EN 636, section 8 (plywood for use in humid conditions).
 - Sheet size: 2400 or 1200 x 1200 mm and 6 mm thick.
 - Laying: Parallel to perimeter edges with cross joints staggered and a 0.5 to 1 mm gap between sheets.

- 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.
 - Nail heads: Set flush with or just below surface.

640 TIMBER FOR USE WITH ALUMINIUM WORK

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

FIXING

710 FIXINGS FOR CLIPS

- Nails to timber substrates: Aluminium to BS 1202-3 for aluminium clips. Stainless steel (austenitic) for stainless steel clips.
 - Shank type: Annular ringed or helical threaded.
 - Shank diameter: Not less than 2.65 mm.
 - Head: Flat.
 - Length: Not less than 25 mm or equal to substrate thickness.
- Screws to concrete/ masonry substrates: Sherardized or zinc plated steel or aluminium, for aluminium clips, to BS EN 14592. Stainless steel (austenitic) to BS EN 14592 for stainless steel clips.
 - Diameter: Not less than 3.35 mm.
 - Length: Not less than 25 mm.
 - Washers and plastic plugs: Compatible with screws.
- Screws to composite metal decks: Self tapping, as recommended by the deck and aluminium manufacturer/ supplier for aluminium or stainless steel clips.

JOINTING

810 FORMING DETAILS

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

**H92
Rainscreen
cladding****H92 Rainscreen cladding**

To be read with Preliminaries/General conditions.

TENDERING**10A INFORMATION TO BE PROVIDED WITH TENDER**

- Submit the following cladding particulars:
 - Typical plan, section and elevation drawings at suitable scales.
 - Typical detailed drawings at large scales, including ALL RELEVANT PLAN & SECTION DETAILS OF ALL JUNCTIONS AS SHOWN ON TENDER DRAWINGS .
 - Technical information and certification demonstrating compliance with specification of proposed incorporated products and finishes, including BBA Certificate, CWCT compliance manufacturing in accordance with relevant BS or equivalent European standards .
 - Certification, reports and calculations demonstrating compliance with specification of proposed cladding.
 - Proposals for connections to and support from the primary support structure.
 - Proposals for primary support structure additional to that shown on preliminary design drawings.
 - Schedule of builder's work, special provisions and special attendance by others.
 - Examples of standard documentation from which project quality plan will be prepared.
 - Preliminary fabrication and installation method statements and programme.
 - Proposals for replacing damaged or failed products. - Areas of non-compliance with specification.

*******PLEASE NOTE THAT THE CONTRACTOR MUST PROVIDE EVIDENCE THAT THE PROPOSED RAINSCREEN CLADDING SYSTEM HAS BEEN TESTED TO CONFIRM THAT IT IS NON-COMBUSTIBLE IN RELATION TO FIRE (EUROPEAN CLASS A1) . THE TEST CERTIFICATE MUST INCLUDE DETAILS OF THE WHOLE SYSTEM INCLUDING TERRACOTTA RAINSCREEN CLADDING TILES, STEEL SUPPORT BRACKETS / RAILS, NON-COMBUSTIBLE INSULATION, BREATHER MEMBRANE ETC. THIS INFORMATION MUST BE SUPPLIED WITHIN 2 WEEKS OF CONTRACT AWARD. *******

TYPE(S) OF RAINSCREEN CLADDING**110 TERRACOTTA RAINSCREEN CLADDING**

- Drawing reference(s): Package reference:
 - Primary support structure
 - Rainscreen cladding system by N.B.K. Keramik.

N.B.K. - Keramik GmbH & Co.
Reeser Strasse 235
D-46446 Emmerich am Rhein.
Phone ++49 (0)2822 / 81 11-0
Fax ++49 (0)2822 / 81 11-20

email: info@nbk.de

Vertical flat cross – DIN EN ISOP 10545-2 +/- 1,0% of height.

To hole direction torsion - DIN EN ISOP 10545-2 +/- 0,25% of diagonal

Corner/Soffit/Angle Units – To be NBK factory produced as either :

1. Extruded lengthways (with drip channel on all soffit tiles)
2. Metal reinforced bonded units.

Sawn edges – Tiles to be supplied free from any significant edge/arris damage or chipping of
the exposed faces.

Frost – To pass 100 freeze thaw cycles as BS3921: 1985 and EN 15010545
Part 12 (100 cycles)

Tile Removal / Replacement– All units likely to be subject to hard impact, loads should be easily replaceable in accordance with BS8200 without modification of replacement tile, or removal or disturbance of adjacent tiles.

Fire performance – All materials class 'O' as defined in the Building Regulations.

Fixing system – Secret fixings – Terrart flex system. Factory pre holed aluminium 'T' profile vertical rails, primary fixing brackets, and tile holders are to conform to Almg S1oO, 5 Alloy. Black vertical Joint profile 8/10mm wide.

Movement - The fixing/framing members are to allow for movement and deformations of the building structure

Fasteners – Captive tile holder pin fixed to vertical profile bolted to fixing cleat..

Number and location of fasteners – Tiles are secured by 4 Terrart aluminium holders positioned at the top and bottom at each end of the terracotta units.

Joint type – Vertical joints with anti rattle joint alignment profile, and labyrinth joints horizontally.

- Air gap – Not less than 38mm

.

- Backing Wall –

Damp proof membrane (DPM) - As clause

Thermal insulation – as clause

Breather membrane – as clause

- Incorporated components – At the top and bottom of the cavity and above and below any obstructions, there shall be a continuous ventilation slot of an area equivalent to 100mm per m run.

All ventilation openings to be protected against the ingress of birds and vermin with a suitable mesh.

- Other requirements

The cavity is to be fully ventilated and drained with a minimum clear width of 38mm.

The system in combination with the inner leaf shall provide an effective barrier in order to prevent rainwater entry into the building envelope. Cavity trays are to be provided above any obstructions.

661 IMPACT TEST: Bespoke tile to be tested in accordance with CWCT TN75/76.

- Wall category: Soft and hard body impact (Independent Test Certificates Required)

- Test impact for retention of performance
- Test impact to ensure safety to persons:

- PRODUCT SAMPLES: Before commencing detailed design provide the CA with identified samples of:

- Terracotta tiles to specified colour and size required.
- Obtain approval of appearance before proceeding.

- SAMPLES OF FIXINGS: At an agreed stage during detailed design work provide the CA with identified samples of each type of fixing, together with the manufacturers' recommended torque figures.

- INTEGRITY OF VENTILATED RAINSCREEN CLAD WALLS:

Determine size(s) and thickness of panels, the size(s), number and spacing of fixings, configuration and location of secondary support systems and incorporation of other accessories and fittings to ensure the cladding system, primary support structure and other elements forming the rainscreen wall will resist all factored dead, imposed and design live loads, and accommodate all deflections and movements without damage.

- Calculate wind loads on rainscreen walls appropriate to location, exposure, height, building shape, and size in accordance with BS 6399-S Standard Method, taking full account of existing and known future adjacent structures.

130 MAJOR NONSTANDARD COMPONENTS Flashings

- Manufacturer: To be sourced by the installation contractor.
- Product reference: N/A.
- Material: Aluminium, 2mm thick.
- Finish: Polyester Powder Coated.
- Fixing: As necessary, in consideration of good practice.
- Other requirements: None.

GENERAL REQUIREMENTS/PREPARATORY WORK

210 DESIGN

- Rainscreen cladding system and associated features: Complete detailed design in accordance with this specification and the preliminary design drawings and submit before commencement of fabrication.
- Related works: Coordinate in detailed design.

215 DESIGN PROPOSALS

- Submission of alternative proposals: Preliminary design drawings indicate intent. Other reasonable proposals will be considered.

220 SPECIFICATION

- Compliance standards: The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
- Reference information: For the duration of the contract, keep available at the design office, workshop and on site copies of:
 - The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
 - Publications invoked by the CWCT 'Standard for systemised building envelopes'.

225 INFORMATION TO BE PROVIDED WITH TENDER

- : Submit tthe CA the following rainscreen cladding particulars:
 Typical plan, section and elevation drawings at suitable scales.
 Typical detailed drawings at large scales, including ALL RELEVANT PLAN & SECTION DETAILS OF ALL JUNCTIONS AS SHOWN ON TENDER DRAWINGS
 Technical information and certification demonstrating compliance with the specification of proposed incorporated products and finishes, including [BBA Certification; Certificate No. 08/4516. Testing report prepared by UKAS accredited testing agent, proving compliance with the requirements of CWCT. Testing reports proving compliance with DIN18516, and DIN456, or other recognised European standards relating tthe use of façade tiles in a non-load bearing, and back ventilated rainscreen installation, and consistency of composition]
 Certification, reports and calculations demonstrating compliance with the specification of the proposed rainscreen cladding.
 Proposals for connections tand support from the primary support structure.
 Proposals for any primary support structure additional that shown on preliminary design drawings.
 Schedule of builder's work, special provisions and special attendance by others.
 Examples of standard documentation from which the project quality plan will be prepared.
 Preliminary fabrication and installation method statements and programme.
 Proposals for replacing damaged or failed products. Areas of non-compliance with the specification.

*******PLEASE NOTE THAT THE CONTRACTOR MUST PROVIDE EVIDENCE THAT THE PROPOSED RAINSCREEN CLADDING SYSTEM HAS BEEN TESTED TO CONFIRM THAT IT IS NON-COMBUSTIBLE IN RELATION TO FIRE (EUROPEAN CLASS A1) . THE TEST CERTIFICATE MUST INCLUDE DETAILS OF THE WHOLE SYSTEM INCLUDING TERRACOTTA RAINSCREEN CLADDING TILES, STEEL SUPPORT BRACKETS / RAILS, NON-COMBUSTIBLE INSULATION, BREATHER MEMBRANE ETC. THIS INFORMATION MUST BE SUPPLIED WITHIN 2 WEEKS OF CONTRACT AWARD.**

230 INFORMATION TO BE PROVIDED DURING DETAILED DESIGN

- Submit the following cladding particulars:
- A schedule of detailed drawings and dates for submission for comment.
 - A schedule of loads that will be transmitted from the rainscreen cladding to the structure.
 - Proposed fixing details and systems relevant to the structural design and construction with methods of adjustment and tolerances.
 - A schedule of fabrication tolerances/ size tolerances.

- A detailed testing programme in compliance with the Main Contract master programme.
- A detailed fabrication and installation programme in compliance with the Main Contract master programme.
- Proposals to support outstanding applications for Building Regulation consents or relaxations.

232 QUALITY PLAN

- Requirement: Submit during detailed design.
- Content: In accordance with BS EN ISO 9001 and including the following:
 - Name of the quality manager.
 - Quality assessment procedures.
 - Inspection procedures to be adopted in checking the work.
 - Stages at which check lists will be used and samples of the lists.
 - List of work procedures on the correct use of materials or components, both off site and on site.
 - List of product information with latest revisions.
 - Subcontractors involved in the work.
 - Subcontractors quality plans.
 - Storage, handling, transport and protection procedures.
 - Procedure for registering and reporting non compliances.
 - Maintenance procedures and calibration records.
 - Certification that completed work complies with specification.
 - Check list register to ensure all items have been inspected and non compliances discharged.

235 INFORMATION TO BE PROVIDED BEFORE COMMENCEMENT OF TESTING OR MANUFACTURE OF RAINSCREEN CLADDING SYSTEM

- Submit the following cladding particulars:
 - Detailed drawings to fully describe fabrication and installation.
 - Detailed calculations to prove compliance with design/ performance requirements.
 - Project specific fabrication, handling and installation method statements.
 - Certification for incorporated components manufactured by others confirming their suitability for proposed locations in the rainscreen cladding.
 - Recommendations for spare parts for future repairs or replacements.
 - Recommendations for safe dismantling and recycling or disposal of products.

240 PRODUCT SAMPLES

- General: Before commencing detailed design, submit labelled samples of: Façade tile in specified colour .

250 SAMPLES OF FIXINGS

- General: During detailed design, submit labelled samples of each type of fixing, together with manufacturers' recommended torque figures.

270 MOCK-UP

- General: Construct during detailed design work in an agreed location. Satisfy purpose and obtain approval of appearance before proceeding. Retain undisturbed until completion of cladding installation.

- Extent: Provide a sample of approximately 1m², to be inclusive of a minimum of 2 vertical and 2 horizontal joints .
- Purpose: Demonstration of system installation, and control .

DESIGN/PERFORMANCE REQUIREMENTS

310 CWCT 'STANDARD FOR SYSTEMISED BUILDING ENVELOPES'

- General: Unless specified or agreed otherwise comply with:
Part 2 - Loads, fixings and movement.
Part 3 - Air, water and wind resistance.
Part 4 - Operable components, additional elements and means of access.
Part 5 - Thermal, moisture and acoustic performance.
Part 6 - Fire performance.
Part 7 - Robustness, durability, tolerances and workmanship.
- Project performance requirements specified in this subsection: Read in conjunction with CWCT performance requirements.

320 HORIZONTAL ZONING OF WIND PRESSURE

Reference heights: As follows: TO BE CONFIRMED BY ENGINEER

330 INTEGRITY OF VENTILATED RAINSCREEN CLAD WALLS

Requirement: Determine sizes and thickness of panels, sizes, number and spacing of fixings, configuration and location of secondary support systems and incorporation of other accessories and fittings to ensure the cladding system, primary support structure and other elements forming the rainscreen wall will resist factored dead, imposed and design live loads, and accommodate deflections and movements without damage.

Wind loads: Calculate to BS 6399-2, Standard Method appropriate to location, exposure, height, building shape, and size taking account of existing and known future adjacent structures.

- Basic wind speed (Vb): TO BE CONFIRMED BY ENGINEER
- Altitude factor (Sa): TO BE CONFIRMED BY ENGINEER - Direction factor (Sd): TO BE CONFIRMED BY ENGINEER - Seasonal factor (Ss): 1.
- Probability factor (Sp): 1.
- Terrain and building factor (Sb): TO BE CONFIRMED BY ENGINEER - External and internal size effect factors (Ca): 1.
- External pressure coefficients (Cpe): As determined from BS 6399-2, clauses 2.4 and 2.5.
- Internal pressure coefficients (Cpi): As determined from BS 6399-2, clause 2.6. - Dominant opening: TO BE CONFIRMED BY ENGINEER Impact loads to CWCT technical note 75 & 76:
- Location and category: TO BE CONFIRMED BY ENGINEER
Temporary imposed loads: TO BE CONFIRMED BY ENGINEER

340 INTEGRITY

- Requirement: The rainscreen cladding must resist wind loads, dead loads and design live loads, and accommodate deflections and movements without damage.
- Design wind pressure: Calculate in accordance with BS EN 1991-1-4 and National Annex.
- Impact performance: TO BE CONFIRMED BY ENGINEER.
 - Safety impact requirements: To CWCT TN 75, High risk.
 - Serviceability impact requirements: To CWCT TN 75, serviceability class 5.
 - External impact exposure: In accordance with CWCT TN 75: Category F. - Hard and soft body impact loads: To BS EN 14019: Class E5.
- Permanent imposed loads: TO BE CONFIRMED BY ENGINEER.

- Temporary imposed loads: TO BE CONFIRMED BY ENGINEER.
- Other design parameters: None.

350 DEFLECTION UNDER WIND LOAD

- Requirement: For listed components, at positive and negative applications of the design wind pressure, normal deflections are not to exceed: $L/360$.
- Additional stiffness to CWCT 'Standard for systemised building envelopes' clause 3.5.4.2: .

360 WIND RESISTANCE - CYCLIC LOADING

- Requirement: No reduction in the integrity of the rainscreen cladding must occur when subjected to the test sequence given in CWCT 'Standard for systemised building envelopes', clause 8.14.6.
- Test method: As clause 665.
 - Effective wind pressure: has been applied for 10,000 cycles.

370 APPEARANCE AND FIT

- Requirement: Design rainscreen wall:
 - To ensure position and alignment of all parts and features as shown on preliminary design drawings.
 - To accommodate deviations in the primary support structure.
- Primary support structure: Before commencing installation of rainscreen cladding system, carry out survey sufficient to verify that required accuracy of erection can be achieved.
 - Give notice: If the structure will not allow the required accuracy or security of erection.
 - Design tolerances: AS PER EXISTING EXTERNAL CONCRETE WALLS - THE CONTRACTOR MUST CARRY OUT A SURVEY OF THE EXISTING SUBSTRATE WALLS ONCE THE EXISTING RAINSCREEN CLADDING SYSTEM HAS BEEN REMOVED AND ALLOW FOR THE REPAIR OF THE SUBSTRATE WALLS PRIOR TO THE INSTALLATION OF THE NEW RAINSCREEN CLADDING SYSTEM.
- Rainscreen envelope zone tolerances:
 - Width: Panel length ± 2 mm, Panel width ± 1 mm, Secondary support bracket length ± 1 mm.
 - Panel tolerance ± 2 mm, installation tolerance ± 2 mm, overall = ± 4 mm. .
 - Critical reference location: All external facades .
- Maximum permitted component and installation tolerances: Façade tiles to be within ± 2.0 mm of specified length, and height.

380 GENERAL MOVEMENT

- Requirement: Rainscreen cladding must accommodate anticipated building movements as follows: TO BE CONFIRMED BY ENGINEER .

390A AIR PERMEABILITY GENERALLY

Requirement: Average air leakage rate through the listed walls at a differential pressure of 50 Pascals must not exceed: All external walls: $4 \text{ m}^3/(\text{h.m}^2)$ at a test pressure of 50 Pa

400 AIR PERMEABILITY THROUGH AIR BARRIER

Requirement: Maximum design value for air leakage through the air barrier at a differential pressure of 50 Pascals is $4 \text{ m}^3/(\text{h.m}^2)$

410 AIR PERMEABILITY

- Permeability class to BS EN 12152:
 - A4. - Peak test pressure: 600 Pa.

420 WATER PENETRATION

- Watertightness class to BS EN 12154: R7.
 - Peak test pressure: 600 Pa.
 - Additional requirements: Mineral wool insulation attached to backing wall not to be wetted at peak test pressure.
- 425 WIND LOAD SERVICEABILITY AND SAFETY OF RAINSCREEN PANELS - CYCLIC WIND LOADING
- Method of determination: Test in accordance with CWCT 'Standard for systemised building envelopes', clause 8.14.6 to the regime given in Table 8.1.
- 430A THERMAL PROPERTIES
- Method for calculating the thermal transmittance (U-value) of the rainscreen wall: [Combined, in accordance with BS EN ISO 6946]
Average U-value of rainscreen wall: 0.28W/m2K)
- 440A AVOIDANCE OF CONDENSATION
- Requirement: Psychrometric conditions under which condensation must not form within or on the interior surface of the rainscreen wall or any surface of the wall that is on the warm side of insulation are:
 - Notional outdoor Hygrothermic conditions as BS5250:2002 and method of calculation as BS EN ISO 13788:2002, utilising relevant building use types, and geographic information provided by the meteorological office
- 450 VAPOUR CONTROL LAYER
- Interstitial condensation risk within rainscreen wall: Determine using the method described in BS 5250 Annex D. If necessary, provide a suitable vapour control layer to ensure that damage and nuisance from interstitial condensation does not occur.
- 460A SOUND TRANSMITTANCE BETWEEN INTERIOR AND EXTERIOR OF RAINSCREEN CLAD WALL
- Minimum sound reduction indices (R) to BS EN ISO 140-3:
One third octave band centre frequency (Hz) R(dB)
[] []
- 465 SOUND TRANSMITTANCE BETWEEN ADJOINING FLOORS ABUTTING RAINSCREEN CLAD WALL
- Minimum sound reduction indices (R) to BS EN ISO 140-3:
One third octave band centre frequency (Hz) R(dB)
- 470 SOUND TRANSMITTANCE BETWEEN ADJOINING ROOMS ABUTTING RAINSCREEN CLAD WALL
- Minimum sound reduction indices (R) to BS EN ISO 140-3:
One third octave band centre frequency (Hz) R(dB)
[] []
- 480 FIRE RESISTANCE OF BACKING WALL
- Minimum periods and criteria: To BS 476-21, 60 min. integrity, 60 min. insulation .
- 485 INTERNAL REACTION TO FIRE/ SURFACE SPREAD OF FLAME OF BACKING WALL
- Class: To BS EN 13501-1, Class A1 .
- 490 CAVITY FIRE BARRIERS TO BS 476-20

- Requirement: To resist the passage of flame and smoke for not less than 60 min. integrity, 60 min. insulation .

TESTING

510 COMPARISON (TYPE) TESTING

- Verification of performance:
 - Submit: Certification and reports satisfying CWCT 'Standard for systemised building envelopes', clause 1.5.5 items a and b.
- Commencement of fabrication and installation of rainscreen cladding: Not until test results and reports showing compliance with this specification have been submitted.

520 PROJECT TESTING (SITE)

- Timing of testing: At an agreed stage during preliminary installation on site arrange for testing of a section of rainscreen cladding in accordance with relevant clauses of this specification.
- Continuation of installation of general areas of rainscreen cladding: Not until site test results and reports showing compliance with this specification have been submitted.

535 TESTING AUTHORITY

Requirement: Project testing must be carried out by the rainscreen cladding manufacturer/ contractor and is to be witnessed and certified by: The CA .

560A TEST SEQUENCE - STANDARD TESTS

Requirement: To CWCT 'Standard for testing ventilated rainscreens', Table 2 as follows:

- Air permeability: As clause [390A] .
- Weathertightness/water penetration: As clause [420] .
- Windloading: As clause [340] .

610 WEATHERTIGHTNESS/ WATER PENETRATION TESTS, LARGE

Provide documentary evidence that the system has been tested independently to comply with: Requirement: To CWCT 'Standard for testing of ventilated rainscreens', clause 3.4. - Test pressure: As clause 410.

615 WEATHERTIGHTNESS/ WATER PENETRATION TESTS, SMALL

Requirement: To CWCT 'Standard for testing of ventilated rainscreens', clause 3.4.

- Test pressure: As clause 410.
- Test method: Using [Sparge bar test as per clause 680] .

620 WINDLOADING TEST, LARGE SPECIMEN - AIR BARRIER

Provide documentary evidence that the system has been tested independently to comply with: Requirement: To CWCT 'Standard for testing of ventilated rainscreens', clause 3.5.1.

- Test pressures: As clause 410.
- Loading directions: TO BE CONFIRMED BY ENGINEER
- Allowable elastic deformation: TO BE CONFIRMED BY ENGINEER
- Allowable residual deformation: TO BE CONFIRMED BY ENGINEER

625 WINDLOADING TEST - RAINSCREEN

Provide documentary evidence that the system has been tested independently to comply with: Requirement: To CWCT 'Standard for testing of ventilated rainscreens', clause 3.5.2.

- Test pressures: As clause 410.
- Loading directions: TO BE CONFIRMED BY ENGINEER
- Allowable elastic deformation: TO BE CONFIRMED BY ENGINEER
- Allowable residual deformation: TO BE CONFIRMED BY ENGINEER

- 645 SPARGE BAR TEST, LARGE SPECIMEN
Requirement: To CWCT 'Standard for testing of ventilated rainscreens', clause 3.10.3.
- 650 HOSEPIPE TEST, LARGE SPECIMEN
Requirement: To CWCT 'Standard for testing of ventilated rainscreens', clause 3.10.4.
- 661 IMPACT TEST
Provide documentary evidence that the system has been tested independently to comply with: Requirement: To CWCT 'Standard for testing of ventilated rainscreens', clause 3.12.1 and CWCT technical note 75 & 76.
- Wall category: TO BE CONFIRMED BY ENGINEER
- Test impact for retention of performance: TO BE CONFIRMED BY ENGINEER
- Acceptable damage without impairment of performance: TO BE CONFIRMED BY ENGINEER
- Test impact to ensure safety to persons: TO BE CONFIRMED BY ENGINEER
- 670 TESTING OF FIXINGS
• Requirement: To CWCT 'Standard for systemised building envelope', 'Standard test methods for building envelopes' Section 19.
• Type of test: Ultimate load.
- Peak load: Not applicable.
Load directions: TO BE CONFIRMED BY ENGINEER.
- 672 SITE TESTING OF FIXINGS
• Requirement: To CWCT 'Standard for systemised building envelope', 'Standard test methods for building envelopes' Section 19.
• Type of test: Ultimate load.
- Peak load: Not applicable.
Load directions: TO BE CONFIRMED BY ENGINEER.
• Number and location of test fixings: TO BE CONFIRMED BY ENGINEER .
- 680A SITE SPRAGE BAR TEST
Requirement: To CWCT 'Standard for testing of ventilated rainscreens', clause 3.10.3.
- 685A SITE HOSEPIPE TEST
Requirement: To 'Standard for testing of ventilated rainscreens', clause 3.10.4.
- Joints to be tested: [TO BE CONFIRMED BY ENGINEER] .

PRODUCTS

- 710A ALUMINIUM ALLOY FRAMING SECTIONS
• Standards: To BS EN 755 alloy EN AW-6063 and suitable for the specified finish.
• Structural members: To comply with BS 8118.
- 712 ALUMINIUM ALLOY SHEET
• Standards: To BS EN 485, BS EN 515 and BS EN 573.
• Alloy, temper and thickness: Suitable for the application and specified finish.
- 715A MILD STEEL FRAMING SECTIONS/ REINFORCEMENT
Standards: To the relevant parts of BS 7668, BS EN 10029, BS EN 10113, BS EN 10137, BS EN 10155 and BS EN 10210, in a thickness suitable for the application, and for galvanizing or other protective coating.

720A STAINLESS STEEL SHEET

Standards: To the relevant parts of BS EN 10029, BS EN 10048, BS EN 10051, BS EN 10095, BS EN 10258, BS EN 10259 and BS EN 10088-2, austenitic, grade 1.4301 (304) generally, grade 1.4401 (316) when used externally or in severely corrosive environments, and in a thickness suitable for the application.

730 MECHANICAL FIXINGS - MATERIAL REQUIREMENTS

- Stainless steel: To BS EN ISO 3506 grade A2 generally, grade A4 when used in severely corrosive environments.
- Carbon steel: To BS 4190 and suitable for galvanizing or other protective coating.
- Aluminium: To BS EN 755.

732 ADHESIVES

- General: Not degradable by moisture or water vapour

735A FIXINGS AND FASTENERS

To be of approved type, and manufactured from non-ferrous materials

Dimensions: Not less than recommended by their manufacturers.

Adjustment capability: Sufficient in three dimensions to accommodate primary support structure and rainscreen cladding fabrication/ installation tolerances.

770A GENERAL SEALANTS

- Selection: In accordance with BS 6213 from:
 - Silicone to BS 5889.
 - One part polysulfide to BS 5251.
 - Two part polysulfide to BS 4254.
 - One or two part polyurethane.
- Reaction to contact products and finishes: Stable and compatible

776 THERMAL INSULATION

- Material: Mineral wool to BS EN 13162.
- Manufacturer: ROCKWOOL Ltd or Equivalent.
 - Product reference: Rainscreen Duo-Slab.
 - Slab size: 1000 x 600 mm.
 - Thermal conductivity: 0.040 W/mK.
 - Reaction to fire class: A1 to BS EN 13501-1.
- Thickness: Not less than 175mm.
- Recycled content: 50% (minimum) to BS EN ISO 14021.
- Fixing: Attached to the outer face or supported within the backing wall so as not to bulge, sag, delaminate or detach during installation or in situ during the life of the rainscreen cladding.

780 VAPOUR CONTROL LAYER

- Material: Self Adhesive Multi layer reinforced HDPE membrane with an aluminium foil.
 - Minimum vapour resistance: 500 MN s/g.
 - Manufacturer: Visqueen Building Products or Equivalent.
- Product reference: Fully Bonded Vapour Barrier.
- Priming:
- Ensure that the surface to be treated is free from loose particles, dry and frost free. All surfaces should be sealed using Visqueen Tanking Primer Solution and allowed to dry thoroughly. .

- Continuity: No breaks and with the minimum of joints.
 - Penetrations and abutments: Seal to vapour control layer. If necessary, prime substrates to achieve full bond.
 - Sheet laps: Not less than 150 mm, seal with tape. Prime substrates as necessary to achieve full bond.
- Sheet tape: Double sided sealant with vapour resistivity not less than the vapour control sheet.
 - Size (width and thickness): 20m long x 1m wide x 1mm thick.
- Sheet repairs and punctures: Seal with lapped patch of vapour control membrane and continuous band of sealant tape along edges.

FINISHES

810A PROTECTIVE COATING OF CARBON STEEL FRAMING SECTIONS/ REINFORCEMENT

Treatment: All surfaces to one of the following:

- Hot dip galvanized to BS EN ISO 1461.
- An appropriate equivalent coating to BS 5493, BS EN ISO 12944 and BS EN ISO 14713.

820A PROTECTIVE COATING OF CARBON STEEL MECHANICAL FIXINGS

Treatment: All surfaces to one of the following:

- Hot dip galvanized to BS EN ISO 1461.
- Sherardized to BS 4921, class 1 coating thickness and passivated.
- Zinc plated to BS EN 12329, coating designation of FE//Zn//C for an iridescent (yellow passivate) chromate conversion coating or FE//Zn//D for an opaque (olive green) chromate conversion coating.

830 POWDER COATING

- Requirement: As section Z31.

840 ANODIZING

- Requirement: As section Z33.

FABRICATION AND INSTALLATION

910 GENERALLY

- Electrolytic corrosion: Take necessary measures to prevent.
- Identification of products: Mark or tag to facilitate identification during assembly, handling, storage and installation. Do not mark surfaces visible in the complete installation.

912 METALWORK

- Requirement: As section Z11, unless specified otherwise in this section.

922 FIXINGS/ ADHESIVES APPLICATION

- Requirement: As section Z20, unless specified otherwise in this section.

925 SEALANT APPLICATION

- Requirement: As section Z22, unless specified otherwise in this section.

930 ASSEMBLY

- Location: Carry out as much assembly as possible in the workshop.
- Joints: Other than movement joints and designed open joints, must be rigidly secured, reinforced where necessary and fixed with hairline abutments.

- Displacement of components in assembled units: Submit proposals for reassembly on site.
- 935 INSPECTION
- All fabrications and assembled units must be carefully inspected for match with approved samples and for compliance with this specification and the final detailed drawings before dispatch to site.
- Give adequate notice of inspection arrangements to enable the CA and/or other affected parties to be present.
- 940 PROTECTION
- All fabrications and assembled units must be protected against damage, corrosion and disfigurement during handling, installation and subsequent site operations.
- Protective coverings must be applied before dispatch to site and must not be detrimental to rainscreen cladding products, finishes or installation procedures.
- 945 HANDLING AND STORAGE
- Do not deliver to site any rainscreen cladding products and units which cannot be installed immediately or unloaded into a suitable well protected storage area.
- Store products and units on level bearers clear of the ground and separate with resilient spacers.
- 950 SUITABILITY OF SUPPORTING STRUCTURE
- Contractor's survey:
- Programme: Not less than 6 weeks before commencement of cladding installation.
 - Scope: Survey of supporting structure to determine suitability.
 - Structure unsuitable to receive cladding: Give notice.
- 960 PRELIMINARY RAINSCREEN CLADDING INSTALLATION
- Requirement: Complete an area of cladding as set out below for inspection and approval of appearance.
First Floor Rear Elevation .
- 970 RAINSCREEN CLADDING INSTALLATION
- Tightening mechanical fasteners: To manufacturer's recommended torque figures. Do not overtighten fasteners intended to permit differential movement.
 - Protective coverings: Remove only where necessary to facilitate installation and from surfaces which will be inaccessible on completion.
- 975 WELDING
- In situ welding: Not permitted.
- 980 INTERFACES
- Installation: Locate flashings, closers etc. correctly and neatly overlap cladding to form a weathertight junction.
- 985 DAMAGE
- Repairs: Do not repair cladding without approval.
 - Approval: Will not be given where the proposed repair will impair performance or appearance.
 - Record of repairs: Prepare schedule or record on drawings for inclusion in the maintenance manual.

995A MAINTENANCE

Maintenance manual: Incorporate details within the Building Manual in accordance with CWCT

'Guide to good practice for facades', Section 10.

H93 BALCONIES

To be manufactured by Balco Balcony Systems Ltd, The Wagon House, Prockters Farm, West Monkton, Taunton, TA2 8QN or **other equal and approved manufacturer**

100 DESIGN CHARACTERISTICS:

- Wintergarden glazing system free from corner support post
- Maximum width per unit 5.4m per section
- Maximum height 2.8m
- Noise reduction ~17 dB
- Parapet infill to be either Laminated glass or other composite material
- Integrated Kerafix® Flexpress 100 intumescent strip or other equal and approved

110 MANUFACTURE CHARACTERISTICS:

- Production in accordance with EN755
- Welding in accordance with EN ISO 3834-2
- CE marking in accordance with EN 1090-1:2009+2011
- Quality assurance to ISO 9001 & ISO 14001

120 EXTRUDED ALUMINIUM PROFILES

- All profiles to be architectural alloy to grade AA 6060, 6063 (T6)
- Profiles to be produced by Hydal or ProfilGruppen in accordance with BS EN 573-2:1995 or other equal and approved

130 RIVETS

- All rivets to be surface fixed large flange blind rivets, Alu AlMg3 Mandrel: Steel
- Rivets to be powder coated in accordance with approved design

140 PRIMING AND POLYESTER POWDER COATING

- All aluminium is to be rinsed pre-treated in accordance with Alficoat 770-771
- All polyester powder coating to be as per Qualicoat class 1 standards
- Minimum thickness 60 µm as per ISO2360
- Dry adhesion according to ISO2409
- Gloss coating in accordance with ISO2813:

150 CATEGORY GLOSS RANGE ACCEPTABLE VARIATION

- 1 (*mat*) 0 - 30 +/- 5 unit
- 2 (*satin*) 31 - 70 +/- 7 units
- 3 (*gloss*) 71 - 100 +/- 10 units
- Bend tests to ISO1519
- Impact tests to ISO 6272-2 / ASTM S 2794

160 FOLDING GLASS WINDOWS

- Windows to have an inwardly action opening system
- Windows supported by an upper and lower integral suspension rail
- Windows to include a swan-neck support bracket
- Single integrated magnetic locking mechanism to primary window
- Glass to be 6-8mm toughened glass

170 HANDRAIL

- Dual handrail system fitted to external extrusion rail in accordance with Building Regulations Part-K
- Distance between handrails not to exceed 100mm
- Handrail:
 - Upper - BKS 5821

- Lower - BKS 5820
- Support - R700557
- Fixings A4 Stainless
-

- 180 PARAPET GLASS
- Glass provided by Pilkington OEA or other equal and approved
 - 3mm float glass + 2xPVB interlayer + 3mm float glass
 - Glass is framed with rubber gaskets in an aluminium frame
 - All glass is beaded from the inside of the balcony
- 190 Ventilation
- Non-mechanical VentTec® ventilation system or other equal and approved
 - Fully integrated into the upper extrusion transom
 - VentTec® ventilation system must work in conjunction with built in blinds
- 200 Fixings
- All fixings to be provided by Hilti or WÜRTH or other equal and approved
 - Fixings to be designed following concrete pull-test or crush-test
 - Mechanical or chemical anchors acceptable
- 210 Accessories
- All of the following accessories can be provided:
- Integrated Roller blinds
 - Balcony Carpets
 - Bolt-on window boxes
 - Photovoltaic integrated parapet glass 135w/m² 6inch A2 Solar cells within glass section
- 220 Balcony lightweight **slab** (*Steel framed, reinforced concrete balcony slab*)
- All steelwork to be Grade S355
 - Fire rated to 30, 60 or 90 minutes
 - All steelwork to be HDG to ISO1460 & PPC as required
 - All connection bolts to be grade 8.8 or stronger
 - Connection joints to be welded in accordance with EN ISO 3834-2
 - Concrete to be class C35/46
 - Surface exposure class top is XC4XF3
 - Surface exposure class underside is XC3-XF1
 - Dimensioning in accordance with relevant EuroCodes

J Waterproofing

J21 Mastic asphalt roofing/ insulation/ finishes

To be read with Preliminaries/ General conditions.

TYPES OF COATING/ PAVING

- 110 WARM DECK ROOF COATING TO MAIN FLAT ROOF
- Substrate: New Concrete screed as Section M10, Clause 180 .
 - Preparation: Quick Dry Bitumen Primer.
 - Vapour control layer: 1 layer of torch on roofing felt - 3mm thick bitumen heavily modified with polymers and reinforced with non-woven polyester .
 - Insulation: 2no layers of non-combustable 100mm Rockwool Hardrock Multi-fix insulation - 200mm overall thickness. Insulation to be fixed to vapour control layer using suitable adhesive .
 - Overlay: Not required.
 - Separating layer (loose laid): Loose-laid Type 4A bitumen impregnated, sheathing felt isolating layer to BS 747: 2000. - Laps (minimum): 50 mm.
 - Coating: Mastic asphalt to BS 6925.
 - Type: R988/ Permaphalt 180 Polymer modified asphalt to BS 8218: 1998 or Equivalent..
 - Application: 20 mm nominal thickness in two coats.
 - Surface protection: Solar reflective paint as Clause 495 .
 - Accessories: Harmer AV300/F Vertical Spigot Aluminium drainage 100mm outlet or Equivalent.
- 180 SKIRTINGS/ VERTICAL WORK TO PARAPET WALLS
- Substrate: 18mm external grade plywood as per Drawing WD10 - Detail 15. - Preparation: Primer.
 - Separating layer: Reinforced bitumen sheathing felt with 50 mm minimum laps.
 - Keying: Expanded metal lathing to BS 8204-5, clause 5.4.
 - Coating: Mastic asphalt to BS 6925.
 - Type: R988/ Permaphalt 180 Polymer modified asphalt to BS 8218: 1998 or Equivalent .
 - Application: 13 mm nominal thickness in two coats.
 - Height above finished roof level (minimum): 150 mm.
 - Fillet profile: 45° angle, 40 mm minimum width on face.
 - Surface protection: Solar reflective paint.
 - Accessories: Lead cover flashing as Section H71 - Clause 420 .

PERFORMANCE

- 207 ROOF COVERING DESIGN PROVIDED .
- Description: AS PER DRAWINGS WD01-09.
 - Requirements:
 - Generally: As section B50.
 - Additional requirements: None.
 - 210 ROOF PERFORMANCE
 - General: Secure, free draining and weathertight.

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220 AVOIDANCE OF INTERSTITIAL CONDENSATION: WARM AND INVERTED ROOFS

Determine: Interstitial condensation risk of roof construction as recommended in BS 6229.

- Basic design data:
 - Outdoor notional psychrometric conditions, winter:
 - Temperature: -5°C.
 - Relative humidity: 90%.
 - Vapour pressure: 0.36 kPa.
 - Duration: 60 days.
 - Outdoor notional psychrometric conditions, summer:
 - Temperature: 18°C.
 - Relative humidity: 65%.
 - Vapour pressure: 1.34 kPa.
 - Duration: 60 days.
 - Indoor notional psychrometric conditions:
 - Temperature: 20°C.
 - Relative humidity: 50%.
 - Vapour pressure: 1.17 kPa.
- Winter interstitial condensate (warm roof):
 - Calculated amount (maximum): 0.35 kg/m². - Calculated annual net retention: Nil.
- Vapour control layer: If necessary, provide a suitable membrane so that damage and nuisance from interstitial condensation do not occur.

225 AVOIDANCE OF INTERSTITIAL CONDENSATION: WARM AND INVERTED ROOFS

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

230 INSULATION

- Requirement: Determine type and thickness of insulation and integral or separate overlay to satisfy the following criteria:
 - Thermal transmittance of the roof (maximum): 0.18 W/m²K.
 - Compressive strength of insulation (minimum) at 10% compression: 350 kPa.
 - Finished surface: Suitably even, stable and robust to receive roof covering.
 - Insulation compliance: To a relevant European Standard, or Agrément certified.

PRODUCTS

320 PRIMER FOR CONCRETE ROOF SCREED

- Type: Bitumen primer.
- Manufacturer: IKO or Equivalent.
 - Product reference: Quick Dry Bitument Primer.

325 BONDING COMPOUND

- Type: Bitumen to BS EN 12591.
- Manufacturer: IKO or Equivalent.
 - Product reference: IKOpro PU Adhesive.

330 TIMBER TRIMS, ETC

- Quality: Planed. Free from wane, pitch pockets, decay and insect attack (except ambrosia beetle damage).
 - Moisture content at time of covering (maximum): 22%.
 - Preservative treatment: As recommended for purpose by mastic asphalt manufacturer.
- 340 PREFORMED SLEEVES, TRIMS, ETC
- Type: 0.6 mm galvanized steel flanged sleeve.
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Colour: Black.
 - Size: As drawing WD08.
- 345 PERIMETER TRIMS
- Type: Aluminium to BS EN 12020-1, grade EN-AW 6063T4.
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Colour: Black.
 - Length (maximum): 3 m.
- 370 COVER STRIPS TO JOINTS IN RIGID BOARD SUBSTRATES
- Bitumen membrane: In accordance with BS 8747, Class S2P3.
 - Width: 150 mm.
- 395 VAPOUR CONTROL LAYER
- Type: Single layer BS 8747 reinforced bitumen membrane, Class S2P3.
 - Manufacturer: IKO or Equivalent.
 - Product reference: Imperial 3 T Mec.
 - Thickness: 3mm.
 - Vapour resistance: 1000 MN s/g.
- 400 SEPARATING LAYER (LOOSE LAID)
- Manufacturer: IKO or Equivalent.
 - Product reference: Submit proposals.
 - Type: Reinforced bitumen sheathing felt to BS 747: 2000 Type 4A . - Laps (minimum): 50 mm.
- 402 MASTIC ASPHALT (ROOFING)
- Manufacturer: IKO or Equivalent.
 - Product reference: Permaphalt 180 Polymer modified asphalt to BS 8218: 1998.
 - Type: Polymer modified.
 - Application: 20 mm nominal thickness in two coats.
- 425 MINERAL WOOL WARM DECK ROOF INSULATION
- Manufacturer: Rockwool or Equivalent.
 - Product reference: Hardrock Multi-fix DD fixed to vapour control layer using adhesive.
 - Standard: To BS EN 13162.
 - Reaction to fire: Euroclass A1, noncombustible boards.
 - Thermal conductivity (minimum): 0.040 W/mK.
 - Thickness: 200 mm (2 x 100).
 - Other BS EN 13162 characteristics: None.
 - Board density (minimum): Manufacturer's standard.
 - Edges: Square.
 - Facing: Glass tissue.

- Recycled content: 50% (minimum) to BS EN ISO 14021.
- 465 **PRECAST CONCRETE PAVING SLABS**
 Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Standard: To BS EN 1339, hydraulically pressed. - Size: 400 x 400 x 30 mm.
 - Water absorption: Manufacturer's standard.
 - Resistance to freeze thaw: Manufacturer's standard.
 - Breaking load (minimum): 5.6 kN.
 - Colour: Buff.
 - Finish: Coarse texture.
 - Other BS EN 1339 characteristics: None.
- Recycled content: 20% (minimum) to BS EN ISO 14021.

- 467 **SUPPORT SYSTEM FOR PRECAST CONCRETE PAVING SLABS**
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Size: 60 mm diameter, 30mm high/ thick.
 - Accessories: Levelling pads.

- 485 **ROOF VENTILATORS**
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Size: 100 mm diameter x 150 mm upstand.

- 495 **SOLAR REFLECTIVE PAINT**
 - Manufacturer: IKO or Equivalent.
 - Product reference: IKOpro Asphalt Protection Coat.
 - Colour: Grey.

EXECUTION GENERALLY

- 510 **ADVERSE WEATHER**
 - General: Do not lay mastic asphalt in wet or damp conditions unless effective temporary cover is provided over working area.
 - Unfinished areas of the roof: Keep dry.

- 520 **INCOMPLETE WORK**
 - Daywork joints in warm roofs and edges of phased roofing: Adequately protected and fully weathertight.

- 530 **APPLYING PRIMERS**
 - Coverage per coat (minimum): 0.2 L/m².
 - Surface coverage: Even and full.
 - Coats: Fully bonded. Allow volatiles to dry off thoroughly between coats.

- 540 **APPLYING BONDING COMPOUNDS**
 - Roof sited boilers: Not permitted.
 - Temperature of compound: Suitable to achieve bond over the whole surface. Do not overheat.
 - Heat sensitive insulation materials: Use cold bituminous adhesive recommended by the insulation manufacturer.

550 CONTROL SAMPLES

- Type of mastic asphalt: Roofing to BS 6925.
- Sample area:
 - Location: Main Roof.
 - Details: Minimum 10 m² and Upstands.
- Approval of appearance: Obtain before proceeding.

SUBSTRATES/ VAPOUR CONTROL LAYERS/ WARM DECK ROOF INSULATION

610 SUITABILITY OF SUBSTRATES

- Substrates generally:
 - Secure, even textured, clean, dry and frost free.
- Preliminary work: Completed, including:
 - Chases (minimum): 25 x 25 mm.
 - External angles: Chamfered where required to maintain full thickness of mastic asphalt.
 - Formation of upstands and kerbs.
 - Grading to correct falls.
 - Movement joints.
 - Penetrations/ Outlets.
- Moisture content and stability of substrate: Must not impair integrity of roof.

620 REMOVING EXISTING MASTIC ASPHALT

- Areas to be removed: Existing Roof Covering, Insulation.
- Existing roof: Do not damage.
- Timing: Only remove sufficient mastic asphalt as will be replaced and made weathertight on same day.

635 REMOVING EXISTING CHIPPINGS

- Mechanical stripping: Permitted .

640 FIXING TIMBER TRIMS

- Fasteners: Sherardized steel screws.
 - Fixing centres (maximum): 600 mm.

642 KEYING TO VERTICAL/ SLOPING DENSE CONCRETE

- Surface preparation: Remove mould oil, clean and apply proprietary high bond primer or proprietary keying mix of cement:sand slurry incorporating a bonding agent.

648 KEYING TO METAL SURFACES

- Surface preparation: Clean and apply proprietary high bond primer.

649 APPLYING METAL LATHING TO VERTICAL/ SLOPING GENERALLY

- Placing:
 - Long way of mesh: Horizontal.
 - Pitch of horizontal strands: Sloping upwards away from background.
- Butt joints: Wire tie between sheets at 75 mm centres.
- Method of fixing: Stainless steel staples.
 - Perimeter edges: 75 mm centres.
 - General areas (maximum): 150 mm vertical and horizontal centres.

660 JOINTS IN RIGID BOARD SUBSTRATES

- Cover strip: Lay centrally over substrate joints before laying vapour control layers or coverings. Adhere to substrate with bonding compound along edges only.

670 LAYING VAPOUR CONTROL LAYER

- Attachment: Secure.
 - Bond: Continuous with no air pockets.
- Appearance on completion: Smooth.
- Side and head laps: Seal using materials and method recommended by membrane manufacturer.
- Joints in second layer (if any): Stagger by half a sheet.
- Upstands, kerbs and other penetrations: Enclose edges of insulation. Fully seal at abutment by bonding or taping.

680 LAYING WARM DECK ROOF INSULATION

Setting out:

- Long edges: Fully support and run at right angles to structure.
- End edges: Adequately support.
- Joints: Butt together.
- End joints: Stagger.
- Margin to walls, upstands, pipes and other projections (minimum): 25 mm.
- Bedding: Full bed of bonding compound.
- Mechanical fixing: Not required.
- Completion: Boards must be in good condition, well fitting and stable.

685 LAYING OVERLAY TO WARM DECK ROOF INSULATION

- Setting out:
 - Joints: Butt together.
 - End joints: Stagger to break joint with insulation.
 - Margin to walls, upstands, pipes and other projections (minimum): 25 mm.
- Bedding: Full bed of bonding compound.
- Mechanical fixing: Not required.

690 MARGIN INFILL TO ANGLE FILLETS IN WARM DECK ROOF

- Infill material: Mastic asphalt when laying roofing.

695 SEPARATING LAYER

- Give notice: Where it is or becomes apparent that a separating layer is required.

ASPHALTING

710 DELIVERY

- Condition of mastic asphalt as delivered to site: Hot-prepared, do not remelt on site.

730 TRANSPORTING

- Transport distances: Minimize to avoid excessive cooling of molten mastic asphalt.
- Buckets, barrows or dumpers used for mastic asphalt: Line with minimum quantity of fine inert dust. Use silica or similar acid resisting dust where acid resisting mastic asphalt is being used.

735 LOCALIZED HEATING

- Blowlamps and gas torches: Use only types with controlled gradual heating during laying, removal and repair of mastic asphalt.

740 LAYING MASTIC ASPHALT

- Standard: To BS 8218.
- Application:
 - In bays to even thickness.

- Re-heated asphalt: Do not use.
- External angles, junctions and tuck-ins: Maintain full thickness of asphalt.
- Fillets at internal angles: Solid, fully fused to asphalt coating.
- Previously laid coats: Protect whilst exposed.
- Successive coats:
 - Timing: Apply without delay and within same working period.
 - Coats: Apply at right angles to preceding.
 - Stagger joints between bays in consecutive coats (minimum): 75 mm.
- Condition of contact edges of previously laid bays: Warm and clean.
- Blowing: Pierce and make good affected areas while mastic asphalt is still at working temperature.
- Completion: During final floating operation, whilst asphalt is still warm, apply sand to horizontal surfaces and rub in well using wooden float. Remove surplus material.
- Surface condition at completion: Smooth and free from imperfections. Firmly adhered, weatherproof and free draining.

750 MASTIC ASPHALT SKIRTINGS AND VERTICAL WORK

Top edge: Tuck into 25 x 25 mm continuous splayed chase or groove.

- External angles: Maintain full thickness of asphalt.
- Splayed top: Form to shed water away from substrate.

760 MARGIN INFILL TO MASTIC ASPHALT PAVINGS

- Top coat: Set 100 mm back from upstands.
- Infill: Roofing grade mastic asphalt.
- Completion: Provide angle fillet to infill.

770 INSTALLING MOVEMENT JOINTS

- Location: Centre over structural movement joint, and bed to exact finished level.
 - Joint width: 20 mm.
 - Bedding: Epoxy mortar.
 - Fixing: M8 resin anchor bolts at 300 mm centres..
- Separating layer: Dress onto horizontal surface of edgings, either side of joint.
- Joints: Prepare and apply sealant as section Z22.
- Sealant: Low modulus silicone. - Depth: 10 mm. - Colour: Grey.

785 FIXING PERIMETER TRIMS

- Separating layer: Terminated at trim. Do not carry under or over.
- Trim:
 - Setting out (minimum): 3 mm from wall or fascia.
 - Fasteners: 50 mm aluminium countersunk wood screws.
 - Fixing: 30 mm from ends of trims and 300 mm (maximum) centres. - Jointing sleeves: Fix one side only.
- Expansion gap between ends of trim: Not required. - Corners pieces: Purpose made.

790 INSTALLING ROOF VENTILATORS

- Setting out: Position evenly over roof area. - Centres (maximum): As drawing WD04.
 - Distance from roof edges: As drawing WD04.
- Holes for ventilators: Cut neatly to suit size of vents through insulation and vapour control layer.
- Skirts and substrate below vents: Prime before asphalting.

SURFACING

- 860 LAYING PAVING TILES
- Condition of substrate: Clean.
 - Setting out: Minimize cutting.
 - Primer: Not required.
 - Bedding: Not required.
 - Separating layer: Not required.
 - Joints: Open.
 - Width generally: 3 mm.
 - Between bays in approved locations: 25 mm.
 - Gaps for drainage: 100 mm in direction of fall.
 - Expansion gap intervals: 3 m.
 - Perimeter/ Upstands: Stop tiles short of angle fillets by 25 mm (minimum).
- 880 APPLYING SOLAR REFLECTIVE PAINTS
- Number of coats: One.
- Coverage per coat (minimum): 0.25 litres / m².
 - Surface coverage: Even and full.
 - Coats: Fully bonded.

COMPLETION

- 910 INSPECTION
- Interim and final roof inspections: Submit reports.
- 920 ELECTRONIC ROOF INTEGRITY TEST
- Testing authority: The roofing contractor.
 - Timing of test: Prior to completion.
 - Condition of roof prior to testing:
 - Complete to a stage where integrity can be tested.
 - Surface: Clean.
 - Test results and waterproof integrity certificate: Submit on completion of testing.
- 940 COMPLETION
- Roof areas: Clean.
 - Outlets: Clear.
 - Work necessary to provide a weathertight finish: Complete.
 - Storage of materials on finished surface: Not permitted.
 - Completed mastic asphalt roof coating: Do not damage. Protect from petroleum based solvents and other chemicals, traffic and adjacent or high level working.

K Linings/Sheathing/Dry partitioning

K10 Gypsum board dry linings/ partitions/ ceilings

To be read with Preliminaries/ General conditions.

TYPES OF DRY LINING**115A INSULATION**

- Manufacturer: ROCKWOOL Ltd. - Web: www.rockwool.co.uk.
 - Email: info@rockwool.com.
 - Product reference: ROCKWOOL FLEXI
- Width: 400 mm.
- Length: 1200 mm.
- Thickness: 50 mm.

125A METAL STUD PARTITION SYSTEM

- Manufacturer: British Gypsum.
 - Web: www.british-gypsum.com.
 - Email: bgtechnical.enquiries@bpb.com.
 - Product reference: GypWall Classic
- Studs:
 - Type: 70 mm Gypframe 70 S 50 'C' studs.
 - Centres: 600 mm
- Head condition:
 - Type: Gypframe 72 C 50 Floor and Ceiling Channels, fixed to underside of Concrete Slab. - Deflection allowance: .
- Insulation:
 - Type: Rockwool Flexi. - Thickness: 50 mm.
- Linings:
 - Type: As Clause 404.
 - Edge: As Clause 404.
- Finishing:
 - Type: Skim coat plaster finish.
 - Primer/ Sealer: One coat of Gyproc Drywall Prime.
- Accessories: Rigid beads/ stops.
- Other requirements: None.

245 CEILING LINING ON TIMBER BIN STORE

- Background: EXISTING CEILING CONSTRUCTION.
- Metal resilient (acoustic) bars: Not required.
- Linings: 12.5 mm plasterboard as clause 404.
 - Fixings: Screws.
- Finishing: Skim coat plaster.
 - Primer/ Sealer: As recommended by board manufacturer for vapour control.
 - Accessories: Metal beads/ stops recommended by board manufacturer .
- Other requirements: Fire stopping around service penetrations as section P12.

GENERAL/ PREPARATION**305 COMPLIANCE WITH PERFORMANCE REQUIREMENTS**

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

335 ADDITIONAL SUPPORTS

- Framing: Accurately position and securely fix to give full support to:
 - Partition heads running parallel with, but offset from main structural supports.
 - Fixtures, fittings and service outlets. Mark framing positions clearly and accurately on linings.
 - Board edges and lining perimeters, as recommended by board manufacturer to suit type and performance of lining.

395 CONTROL SAMPLES

- General: Complete areas of finished work and obtain approval of appearance before proceeding.
- Type of dry lining: Ceiling K10/245.
 - Location/ Size: Submit proposals.

COMPONENTS

400 GYPSUM BOARDS GENERALLY

- Standard:
 - Gypsum plasterboard to BS EN 520.
 - Gypsum fibre board to BS EN 15283-2.
 - Evidence of compliance: All sheets to be CE marked. Submit Declaration of Performance (DoP).

404 GYPSUM PLASTERBOARD (IMPROVED FIRE PROTECTION)

- Type: To BS EN 520, type F.
- Core: Including fibres and/ or other additives for improved cohesion.
 - Density (minimum): 800 kg/m³.
- Reaction to fire: Class A2-s1, d0.
- Water vapour resistance factor: Dry - 10 µ.
- Thermal conductivity: 0.25 W/(m·K).
- Other BS EN 520 characteristics: None.
- Recycled content: 60% (minimum) to BS EN ISO 14021.
- Exposed surface and edge profiles: Suitable to receive specified finish.

415 GYPSUM PLASTERBOARD INSULATED PLASTERBOARD TO WINDOW OPENINGS GENERALLY

- Type: Kingspan Kooltherm K17 or Equivalent, overall thickness 32.5mm.
- Core density (minimum): 650–750 kg/m³.
- Reaction to fire: Class A2-s1, d0.
- Water vapour resistance factor: Manufacturer's standard.
- Thermal conductivity: 0.23 W/(m·K).
- Other BS EN 520 characteristics: None.
- Recycled content: 84% (minimum) to BS EN ISO 14021.
- Exposed surface and edge profiles: Suitable to receive specified finish.

430 ACCESS PANELS TO BIN SHUTE AT EACH LEVEL FROM FIRST TO EIGHT FLOOR

- Type: 60 minutes fire protection to BS EN 13501-2 . - Sizes: 550 x 550 mm .
- Frame: Bead for taping and jointing .
- Panel: Metal with powder coated factory finish .
- Lock: Tamper proof and operated by castellated key .

INSTALLATION

435 DRY LININGS GENERALLY

- General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.

- Cutting gypsum boards: Neatly and accurately without damaging core or tearing paper facing.
 - Cut edges: Minimize and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.
- Fixings boards: Securely and firmly to suitably prepared and accurately levelled backgrounds.
- Finishing: Neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.

445 CEILINGS

- Sequence: Fix boards to ceilings before installing dry lined walls and partitions.
- Orientation of boards: Fix with bound edges at right angles to supports and with ends staggered in adjacent rows.
- Two layer boarding: Stagger joints between layers.

510 SEALING GAPS AND AIR PATHS

- Location of sealant: To perimeter abutments and around openings.
 - Pressurized shafts and ducts: At board-to-board and board-to-metal frame junctions.
- Application: To clean, dry and dust free surfaces as a continuous bead with no gaps.
 - 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

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

560 JOINTS BETWEEN BOARDS

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

570 HORIZONTAL JOINTS

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

580 INSULATION BACKED PLASTERBOARD

- General: Do not damage or cut away insulation to accommodate services.
- 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

- Fixing to timber: Securely at the following centres (maximum):
 - Nails: 150 mm.
 - Screws to partitions/ wall linings: 300 mm. Reduce to 200 mm at external angles. - Screws to ceilings: 230 mm.
- Position of nails/ screws from edges of boards (minimum):
 - Bound edges: 10 mm.
 - Cut/ unbound edges: 13 mm.
- Position of nails/ screws from edges of timber supports (minimum): 6 mm.

620 FIXING GYPSUM BOARD WITH ADHESIVE DABS

- Setting out boards: Accurately aligned and plumb.
- Fixing to substrates: Securely using adhesive dabs.
- Adhesive dab spacings for each board:

- Horizontally: One row along top edge and one continuous dab along bottom edge.
- Vertically: One row along each edge and thereafter at intermediate spacings to suit size of board:

Thickness (mm)	Width (mm)	Dab centres (mm)
9.5	1200	400
9.5/12.5	900	450
12.5	1200	600

- Adhesive dab dimensions (width x length): At least 50-75 mm x 250 mm.
- Position of dabs from edges/ ends of boards (minimum): 25 mm.

625 FIXING INSULATION BACKED PLASTERBOARD WITH ADHESIVE DABS

- Fixing to substrates: In addition to adhesive dab fixings, secure boards with nailable plugs in locations recommended by board manufacturer.

630 FIXING INSULATION BACKED PLASTERBOARD WITH ADHESIVE SPOTS

- Setting out boards: Accurately aligned and plumb.
- Fixing to substrates: Securely using adhesive spots and mechanical fastenings.
- Adhesive spot spacings to each board: Four vertical rows, at 400 mm centres in each row.
- Adhesive spot diameters (minimum): 25 mm.
- Mechanical fasteners: Nailable plugs in locations recommended by board manufacturer.

FINISHING

650 LEVEL OF DRY LINING ACROSS JOINTS

- Sudden irregularities: Not permitted.
- 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.
 - Tapered edge joints:
 - Permissible deviation (maximum) across joints when measured with feet resting on boards: 3 mm.
 - External angles:
 - Permissible deviation (maximum) for both faces: 4 mm.
 - Internal angles:
 - Permissible deviation (maximum) for both faces: 5 mm.

670 SEAMLESS JOINTING TO GYPSUM BOARDS

- Cut edges of boards: Lightly sand to remove paper burrs.
- Filling and taping: Fill joints, gaps and internal angles with jointing compound and cover with continuous lengths of paper tape, fully bedded.
- Protection of edges/ corners: Reinforce external angles, stop ends, etc. with specified edge/ angle bead.
- Finishing: Apply jointing compound. Feather out each application beyond previous application to give a flush, smooth, seamless surface.
- Nail/ screw depressions: Fill with jointing compound to give a flush surface.
- Minor imperfections: Remove by light sanding.

680 SKIM COAT PLASTER FINISH

- Plaster type As recommended by board manufacturer.. - Thickness: 2-3 mm.
- Joints: Fill and tape except where coincident with metal beads.
- Finish: Tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.

692 RIGID BEADS/STOPS

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

695 INSTALLING BEADS/ STOPS

- Cutting: Neatly using mitres at return angles.
- Fixing: Securely using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
- 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

- Filling small areas with broken cores: Cut away paper facing, remove loose core material and fill with jointing compound.
 - Finish: Flush, smooth surface suitable for redecoration.
- Large patch repairs: Cut out damaged area and form neat hole with rectangular sides. Replace with matching gypsum board.
 - Fixing: Use methods to suit type of dry lining, ensuring full support to all edges of existing and new gypsum board.
 - Finishing: Fill joints, tape and apply jointing compound to give a flush, smooth surface suitable for redecoration.

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

To be read with Preliminaries/ General conditions.

TYPES OF FLOORING/ SHEATHING/ DECKING/ SARKING/ LINING/ CASINGS

- 485 WALL SHEATHING CEMENTITIOUS BOARD TO PARAPET WALL UPSTANDS AT ROOF
REFER TO DRAWING WD08
- Substrate: Steel framing.
 - Additional supports: timber studs.
 - Sheathing: Cement bonded particleboard to BS EN 634-2, class 1.
 - Manufacturer: Contractor's choice.
 - Product reference: Submit Proposals.
 - Thickness: 12mm.
 - Other requirements: Class 0 Fire Rating .
 - Setting out: Long edges vertical and centred on supports.
 - Expansion gap between adjacent boards: 2mm.
 - Fixing to supports:
 - Fasteners: 4.8 x 38 mm wing tip self-drilling fixing, 15 mm from edge.
 - Fixing centres (maximum):
 - Around board edges: 150 mm.
 - Along intermediate supports: 300 mm.
 - Fixing distance from edges (minimum): 15mm from bottom edge of board and 15mm mm from other edges.

WORKMANSHIP

- 910 INSTALLATION GENERALLY
- Timing: Building to be weathertight before fixing boards internally.
 - Moisture content of timber supports (maximum): 18%.
 - Joints between boards: Accurately aligned, of constant width and parallel to perimeter edges.
 - Methods of fixing, and fasteners: As section Z20 where not specified otherwise.
- 930 ADDITIONAL SUPPORTS
- Additional studs, noggins/ dwangs (Scot) and battens:
 - Provision: In accordance with board manufacturer's recommendations and as follows:
 - Tongue and groove jointed rigid board areas: To all unsupported perimeter edges.
 - Butt jointed rigid board areas: To all unsupported edges.
 - Size: Not less than 50 mm wide and of adequate thickness.
 - Quality of timber: As for adjacent timber supports.
 - Treatment (where required): As for adjacent timber supports.
- 940 BOARD MOISTURE CONTENT AND CONDITIONING
- Moisture content of boards at time of fixing: Appropriate to end use.
 - Conditioning regime: Submit proposals.
- 960 FIXING GENERALLY
- Boards/ sheets: Fixed securely to each support without distortion and true to line and level.
 - Fasteners: Evenly spaced in straight lines and, unless otherwise recommended by board manufacturer, in pairs across joints.
 - Distance from edge of board/ sheet: Sufficient to prevent damage.
 - Surplus adhesive: Removed as the work proceeds.

14th August 2018

Project Admiral

990 ACCESS PANELS

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

13th February 2018

Project Admiral Re-Cladding

L Windows/Doors/Stairs

L10 Windows/ Rooflights/ Screens/ Louvres

To be read with Preliminaries/ General conditions.

GENERAL**110 EVIDENCE OF PERFORMANCE**

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

120 SITE DIMENSIONS

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

140 CONTROL SAMPLES

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

150 DAYLIGHT PERFORMANCE

- Daylight calculations: In accordance with BS 8206-2 and CIBSE 'Lighting guide LG10'.
- BREEAM requirements:
 - Submit: Daylight performance schedule.
 - Calculations showing: Average daylight factor expressed as a percentage for each room/ area.

155 VIEW OUT

- Windows/ opening sizes and position: Design to meet BREEAM 'View out' criteria for relevant building type.
- Submit design plan and elevation drawings showing the following:
 - All BREEAM defined 'relevant areas' dependent on building type and room depths.
 - Actual or notional workstation/ desk layouts.
 - Window/ open areas.
- Submit site plan showing: Building location and proximity to external obstructions.

160 POTENTIAL FOR NATURAL VENTILATION

- Submit design plan and elevation drawings, and calculations confirming the following: Locations of openings and Types of windows/ ventilators (including trickle ventilation) and total openable areas..

PRODUCTS**205 WINDOW MATERIALS SPECIFICATION**

- Minimum BRE 'Green Guide to Specification Online' rating: A+.

360A PVC-U WINDOWS

- Standard:
 - Manufacture: To BS 7412.
- Manufacturer: A firm currently registered under a quality assurance scheme operated by a certification and inspection body accredited by the United Kingdom Accreditation Service (UKAS).

- Profile: To BS EN 12608.

COMPLIANCE STANDARDS:

A. The window/door system shall be Kite marked in compliance with BS 7412:1991 and BS 7950

(formerly PAS 011), using materials Type A complying with BS 7413:1991, and the window fabricator/installer shall be a Licensed Kite marked manufacturer to BS 7412 and BS EN ISO.9002:1987/BS 5750: Part 2:1987. and a full copy of his licence shall accompany the Tender.

B. The windows and doors and the installation shall comply with all current British Standards, Codes of Practice, Statutory Requirements and Building Regulations relevant to their performance.

C. The installer shall be a F.E.N.S.A. member.

MATERIALS:

A. Composition:

The material from which the profiles are made shall consist substantially of white or near white Hydro

Polymer high impact polyvinyl chloride. Only those additives and pigments may be used that are needed for the manufacture of the compound and its subsequent conversion into sound, durable extrusions of good surface finish and mechanical strength, as assessed by the requirements of this specification. B. Physical Properties:

The PVC materials from which the profiles are made shall conform to the specification given in Table 1.

The tests shall be carried out, with the exception of the impact test which is carried out on samples cut

from the face sides of extruded profile, on pressed plaques prepared from filled sheet, under standard

conditions as specified in ISO 1163/2 or as follows:-

The testing of materials to show compliance with the standards set out hereafter may, where applicable,

be carried out in accordance with the procedures detailed in Appendices D, E, F, G, H, I, J and K of the

trade standard for PVCU windows issued by the British Plastics Federation and the Glass and Glazing

Federation, November 1986 Issue 1. As shown in Table 1.

Test	Unit	Din	Standard	BS	Value
Density	g/cm ³	53479		± 0.2	Min 1.42 g/cm
Vicat softening temp	°C	53460	2782:120B	1983	Min 72°C
Tensile strength	N/mm ²	53455			
Elongation at fracture	%	53455	2782:320C	1983	
Strength of weld corner			50014		
Apparent modulus			BS2782 Method 335A Rate 5mm/min		2250 M pa min
Notch impact strength	KJ/m KJ/m ²	53453	2782:359 App K Trade Std App E		12km min
Modules elasticity	N/mm ²	53457	2782:335A	1983	300N/mm
Fire resistance	Item		2782/470pt.7 C 1		
Colour fastness (artificial ageing)	Item		Trade Std App K	BS 1006 A036	3/4 Shade on grey scale
Heat stability	Item		2782:130A	1983	Not less than 85 minutes
Weld factor	Item		Trade Std App L		Not less than 0.7
Resistance to impact at low temperature			Trade Std App J (1kg falling weight from 1 metre on profile at -10C)		No cracking
Retention to impact at low temperature			Trade Std App F		70% of original value
Heat reversion			Trade Std App H (200m of profile at 100C for 1Hr)		Max 2% Bead 3%
Heat stability			2782:Pt 1 Method 130A		Not less than 85 mins

C. Conditioning of Test Samples:

All samples shall be stored at 20+ -5°C and shall not be tested sooner than 16 hours after production.

Samples shall be conditioned and tested in accordance with requirements of the relevant appendix.

D. Appearance and Finish:

The colour of the profile shall be uniform and the colour of the profiles in a system shall be uniform. The profile shall be free from foreign bodies, cracks or sink marks when viewed by normal corrected vision at

90° to the surface and at a distance of 1 metre in normal diffused north light.

E. Dimensions and Weights:

The profiles shall be straight such that the longitudinal axis of the profile as measured on the face surfaces may deviate from the straight line by no more than 1mm/metre.

The cross section of the profile must conform in shape and dimension to the manufacturer's drawing.

Outer surface dimensions may deviate by no more than + -0.3mm glazing channels and seal grooves may deviate by no more than = -0.3mm. The weight of the profile per metre must not be more than 5% below the nominal value.

F. Heat Reversion:
When tested in accordance with BS 6375 pt 1 (1989) the mean maximum reversion shall not be greater

than 2%. There shall also not be more than a 0.4% variation between individual face sides of the same sample. The mean maximum reversion for glazing beads shall not be greater than 3% and there shall not be more than 0.6% variation between individual face sides of the same sample.

G. Fire Testing:

The construction of the windows and doors shall strictly adhere to the requirements for Class 1 surface spread of flame in accordance with BS476: Pt 7 1971

PERFORMANCE AND FUNCTIONAL REQUIREMENTS :

A. The window assemblies are to be manufactured and installed to the highest quality levels and the manufacturer/supplier must produce certified evidence that they comply with the following summarised standards:

1. The BPWG/GGF Trade Standards for UPVC Windows.
2. BS EN ISO 9001 and BS 9002 Schemes for: Quality Assurance Standards Management.
3. BS 5368:Parts 1 to 3 and BS 6375:Part 1 – Classification of Weather tightness Operation and

Strength Characteristics.

B. Windows must meet the following ratings in respect of Exposure Category B:

1. Air permeability 600 PA
2. Water tightness 300 PA
3. Wind resistance 2000 PA

Double glazing max: 1/175 deflections as laid down in BS 6375 Pt. 1. 1989.

U-Value of complete unit (glass and frame) to be 1.2W/m²K and to have a BFRC energy rating of 'B'

C. The performance of windows will be in accordance with:

BS6375 Pt. 1, BS EN 12207, BS EN 12208 and test method BS5368 Pt. 1 (1985), Pt. 4 BS EN1027 and BS EN 12211. Pt. 4 BS EN1027 and BS EN 12211.

BS5466 Pt. 1 (1977) and BS7479 1991 – Hardware and fixings.

BS5713 – Double glazed units.

BS6206 – Safety glass.

BS6262 and BS952 – Glass and glazing standards.

BS6399 Part 2 – Wind pressure standards.

BS7412 – Reinforcement and fixing of hardware.

BS7413 – PVCU extruded hollow profiles – type A.

BS7479 – 500 hour neutral salt spray test.

BS7950 – Enhanced security performance (formerly PAS011).

BS8213 – Window safety.

D. "Secured by Design " criteria shall apply.

E. Ground floor windows and doors and those easily accessible above ground floor must be successfully have been tested to BS7950:1997. Laminated glass to be as per Section L40 Clause 370 only.

F. Ground floor windows and doors and those that are easily accessible must have key operated locks

(unless designated "Egress"" in which case key locks are not permitted) and laminated glass external leaves. Toughened glass in these locations is not acceptable.

G. The structural frame assemblies and installations must be capable of withstanding and accommodating satisfactorily wind loads and pressures in accordance with the requirements of BS 6399, BS 6375 and BS 6262.

H. The window assemblies must incorporate concealed drainage dispersal methods that discharge clear of the structure.

I. All screws, nuts, bolts, rivets and other fastenings shall be of corrosion resistant or treated material,

eg. austenitic stainless or ferretic steel, bi-chromate treated steel and be compatible with other metallic

fixings used in the manufacture of the window, in accordance with BS 7412 and having been tested to

BS EN 1670:1998 Class 4.

J. Fastenings that are protected when the window is closed may alternatively be made from steel which has been finished by one of the following methods:-

- a) Zinc plated and passivated according to BS EN 12329, BS EN 12330.
- b) Hot dip galvanised according to the requirements of BS EN ISO 1461.
- c) Sheradised according to the requirements of BS 4921 (1998).

d) Sprayed with metal coating according to BS EN ISO 2063.

K. Generally, hardware and ironmongery fittings and fixings are to penetrate at least two thicknesses of the UPVC profile and/or penetrate the reinforcement by at least 2mm. Fixing positions shall comply with BS 8213.

WINDOW MANUFACTURE:

A. All joints associated with UPVC window frame and sashes are to be hot fusion welded and all shall meet the testing method in BS 2782.

B. The joints must be completely moisture resistant and not permit any penetration into the profiles either externally or internally.

C. The residue of material resulting from hot fusion welded joints are to be carefully removed and neatly routed to just below the surface leaving a uniformed recessed feature.

D. The overall size of the assembled frames shall be maintained within a permissible deviation of +/-

3mm. The framed assemblies shall be such that they can be installed square within a maximum difference

in the diagonals of 4mm. Several measurements of both width and height should be taken and the Contractor

must allow all tolerances necessary in order to take into account deviations of actual opening and expansion and contraction of the assembled units when fixed in position.

PROFILE SECTIONS:

All profile sections are to be multi-chambered extruded UPVC white in colour, 70mm wide with 60mm sashes. No reworked material must be used. The system must enable adequate drainage to be

incorporated away from the central reinforcement chamber, regardless of the positioning of the profile.

The raw material shall comply with the _British Plastics Window Group and Glass and Glazing Federation_

Trade Standard for UPVC windows. The profiles should resist normal weathering and the colour fastness

must be within BS 1006:1978 part 1. Profile to be of triple chamber construction to enable any reinforcement

to be isolated from the drainage channels, except the vent profile which is to have four chambers enabling all gearing to be fitted without breaking into the glazing of reinforcement chambers. Nominal

external wall thickness of 2.5mm -0.00 +0.30. Internal wall thickness to be of a nominal 1.2mm.

REINFORCEMENT AND STRUCTURAL COLUMNS:

A. All sections shall be reinforced in order to resist wind and operating loads and should be made from

either Aluminium, Stainless Steel or Galvanised Mild Steel and

shall conform with the respective _British Standards_ BS 1473: 1982, Grade 6003 or 6082 (Aluminium), BS

1449:1983, Part 2, Grade 304 (Stainless Steel), BS

2989:1982, Grade 275N (Galvanised Mild Steel).

B. The reinforcement is to be fixed to the profiles at 300mm centres. The chambers accommodating

reinforcement must be sealed in order to eliminate any possible ingress of moisture.

C. Note: The reinforcement shall be identical to that described in the type testing results to BS 7412 and details must be made available on detailed drawings.

D. Where windows cannot achieve the gusting requirements of this document (in accordance with type

testing to BS 7412) they shall be sub-divided with columns incorporated between the divisions. These structural columns shall meet the gusting requirements specified and be expressed in Pascals.

E. Each window shall be permanently marked or labelled in an unobtrusive position that cannot be seen when the window is shut. This shall give the name or trademark of the fabricator.

F. Reinforcement shall be close fitting within the cavities of the profile into which it is to be inserted and secured in place with the appropriate non-corrosive screws at a maximum of 300mm centres.

Reinforcement shall be taken to within 50mm of welded sections.

POSITION OF WINDOW FURNITURE:

A. Window furniture to opening lights is to be positioned so that the handle etc can be easily operated by the resident whilst standing with their feet on the floor.

B. Window furniture in kitchens and bathrooms is to be positioned on the opening light such that it can be easily reached by an average sized person leaning over sanitary and kitchen fittings ie below the centre line within the limit of the design of the window.

GLASS AND GLAZING:

A. All windows are to be glazed with clear (obscure in bathrooms/wc) 28mm double glazed sealed units

and shall comply with BS 5713:1979. Specification for hermetically sealed double glazed units. The glass

shall be free from bubbles, scratches and other flaws and conform to BS 952, Part 1: 1995 – Glass for

Glazing and BS 6262: 1982 Code of Practice for glazing of buildings. The glass shall be retained by suitable

UPVC snap-on beads matching existing frame.

B. Toughened glass is to be used in all locations required by the Building Regulations current at the time of tender (except where 'Secured by Design' criteria apply where laminated glass shall be used).

C. Where 'Secured by Design' criteria apply the outer pane of glass shall be laminated. This shall apply

to all windows and doors in accordance with Section L40 Clause 370 unless otherwise noted on the drawings. This Clause must be read in conjunction with Glazing Schedule at the end of this Specification.

E. All glazing shall be internally glazed and held securely in position and must comply with BS 6262.

Provision must be allowed for drainage of any ingress of moisture, satisfactorily to the outside.

Glazing gaskets may either be continuous or cut and struck in corners used. Drainage caps where accessible shall be glued in position.

GLAZING GASKETS AND WEATHER STRIPPING:

A. Glazing gaskets and weather stripping materials should not have a detrimental effect on the plastic

profiles. The rubber based compounds shall conform to BS 4255:1967:Part 1

_Preformed rubber gaskets for weather exclusion from buildings.

LOCKING MECHANISMS:

A. Windows to be fitted with High Security Window Locking Mechanism.

B. To include automatic dual action enclosed, system specific, self locating Rogard Supreme Plated Seal

keeps giving optimum penetration and security. With integral acuzinc bi-directional gearbox endurance

tested to 50,000 cycles of operation without demonstrating any significant deterioration and deformation that would inhibit its function.

C. Bar with spun riveted adjustable mushroom headed cams to be manufactured from Ferretic Steel.

D. Max height of window handles 1200mm and locking requirements

HARDWARE AND IRONMONGERY:

A. Friction hinges to be manufactured from Austenitic 304 Stainless or Ferretic Steel. When subject to

500 hours neutral salt spray test the hinge will remain functional with no significant surface pitting caused by corrosion. All to BS 7479.

B. All friction hinges should be capable of sustaining 50,000 cycles of operation without demonstrating

any significant deterioration and deformation that would inhibit their function. All hinges should be approved to BS 7412 and should incorporate a riser block to all side hung installations. Friction adjustment

should not rely on metal to metal contact but should be achieved by a metal cam working via a thermoplastic block to provide precise long lasting friction adjustment. All hinges should incorporate nylon washers

between all pivot points to minimise metal to metal contact and thermoplastic asymmetric end cap to ensure smooth location and weathertight sealing.

D. All windows to be fitted with restrictor hinges to permit the windows to open to 100 mm maximum in

the restricted position. On restricted hinges the release mechanism shall be an integral part of the hinge

and shall self relocate in one action on closure of the vent. All components, rivets and pins should withstand

a force of 600 Newtons to comply with BS 6375:Part 2 and BS 8213:Part1:1990. All side hung windows can be

restricted by a single restrictor hinge positioned at the bottom of each casement. All to meet BS 6375:Part 2 and BBA Approval Ref:1227.

E. All ground floor and non fire escape first window, irrespective of size will each have two fixed integrated

restrictor hinges of maximum length within each opening - limiting opening to 100 mm

F. All ground floor windows and any designated vulnerable windows to be fitted with the ancillary security

devices as hinge protection. This device is to be of a type of "non-contact" in normal operation of the window and passivated to withstand 500 hour neutral salt and spray test. To meeting BS 7950.

G. The hinge manufacturers sizes and weights limitations must be strictly observed. It is the responsibility of the fabricator to ensure the correct size of hinge is chosen for the weight of each opening casement or sash.

Two fixed intergrated restricot hinges.

H. The locking mechanism is to be a Shoot Bolt Locking System operated by a single handle. Profile system specific

zinc die cast alloy keeps should allow for secure night vent position. Abuse tested to 45 N with keeps blocked. Gearbox

is to be sealed to stop the ingress of swarf during manufacture and use. All components to be proven fully functional

after 500 hours neutral salt spray test to BS 7479. All components should be supplied under the auspices of an official licence holder of the Home Office "Secured by Design" partnership and to comply with BS 7950 accreditation.

I. Operating handles to be push to release, key deadlocking, offset, white polyester powder coated with push to fit screw covers. One key is to be supplied with each handle.

490A SMOKE EXTRACT/ VENTILATOR

- Manufacturer: Colt International Ltd. - Web: www.coltinfo.co.uk.
 - Email: info@coltgroup.com.
 - Product reference: Apollo natural flap ventilator
- Size:
 - Throat width: 1200mm.
 - Throat length: 1200mm.
- Fixing type:
 - Aluminium base profile to suit: Curb.
- Frame finish: Mill aluminium.
- Base: Insulated.
- Top flaps: 16 mm clear polycarbonate, 7 skins, 6 chambers.
- Control:
 - Type: 24 V DC.
 - Locking: Failsafe open.

510A GLAZING

- Manufacturer: Pilkington United Kingdom Ltd. - Web: www.pilkington.co.uk.
 - Email: pilkington@respond.uk.com.
 - Product reference: Pilkington Pyrodur® Plus Clear Fire Resistant

650A METAL LOUVRES

- Manufacturer: Colt International Ltd. - Web: www.coltinfo.co.uk.
 - Email: info@coltgroup.com.
 - Product reference: Universal Louvre - E Series Extruded rain defence louvre
- Size: As drawings.
- Materials:
 - Finish: Polyester powder coated, RAL 7015. Coverage: Total.
- Frame: Internal flange frame.
- Guards: Insect mesh [OS1].
- Ancillary items: None.
- Blanking panels: Single skin aluminium - polyester powder coated.
- Fixing: Bolted to Substrate.

650B LOUVRED GLAZED VENTILATOR

- Manufacturer: Colt International Ltd or Equivalent - Web: www.coltinfo.co.uk.
 - Email: info@coltgroup.com.
 - Product reference: Coltlite CLN glass louvred ventilator
- Size (overall): 450mm x 2000mm.
- Louvre:
 - Type: 28 mm toughened glass.
 - Louvre dimensions: 400mm x 1900mm.
- Colour/ Finish: Polyester powder painted, RAL.
- Controls: 24 V DC actuator.

EXECUTION**710 PROTECTION OF COMPONENTS**

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

730 PRIMING/ SEALING

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

755 PVC-U WINDOW INSTALLATION

- Standard: In accordance with clause 783 and British Plastics Federation 'Code of practice for the survey and installation of windows and external doorsets'.

760 REPLACEMENT WINDOW INSTALLATION

- Standard: To BS 8213-4.

765 WINDOW INSTALLATION GENERALLY

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

766 LOCATION OF OPENABLE WINDOWS IN NATURALLY VENTILATED BUILDINGS

- Location: Over 10 m from sources of external pollution.

770 DAMP PROOF COURSES IN PREPARED OPENINGS

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

783 FIXING OF PVC-U FRAMES

- Standard: As section Z20.
- Fasteners: Stainless steel wood screws.
 - Spacing: When not predrilled or specified otherwise, position fasteners 150-250 mm from ends of each jamb, adjacent to each hanging point of opening lights, but no closer than 150 mm to a transom or mullion centre line, and at maximum 600 mm centres.

790 FIRE RESISTING FRAMES

- Gap between back of frame and reveal: Completely fill with intumescent mastic or tape.

820 IRONMONGERY

- 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.
- Checking/ Adjusting/ Lubricating: Carry out at Completion and ensure correct functioning.

L20 Doors/ shutters/ hatches**To be read with Preliminaries/ General conditions.****GENERAL****110 EVIDENCE OF PERFORMANCE**

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

112 TIMBER PROCUREMENT

- Timber (including timber for wood-based products): Obtained from well-managed forests and/ or plantations in accordance with:
 - The laws governing forest management in the producer country or countries.
 - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
 - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
 - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood-based products.
- Certification scheme: . - Other evidence: .

115 FIRE RESISTING DOORS/ DOOR ASSEMBLIES/ DOORSETS

- Door products: As defined in BS EN 12519.
- Evidence of fire performance: Provide certified evidence, in the form of a product conformity certificate, directly relevant fire test report or engineering assessment, that each door/ door assembly/ doorset supplied will comply with the specified requirements for fire or smoke resistance if tested to BS 476-22, BS EN 1634-1 or BS EN 1634-3. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.
- Components, assemblies or sets will be marked to the relevant product standard and/ or third party certification rating.

120 NON FIRE RESISTING DOORS/ DOOR ASSEMBLIES/ DOORSETS

- Provide certified evidence, in the form of a product conformity certificate or engineering assessment, that each door/ doorset/ assembly supplied will comply with the specified requirements to BS EN 14351-1. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.
- Components and assemblies will be marked to the relevant product standard and/ or third party certification rating.

150 SITE DIMENSIONS

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

170 CONTROL SAMPLES

- Procedure:
 - Finalize component details.
 - Fabricate one of each of the following designated items as part of the quantity required for the project.
 - Obtain approval of appearance and quality before proceeding with manufacture of the remaining quantity.
- Designated items: Internal and External Doors.

PRODUCTS**200 ALUMINIUM THERMALLY BROKEN DOORS MAIN ENTRANCE DOORS**

The following specification shall be read in conjunction with Architect series drawings

Generally:

Thermally broken aluminium doors shall be manufactured from thermal door system. The system shall be offered in a PPC colour finish and shall be able to contain glazed units and inserts as described in their appropriate specification clause.

Fabrication Partners:

A list of specific and approved fabrication partners for this installation shall be made available on request. The glazing contractor shall make provision for producing construction drawings for approval prior to commencing works.

Product Reference:

Submit proposals based on thermal door system.

Materials:

All profiles to be extruded from aluminium alloy 6060 T6, T5 or T4 to BS EN 12020-2; 2008 / BS 755-9; 2008 and where thermally broken, with polyamide thermal break sections manufactured from glass reinforced nylon sections capable of withstanding temperatures in excess of 200 °C.

Finish :

The finish to all aluminium profiles shall generally be Polyester Powder Coated to BS EN 12206 in a standard RAL 7015 colour to satisfy a corrosion classification as defined by the paint supplier. All powder coating shall be supported by a manufacturers/applicators guarantee for a standard finish subject to the applicators approval.

Colour: RAL 7015

It will be the responsibility of the fabricator/installer to ensure that all profiles, panels, flashings, and other necessary trims associated with his works that require powder coating are processed in accordance with the corrosion classifications laid down in ISO 12944 – 2.

Performance:

When tested with a fully rebated frame surround, the doors achieved Class IV weather tightness as defined by BS 6375 part 1. (Air 600 Pa class IV, Water 600 Pa, and Wind 2400 Pa)

Exposure:

Design Wind Pressure to be determined in accordance with BS 6399 - Part 2: 1997.

Thermal Performance:

All glazed screens, windows, doors and their respective inserts, in conjunction with the appropriate glazing specification, shall be capable of meeting the current approved Building Regulations. Details/evidence of all calculations/methods of determining the required project average U-value for windows, screens and doors shall be submitted by the glazing contractor with all tender submissions for approval (NOTE glazing shall achieve 1.0 W/m²K centre pane value and 1.2 W/m²K overall unit value). Further details illustrating actual U-values for each individual window design, detailing the applicable frame, glazing and whole window U-values, and the total average U-value for all the windows, demonstrating a compliant design, in accordance with the methods stated within approved local Building Regulations are to be submitted to the project Architect for approval. The thermal transmission coefficients are to be calculated using EN ISO 100771:2006 or DIN V 4108-4: 06.20007 for insertion units and windows and doors (U_w) and EN 13947:2006 for curtain walling (U_{cw}).

Air Tightness:

The air tightness of the doors must be installed in line with current legislation and CWCT recommendations (Centre for Window and Cladding Technology, Bath University). All door/screens are to have a continuous EPDM barrier fitted to the perimeter by the glazing contractor. All interface details are to be applied and installed as per the specified details developed by the project Architect/Designer, and/or in conjunction with the Accredited Details as published by Building Control.

Air Permeability:

The maximum permissible air exfiltration rate through the curtain walling, windows, doors and rooflights must not exceed 3 m³/(h.m²)@50Pa (or as required)

Structure:

All structural profiles to be designed so as the maximum deflection of any member shall not exceed L/175 of its span with any evidence of any permanent deformation once the load has been removed. All vents shall be sized in accordance with the guidelines detailed in manufacturers technical literature.

Construction:

All windows are to be manufactured and installed to comply with the recommendations of BS4873. The system will have passed BS 7950 incorporating Amendments 1, 2 and 3 "Specification for Enhanced Security Performance". All windows shall be manufactured, installed and glazed in strict accordance with the Systems Company's instructions and guidelines as set down in the appropriate technical literature, details and specifications. Minimum depth of outer frame sections shall be 50mm incorporating 20mm polyamide thermal break sections within the window profiles. All outer frame and vent frame members to be 45° mitred corner construction, reinforced by means of extruded aluminium cleats and stainless steel corner braces. All corner joints to be secured by pneumatically crimping into both corner cleats, and secured with a two part adhesive (MT1803) to increase the stability of the joints. All mullions and transoms shall be square cut, shaped and secured using suitable stainless steel screws driven into integral screw ports within the sections where required. Cruciform cleats to be used where required. All corner joints and T joints should be sealed during construction using suitable 'small gap' sealant (MT819) and two part adhesive to increase the stability of the joints. All gasket joints within the frame must be sealed using a suitable sealant to prevent water ingress (HR50328). Drip rails shall be fixed to the top of each sash vent. Where the windows are joined they shall be coupled as detailed in the Systems Company's technical literature. All windows shall be manufactured in compliance with BS 4873 and BS8200. It shall be the responsibility of the glazing subcontractor to submit details/evidence of all structural calculations/methods of determining the required profiles for windows, screens and doors on each project with all tender submissions for approval. An appropriate coupling detail is to be utilised. Corner windows are to be constructed using the dedicated extruded corner post section. The proposed system shall incorporate specially designed bespoke thermal gaskets and cellular foams to offer improved thermal performance, over and above standard polyamide thermal break windows. To achieve the desired overall U values these inserts MUST be included with this project.

Air Tightness:

The air tightness of the windows must be installed in line with current legislation and CWCT recommendations (Centre for Window and Cladding Technology, Bath University). All windows are to have a continuous EPDM barrier fitted to the perimeter by the glazing contractor. All interface details are to be applied and installed as per the specified details developed by the project Architect/Designer, and/or in conjunction with the Accredited Details as published by Building Control.

Air Permeability:

The maximum permissible air exfiltration rate through the curtain walling, windows, doors and rooflights must not exceed 3 m³/(h.m²)@50Pa (or as required)

Glazing System:

All double-glazed units, panels and inserts shall be supported continuously along all four edges by specialised glazing support blocks. All windows shall be dry glazed using 'snap in' extruded aluminium beads with standard colour coded, co-extruded PVC Nitrile captive 'E' gaskets externally and wedge gasket internally. The corners of the gaskets shall be accurately mitred together and sealed to ensure an effective joint. Setting blocks and location pieces shall be fitted in accordance with BS 6262 in order to ensure the windows are maintained square and rigid. The windows shall incorporate an internal pressure equalised drainage system with external snap on cover caps.

Sealed Unit Details:

All glazed windows and sash vents shall contain sealed units, which shall be manufactured in accordance with BS EN 1279 Parts 2 and 3 and carry the necessary and appropriate guarantee.

Float glass Soft Coat Low E

Argon Filled Cavity

Warm edge spacer bar

Obscure patterned glass where required

Safety glass where required

All glass shall be in compliance with the local Building Regulations. The exact glass specification will

be determined by the Uw and all applicable and stated project specific requirements and regulations, all confirmed by the Glazing Sub-Contractor. All glazing shall achieve 1.0 centre pane value and 1.2 overall unit value.

All glazing shall conform to BS6262 and/or BS EN12600.

Panels:

Where indicated, insulated panels constructed from 2 x 1.5mm flat aluminium sheets, powder coated finish to selected colour(s), bonded to 25mm high density insulation. Taped edges

Glazing details:

As required by the Building Regulations, each window / door shall incorporate a trickle ventilator

(either 'overglass' or 'thru-frame' type) and shall be polyester powder coated to match the window

profiles. They should be fitted with an external, aluminium hood. Each trickle vent must be capable of providing a minimum Available Air Opening in accordance with the Northern Ireland Building Regulations..

Glazing contractor is to propose type and operation. Contract Administrator (CA) is to confirm all prior to order and manufacture.

Ironmongery/ Accessories:

The door / window system shall be manufactured, supplied and installed in strict accordance with the criteria laid down in BS 7950. The window system shall have been proven to pass the relevant performance tests

associated with the same. The appointed glazing contractor should take into consideration the relevant design criteria laid out in the Building Regulations for the safe opening and closing of windows and natural ventilation.

Compatibility of the ironmongery with the choice of system is essential prior to tender. All sash vents are to fall within the parameters (Widths, Heights and Weights) stated in the Systems Company's Technical Manuals.

Hinges:

All opening sash vents shall be fitted with a pair of stainless steel friction hinges sized in accordance with the

Systems Company's technical literature and fitted in accordance with the manufacturer's recommendations.

Opening sash vents which are deemed to be 'egress' or 'easy clean' are to be clearly noted as such, designed accordingly, and include the necessary ironmongery.

Handles:

Low level opening sash vents (those with handles at less than 1.9m from FFL unobstructed, or

1.7m from FFL obstructed) shall be operated by a single espagnolette locking handle, offering multi-point locking. The mechanism shall consist of a single locking handle with a standard 'Euro' espagnolette drive unit and compression locking keeps.

Fixing screws for handles

should be applied with lock nut adhesive to prevent removal. (Upper vents that are deemed unreachable for normal hand operation shall use adapted 'Window Pull Mechanism' to allow simple operation by the accessory, one supplied per applicable room)

Restrictors:

In accordance with BS8213 and any other required safety standard, all lower opening sash vent frames shall be fitted with one non-releasable locking restrictor. These will restrict the window opening to 100mm. These should be fitted to the supplier's recommendations and as detailed in their technical literature.

Additional Components: Each opening vent must be fitted with a pair of ancillary hinge security devices secured with M5 rivets to comply.

" Fixing: All fixings shall be in strict accordance with the Systems Company's instructions and guidelines as detailed in

their technical literature and in accordance with the relevant British Standards, including BS6262, and shall ensure the window is retained securely within the opening without incurring any damage or distortion to the window frame.

Generally fixings to be positioned 150mm from each corner and each mullion/transom and at centres not exceed 600mm

where window inserts are not directly installed into the curtain walling. Fixing lugs/straps only to be used where they

can be suitably concealed to approval. All fixing of the windows to the building structure to be achieved using a suitable lug and/or frame anchor fixing method capable of accommodating all applicable loads, deflection, tolerances and expansion expected on site. Details of the proposed fixing method shall be submitted to the CA for approval prior to installation.

Cill liners:

Doors / window shall incorporate flush cill liner profile (043-040) to accommodate made to measure bespoke push fit aluminium cill pressing c/w welded end caps. Designed by glazing contractor, and approved by CA prior to manufacture and installation.

Accessories: All aluminium flashings, sills and other perimeter trims necessary to ensure the performance of the glazing system shall be the responsibility of the glazing sub contractor and shall be designed, fabricated, finished, install, secured and sealed in accordance with the Systems Company's instructions and guidelines as detailed in their technical literature. It will be the responsibility of the fabricator/installer to ensure that all profiles, panels, flashings, pressings and other necessary trims associated with his works is processed in one batch to ensure continuity of finish. All decorative flashings/trims etc&required in addition to those indicated above, and intended to be the responsibility of the glazing contractor, should be clearly indicated by the CA.

Installation:

The 'CWCT Standard for Systemised Building Envelopes' is to be used as a reference for all projects containing curtain walling, windows and doors. Screenwork/doors should be installed by experienced and qualified personnel, possessing either a recognised and relevant NVQ, or CWCT Window Installers qualification.

Warranty:

Contractor to provide min. 15 year guarantee for entire window system including all components of the system.

Accreditation:

The appointed Systems Company is to have ISO 9001 Quality Management Standard, and ISO 14001 Environmental Management Systems Standard

- 430A WOOD DOORSETS Internal Pre Finished FD30 Doors
- " Fire resistance rating: To BS 476-22, 30 minutes integrity.
 - " Sound insulation requirement: Perimeter seals (30bBA Standard) only.
 - " Door leaf: 44mm paint grade hardwood flush door Fire Grade (FD30 Standard) solid core door with veneered or factory sprayed finish, widths as shown on drawings to fit in a structural opening 2100mm high - Core:
 - Components:
 - Stiles: Hardwood min 38mm (nominal width)
 - Rails (outer): Hardwood min 38mm (nominal width)
 - Rails (inner): Hardwood
 - Core: Flaxboard (approximate density 350kg/m³) or Tubular chipboard (approximate density 450kg/m³)
 - Lockblock: Incorporated into the Flaxboard or Tubular chipboard
 - core. - Facings: Hardwood - Lippings: Unlipped.
 - Finish as delivered: Doors are to come fully finished with a wood grain finish. " Frame and architraves:
 - Wood species: European whitewood.
 - Appearance class to BS EN 942:
 - Standard: BS EN 942 1996, Clause 5.2 Table 1 (Class J40) or better (for softwood)
 - Density: minimum 510kg/m³
 - Section size: minimum 125mm by 32mm plus 19mm stop rebated from solid or planted 44mm wide by 19mm thick. The stop may be machined from solid timber, glued and pinned or pinned only using 40mm long steel pins.
 - Finish as delivered: Full paint system, as section M60.
 - Preservative treatment: Organic solvent as section Z12 and WPA Commodity Specification C5; Desired service life: 30 years.
 - " Glazing details: Not applicable.
 - Beading: Not applicable.
 - " Moisture content on delivery: 6-10% .
 - Ironmongery:
 - Hinges: Hinges shall be CE marked for use on fire resisting timber doors, in addition to the specifications below:
 - Number: Doors up to 2400 mm high 3 No. per leaf Doors larger than 2400 mm high 4 No. per leaf
 - Type: Stainless Steel butt hinges, journal supported loose pin type. Any washers or ball bearings to be of stainless steel.
 - Positions: Centrally in the leaf height, 150mm from the head of the leaf and 225-250mm from the base of the door leaf.
 - Size: Height: 100mm, Blade width: 26 - 36mm, Thickness: 2-3mm thick, Knuckle dia: 12mm maximum
 - Fixings: Steel screws, minimum 4 No. per hinge and no smaller than No. 8 by 32mm long.
 - Handles: Satin stainless steel bolt through lever type.
 - Locks: Bathroom locks only (not key operated)
 - Refer to separate Ironmongery Schedule for additional specification details)..

" Perimeter seals: Fire and smoke seals to jambs and heads of all doors to be minimum 10mm wide by 4mm thick in the centre of the door leaf edge. "

Fixing: Plugged and screwed as section Z20

Jointing: Mortice and tenon or half lapped joint with the head fixed to the jambs with two steel fixings.

Door to frame gaps: Not to exceed 3mm except at threshold where up to 10mm is permitted

Maximum Trim: 6mm from the bottom of the door and 4mm from each vertical edge. The top of the door is not allowed to be trimmed due to the BWF-CERTIFIRE fire certification label and manufacturing identifications.

Installation Note: The doors must be tested to BS476 pt 22:1987 and are approved by BWFCERTIFIRE of being capable of achieving 30 minute fire resistance when fitted in accordance with the installation instruction delivered with every door. All doors must be fitted with intumescent strips to the head and sides of the door leaf or frame. Cutting of apertures or glazing on site is not permitted and invalidates the fire certification. Third party BWF-CERTIFIRE licensed members are able to complete this ancillary work when required..

" Note: Doors must be fitted with complete with proprietary intumescent strip (fitted either to door or door frame in accordance with fire certificate) and extruded PVC acoustic smoke 'perimeter' seals (to be discretely fitted in protected covers at doors stops). Self-closing devices or acoustic 'drop' seals are not required.

- 430B WOOD DOORSETS Internal Pre Finished FD60 Doors
- " Fire resistance rating: To BS 476-22, 60 minutes integrity.
 - " Sound insulation requirement: Perimeter seals (60bBA Standard) only.
 - " Door leaf: 44mm paint grade hardwood flush door Fire Grade (FD60 Standard) solid core door with veneered or factory sprayed finish, widths as shown on drawings to fit in a structural opening 2100mm high - Core:
 - Components:
 - Stiles: Hardwood min 38mm (nominal width)
 - Rails (outer): Hardwood min 38mm (nominal width)
 - Rails (inner): Hardwood
 - Core: Flaxboard (approximate density 350kg/m³) or Tubular chipboard (approximate density 450kg/m³)
 - Lockblock: Incorporated into the Flaxboard or Tubular chipboard
 - core. - Facings: Hardwood - Lippings: Unlipped.
 - Finish as delivered: Doors are to come fully finished with a wood grain finish. " Frame and architraves:
 - Wood species: European whitewood.
 - Appearance class to BS EN 942:
 - Standard: BS EN 942 1996, Clause 5.2 Table 1 (Class J40) or better (for softwood)
 - Density: minimum 510kg/m³
 - Section size: minimum 125mm by 32mm plus 19mm stop rebated from solid or planted 44mm wide by 19mm thick. The stop may be machined from solid timber, glued and pinned or pinned only using 40mm long steel pins.
 - Finish as delivered: Full paint system, as section M60.
 - Preservative treatment: Organic solvent as section Z12 and WPA Commodity Specification C5; Desired service life: 30 years.
 - " Glazing details: Not applicable.
 - Beading: Not applicable.
 - " Moisture content on delivery: 6-10% .
 - Ironmongery:
 - Hinges: Hinges shall be CE marked for use on fire resisting timber doors, in addition to the specifications below:

Number: Doors up to 2400 mm high 3 No. per leaf Doors larger than 2400 mm high 4 No. per leaf

Type: Stainless Steel butt hinges, journal supported loose pin type. Any washers or ball bearings to be of stainless steel.

Positions: Centrally in the leaf height, 150mm from the head of the leaf and 225-250mm from the base of the door leaf.

Size: Height: 100mm, Blade width: 26 - 36mm, Thickness: 2-3mm thick, Knuckle dia: 12mm maximum

Fixings: Steel screws, minimum 4 No. per hinge and no smaller than No. 8 by 32mm long.

Handles: Satin stainless steel bolt through lever type.

Locks: Bathroom locks only (not key operated)

Refer to separate Ironmongery Schedule for additional specification details)..

" Perimeter seals: Fire and smoke seals to jambs and heads of all doors to be minimum 10mm wide by 4mm

thick in the centre of the door leaf edge. "

Fixing: Plugged and screwed as section Z20

Jointing: Mortice and tenon or half lapped joint with the head fixed to the jambs with two steel fixings.

Door to frame gaps: Not to exceed 3mm except at threshold where up to 10mm is permitted Maximum Trim: 6mm from the bottom of the door and 4mm from each vertical edge. The top of the door is not allowed to be trimmed due to the BWF-CERTIFIRE fire certification label and manufacturing identifications.

Installation Note: The doors must be tested to BS476 pt 22:1987 and are approved by BWFCERTIFIRE

of being capable of achieving 30 minute fire resistance when fitted in accordance with the installation

instruction delivered with every door. All doors must be fitted with intumescent strips to the head and sides of the door leaf or frame. Cutting of apertures or glazing on site is not permitted and invalidates the fire certification. Third party BWF-CERTIFIRE licensed members are able to complete this ancillary work when required..

" Note: Doors must be fitted with complete with proprietary intumescent strip (fitted either to door or door

frame in accordance with fire certificate) and extruded PVC acoustic smoke 'perimeter' seals (to be discretely fitted in protected covers at doors stops). Self-closing devices or acoustic 'drop' seals are not required.

520A INLINE SLIDING PVC-U PATIO DOORS

- Manufacturer: Eurocell.
 - Web: www.eurocell.co.uk.
 - Email: cpd@eurocell.co.uk.
 - Product reference: Inline Sliding PVC-U Patio Doors
- Size: AS PER WINDOW AND DOOR SCHEDULE.
- Profile:
 - Type: Chamfered.
 - Configuration: Two pane.
- Colour/ Finish:
 - Internal: White.
 - External: White.
- Glazing: Double Glazed.
- Ironmongery: As per schedule.

630 HATCHES TO SERVICES AREAS ON ROOF L20-126 & 127

- Manufacturer: Contractor's choice.
 - Product reference: Hardwood Doors.
- Performance: Wind resistance/ air tightness.
- Operation: Lockable.
- Other requirements: Varnish as per Section M60.

EXECUTION**710 PROTECTION OF COMPONENTS**

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

730 PRIMING/ SEALING

- Wood surfaces inaccessible after installation: Primed or sealed as specified before fixing components.

750 FIXING DOORSETS

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

760 BUILDING IN

- General: Not permitted unless indicated on drawings.

770 DAMP PROOF COURSES ASSOCIATED WITH BUILT IN WOOD FRAMES

- Method of fixing: To backs of frames using galvanized clout nails.

780 DAMP PROOF COURSES IN PREPARED OPENINGS

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

790 FIXING OF WOOD FRAMES

- Spacing of fixings (frames not predrilled): Maximum 150 mm from ends of each jamb and at 600 mm maximum centres.

800 FIXING OF LOOSE THRESHOLDS

- Spacing of fixings: Maximum 150 mm from each end and at 600 mm maximum centres.

809 FIRE RESISTING/ SMOKE CONTROL DOORS/ DOORSETS/ ROLLER SHUTTERS/ CURTAINS

- Installation: By a firm currently registered under a third party accredited fire door installer scheme in accordance with instructions supplied with the product conformity certificate, test report or engineering assessment.

820 SEALANT JOINTS

- Sealant:
 - Manufacturer: Contractor's choice .
 - Product reference: Contractor's choice .
 - Colour: White .
 - Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.

830 FIXING IRONMONGERY GENERALLY

- Fasteners: Supplied by ironmongery manufacturer.
 - Finish/ Corrosion resistance: To match ironmongery.
- Holes for components: No larger than required for satisfactory fit/ operation.

- Adjacent surfaces: Undamaged.
- Moving parts: Adjusted, lubricated and functioning correctly at completion.

840 **FIXING IRONMONGERY TO FIRE RESISTING DOOR ASSEMBLIES**

- General: All items fixed in accordance with door leaf manufacturer's recommendations ensuring that integrity of the assembly, as established by testing, is not compromised.
- Holes for through fixings and components: Accurately cut.
 - Clearances: Not more than 8 mm unless protected by intumescent paste or similar.
 - Lock/ Latch cases for fire doors requiring ≥ 60 minutes integrity performance: Coated with intumescent paint or paste before installation.

850 **LOCATION OF HINGES**

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

860 **INSTALLATION OF EMERGENCY EXIT DEVICES**

- Standard: Unless specified otherwise, install panic bolts/ latches in accordance with BS EN 1125.

L30 Stairs/ ladders/ walkways/ handrails/ balustrades

To be read with Preliminaries/ General conditions.

PRELIMINARY INFORMATION/ REQUIREMENTS**130 SITE DIMENSIONS**

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
 - Designated items: HANDRAILS TO PARAPET WALLS AT ROOF.

COMPONENTS**250A METAL STAIRS Contractor Designed Element - Refer to dwgs - WD03 & WD10**

- Component materials/ grades: Submit Proposals
 - Tread / Walkway infill: Galvanised Mild Steel Serrated bearing bars, control and filler bars, not permit passage of a 35mm ball (35mm ball-proof) to BS4592: Part 0: 2006 +A1: 2012.
 - Tread / Walkway infill Loadings: Submit Proposals.
 - Slip resistance value of integral tread - water wet (minimum): Not applicable.
 - Slip resistance value of integral nosing - water wet (minimum): Not applicable.
 - Colour of integral nosing: Yellow.
- Risers: Submit Proposals.
- Strings: Submit Proposals..
- Guarding: Contractors Choice Posts Contractors Choice.
- Handrails: Contractors Choice.
- Infill: Contractors Choice.
- Finish: Primed Paint
- Finish as delivered: Galvanized to BS EN ISO 1461.
- Workmanship: To section Z11.
- Fixings: Submit Proposals.
- Other requirements: Applied slip resistant nosings with visual contrast.

410A STEEL LADDERS Contractor Designed Element - Refer to drawing WD10

- Manufacturer: Contractor's choice.
 - Product reference: Submit Proposals.
- Standard: To BS 4211.
- Size: 600mm Wide / 200mm Deep / 589mm High
- Safety hoops: Not required.
- Platforms: Not required.
- Finish as delivered: Galvanized to BS EN ISO 1461.
- Other requirements: Applied slip resistant nosings with visual contrast.
- Fixing: Bolted to wall.

580 PROPRIETARY HANDRAILS TO PARAPET WALLS AT ROOF EXTERNALLY

- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Component material and finish as delivered:
 - Handrails: Stainless steel - satin polished.
 - Lower handrail: Stainless steel - satin polished.
 - Brackets: Stainless steel.
- Other requirements: Stainless Steel uprights.
- Fixing: Side fixed to steel. - Centres: 1m.

580A PROPRIETARY HANDRAILS TO ROOF ACCESS STAIRS

- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Component material and finish as delivered: - Handrails: Submit Proposals.
 - Lower handrail: Submit Proposals.
 - Brackets: Stainless steel.
- Other requirements: None.
- Fixing: Side fixed to steel.
 - Centres: Submit Proposals.

INSTALLATION**630 CORROSION PROTECTION OF DISSIMILAR MATERIALS**

- 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

- Fasteners and methods of fixing: To section Z20.
- Structural members: Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
- Temporary support: Do not use stairs, walkways or balustrades as temporary support or strutting for other work.
- 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**910 INSPECTION**

- Timing: Two weeks after request by Contract Administrator.
- Period of notice (minimum): 5 working days.

920 DOCUMENTATION

- Contents:
 - Copies of structural design calculations/ test reports.
 - General product information.
 - Installation information.
 - Inspection and maintenance reports.
- Number of copies: 2.
- Submission: Two weeks after request by Contract Administrator .

L40 General glazing

To be read with Preliminaries/ General conditions.

GENERAL REQUIREMENTS

- 111 **PREGLAZING**
- Preglazing of components: Permitted.
 - Prevention of displacement: Submit details of precautions to be taken to protect glazing and compound/ seals during delivery and installation.
 - Defective/ displaced glazing/ compound/ seals: Reglaze components in situ.
- 130 **REMOVAL OF GLASS/ PLASTICS FOR REUSE**
- Existing glass/ plastics and glazing compound, beads, etc: Remove carefully, avoiding damage to frame, to leave clean, smooth rebates free from obstructions and debris.
 - Deterioration of frame/ surround: Submit report on defects revealed by removal of glazing. - Affected areas: Do not reglaze until instructed.
 - Reusable materials: Clean glass/ plastics, beads and other components that are to be reused.
- 140 **MATERIAL SAMPLES**
- Representative samples of designated materials: Submit before cutting panes. - Sample size (minimum): 600 x 300 mm.
 - Designated materials: 28mm Double glazed units incorporating 6.4mm laminated safety glass outer pane, argon cavity formed with warm edged spacer and 4mm toughened glass inner pane with soft low E coating..
- 150 **WORKMANSHIP AND POSITIONING GENERALLY**
- Glazing generally: In accordance with BS 6262 series.
 - Integrity: Glazing must be wind and watertight under all conditions with full allowance made for deflections and other movements.
 - Dimensional tolerances: Panes/ sheets to be within ± 2 mm of specified dimensions.
 - Materials:
 - Compatibility: Glass/ plastics, surround materials, sealers, primers and paints/ clear finishes to be used together to be compatible. Avoid contact between glazing panes/ units and alkaline materials such as cement and lime.
 - Protection: Keep materials dry until fixed. Protect insulating glass units and plastics glazing sheets from the sun and other heat sources.
- 152 **PREPARATION**
- Surrounds, rebates, grooves and beads: Clean and prepare before installing glazing; ensure compliance with any certified installation requirements.
- 155 **GLASS GENERALLY**
- Standards: To BS 952 and relevant parts of:
 - BS EN 572 for basic soda lime silicate glass.
 - BS EN 1096 for coated glass.
 - BS EN 1748-1 for borosilicate glass.
 - BS EN 1748-2 for ceramic glass.
 - BS EN 1863 for heat strengthened soda lime silicate glass.
 - BS EN 12150 for thermally toughened soda lime silicate safety glass.

- BS EN 12337 for chemically strengthened soda lime silicate glass.
 - BS EN 13024 for thermally toughened borosilicate safety glass.
 - BS EN ISO 12543 for laminated glass and laminated safety glass.
 - Panes/ sheets: Clean and free from obvious scratches, bubbles, cracks, rippling, dimples and other defects.
 - Edges: Generally undamaged. Shells and chips not more than 2 mm deep and extending not more than 5 mm across the surface are acceptable if ground out.
- 160 **LINEAR PATTERNED/ WIRED GLASS**
- Alignment: Vertical/ Horizontal as appropriate, and pattern matched across adjacent panes in close proximity.
- 165 **HEAT SOAKING OF THERMALLY TOUGHENED GLASS**
- Standard: To BS EN 14179.
 - Holding period (minimum): 2 hours.
 - Mean glass temperature: $290^{\circ} \pm 10^{\circ}\text{C}$.
 - Certified evidence of treatment: Submit.
 - Designated locations: ALL CRITICAL LOCATIONS.
- 170 **PLASTICS GLAZING SHEET**
- Condition: Free from scratches, edge splits and other defects.
 - Preparation for use: Protective coverings carefully peeled back from edges and trimmed off to facilitate glazing. Remainder retained in place until completion unless instructed otherwise.
- 180 **BEAD FIXING WITH PINS**
- Pin spacing: Regular at maximum 150 mm centres, and within 50 mm of each corner.
 - Exposed pin heads: Punched just below wood surface.
- 181 **BEAD FIXING WITH SCREWS**
- Screw spacing: Regular at maximum 225 mm centres, and within 75 mm of each corner.

TYPES OF GLAZING

- 230A **BEAD FIXED SINGLE GLAZING Internal 30min / 60min FR Doors & Screens Generally**
- Pane material: 7mm Pyroguard Clear or equivalent.
 - Surround/ bead: Softwood frame with hardwood beads.
 - Preparation: Paint primer & intumescent strips.
 - Bead location: Inside.
 - Bead fixing: 6 x 25 mm countersunk brass screws.
 - Glazing compound: One-part, high modulus, silicone sealant.
 - Glazing installation:
 - Glass: Located centrally in surround using setting and location blocks and distance pieces.
 - Finished thickness of back bedding after inserting glazing (minimum): 3 mm.
 - Front bedding: Applied to fill voids.
 - Beads: Bedded in glazing compound and fixed securely.
 - Visible edge of glazing compound: Finished internally and externally with a smooth chamfer.
- 370A **BEAD FIXED INSULATING GLASS UNITS TO ALL GLAZING IN ALL EXTERNAL DOORS (INCLUDING 1ST FLOOR DOORS), ALL GLAZING IN WINDOWS WITHIN 300MM OF A DOOR FRAME AND ALL GLAZING IN WINDOWS BELOW 800MM FROM FFL**

Pane material: 28 mm insulating glass units to BS EN 1279 and Kitemark certified . Inner pane: 4 mm clear high iron content toughened glass (obscure to bathrooms / WC's – Grade/Rating 5) .

Outer pane: 6.4mm high iron content laminated safety glass .

Spacer: 18mm warm edged spaver .

Perimeter taping: Do not use.

Surround/ bead: PVC-U .

Preparation: Priming/ sealing not required .

Bead location: Inside .

Bead fixing: Proprietary clip fixing .

Glazing system: Preformed gasket sections supplied by window manufacturer.

Glazing installation:

Insulating unit: Located centrally in surround using setting and location blocks.

Gaskets and beads: Installed as recommended by frame manufacturer.

Gasket fit at corners: Tight, without gaps.

Drainage and ventilation holes: Unobstructed.

370B BEAD FIXED INSULATING GLASS UNITS TO ALL GLAZING IN WINDOWS GENERALLY (EXCEPT THOSE ALREADY NOTED IN CLAUSE 370)

Pane material: 28 mm insulating glass units to BS EN 1279 and Kitemark certified .

Inner pane: 4 mm clear high iron content float glass (obscure to bathrooms / WC's – Grade/Rating 5). .

Outer pane: 4 mm clear high iron content floatglass .

Spacer: 20mm warm edged spaver.

Perimeter taping: Do not use.

Surround/ bead: PVC-U.

Preparation: Priming/ sealing not required.

Bead location: Inside.

Bead fixing: Proprietary clip fixing .

Glazing system: Preformed gasket sections supplied by window manufacturer .

Glazing installation:

Insulating unit: Located centrally in surround using setting and location blocks.

Gaskets and beads: Installed as recommended by frame manufacturer.

Gasket fit at corners: Tight, without gaps.

Drainage and ventilation holes: Unobstructed.

520 FIRE RATING

- Assessment of capability: Submit proposed construction details of designated items to a UKAS/ EA accredited laboratory or other approved authority for assessment of capability of achieving specified fire ratings.
 - Test standard: To BS EN 1364-1.
- Assessment/ test results and reports: Submit immediately they are available, and before installing glazing.
- Designated items: ALL FIRE RATED GLAZING.

M Surface finishes

M10 Cement based levelling/ wearing screeds

To be read with Preliminaries/General conditions.

TYPES OF SCREED**180 CONCRETE WEARING SCREEDS (GRANOLITHIC) LAID TO FALLS ON EXISTING FLAT ROOF - REFER TO DRAWING WD10 - DETAIL 13**

- Substrate: In situ concrete slab.
- Screed construction: Fully bonded.
- Thickness:
 - Nominal: 50mm.
 - Minimum: 40mm.
 - Maximum: 100mm - Screed to be laid to a 1:80 fall.
- Mix:
 - Proportions (cement:sand:coarse aggregate): 1:1:2. .
- Flatness/ Surface regularity class: SR1.
- Abrasion resistance:
 - Standard: In accordance with BS 8204-2, Table 4. - Classification: AR1/ WS Heavy Duty.
- Finish: Trowelled, as clause 550.
 - Slip resistance value (minimum): Not required.
- Other requirements: None.

GENERALLY/ PREPARATION**205 DESIGN LIFE OF SCREEDS**

- Duration: 70 years .
 - Subject to reasonable wear and tear.
- Location: Flat Roof .
- Condition of use: Subject to correct loading and traffic usage throughout duration.

210 SUITABILITY OF SUBSTRATES

- General:
 - Suitable for specified levels and flatness/ regularity of finished surfaces. Consider permissible minimum and maximum thicknesses of screeds. - Sound and free from significant cracks and gaps.
- Concrete strength: In accordance with BS 8204-1, Table 2.
- Cleanliness: Remove plaster, debris and dirt.
- Moisture content: To suit screed type. New concrete slabs to receive fully or partially bonded construction must be dried out by exposure to the air for minimum six weeks.

230 CONTROL SAMPLES

- General: Complete areas of finished work and obtain approval of appearance before proceeding.
- Screed type: As clause 180.
 - Location/ Size: 2m².

255 PIPE DUCTS/ TRUNKING

- Preformed access ducts: Before laying screed, fix securely to substrates and level accurately in relation to finished floor surface.

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270 PARTIALLY BONDED CONSTRUCTION

Preparation: Generally in accordance with BS 8204-1.

- Substrate surface: Brushed finish with no surface laitance.
 - Texture of surface: Suitable to accept screed and achieve a bond over complete area.
- Bonding coat: Manufacturer's standard.

280 UNBONDED CONSTRUCTION

- Separation: Lay screed over a suitable sheet dpm or a separating layer.
 - Type: Polyethylene dpm, as section J40/120.
- Installation of separating layer: Lay on clean substrate. Turn up for full depth of screed at abutments with walls, columns, etc. Lap 100 mm at joints.

BATCHING/ MIXING

302 CEMENTS

- Cement types: In accordance with BS 8204-1, clause 5.1.3.

305 AGGREGATES

- Sand: To BS EN 13139.
 - Grading limits: In accordance with BS 8204-1, Table B.1.
- Coarse aggregates for fine concrete levelling screeds:
 - Standard: To BS EN 12620.
 - Designation: 4/10.
- Lightweight aggregates: In accordance with BS 8204-1, Annex A.

307 ADMIXTURES

- Standard: In accordance with BS 8204-1, Table 1.
- Calcium chloride: Do not use in admixtures.

310 BATCHING WITH DENSE AGGREGATES

- Mix proportions: Specified by weight.
- Batching: Select from:
 - Batch by weight.
 - Batch by volume: Permitted on the basis of previously established weight:volume relationships of the particular materials. Use accurate gauge boxes. Allow for bulking of damp sand.

311 BATCHING WITH LIGHTWEIGHT AGGREGATES

- Standard: In accordance with BS 8204-1, Annex A.
- Mix proportions: Specified by volume.
- Batching: Use accurate gauge boxes.

330 MIXING

- Water content: Minimum necessary to achieve full compaction, low enough to prevent excessive water being brought to surface during compaction.
- Mixing: Mix materials thoroughly to uniform consistency. Mixes other than no-fines must be mixed in a suitable forced action mechanical mixer. Do not use a free fall drum type mixer.
- Consistency: Use while sufficiently plastic for full compaction.
- Ready-mixed retarded screed mortar: Use within working time and site temperatures recommended by manufacturer. Do not retemper.

-
- 335 IN SITU CRUSHING RESISTANCE (ISCR)
 - Standards and category: In accordance with BS 8204-1, table 4. - Testing of bonded and unbonded screeds: To Annex D. - Testing of floating levelling screeds: To Annex E.
- 340 ADVERSE WEATHER
 - Screeds surface temperature: Maintain above 5°C for a minimum of four days after laying.
 - Hot weather: Prevent premature setting or drying out.

LAYING

- 350 SCREEDING TO FALLS
 - Minimum screed cover: Maintain at the lowest point.
 - Falls: Gradual and consistent.
 - Gradient (minimum): 1:80 .
- 365 FLATNESS/SURFACE REGULARITY OF ROOF SCREEDS
 - Sudden irregularities: Not permitted.
 - Deviation of surface: Measure from underside of a 2 m straightedge (between points of contact), placed anywhere on surface.
 - Permissible deviation (maximum): 6 mm.
- 375 COMPACTION OF SCREEDS
 - General: Compact thoroughly over entire area.
 - Screeds over 50 mm thick: Lay in two layers of approximately equal thickness. Roughen surface of compacted lower layer then immediately lay upper layer.
- 415 BAY JOINTS IN BONDED WEARING SCREEDS
 - Bay sizes:
 - Area (maximum): 20 m².
 - Length: Breadth ratio (maximum): 3:2.
 - Location of bay joints: Over construction/ movement joints in substrate slab.
- 435 FORMED JOINTS IN WEARING SCREEDS
 - Temporary forms: Square edged with a steel top surface and in good condition.
 - Placing screed: Compact thoroughly at edges to give level, closely abutted joints with no lipping.
- 445 CRACK INDUCING GROOVES IN WEARING SCREEDS
 - Groove dimensions:
 - Depth: At least half the depth of wearing screed.
 - Width: 6 mm.
 - Cutting grooves: Straight, vertical and accurately positioned. Saw cut sufficiently early after laying to prevent random cracking.
- 450 SEALANT FOR SAWN JOINTS IN WEARING SCREEDS
 - Type: Two part polysulfide-based, colour to approval.
 - Preparation and application: As section Z22.

FINISHING/CURING

- 510 FINISHING GENERALLY

-
- Timing: Carry out all finishing operations at optimum times in relation to setting and hardening of screed material.
- Prohibited treatments to screed surfaces:
 - Wetting to assist surface working.
 - Sprinkling cement.

550 TROWELLED FINISH TO WEARING SCREEDS

- Floating: To an even texture with no ridges or steps.
- Trowelling: Successively trowel at intervals, applying sufficient pressure to close surface and give a uniform smooth finish free from trowel marks and other blemishes.

650 CURING

General: Prevent premature drying. Immediately after laying, protect surface from wind, draughts and strong sunlight. As soon as screed has set sufficiently, closely cover with polyethylene sheeting.

- Curing period (minimum): Keep polyethylene sheeting in position for: seven days.
- Drying after curing: Allow screeds to dry gradually. Do not subject screeds to artificial drying conditions that will cause cracking or other shrinkage related problems.

670 ROOF SCREEDS

- Protection: Cover screeds during wet weather. When weathertight coverings are laid, screeds must be as dry as practicable.

700 ABRASION TESTING OF WEARING SCREEDS

- Test method: To BS EN 13892-4.

M20 Plastered/ Rendered/ Roughcast coatings

To be read with Preliminaries/ General conditions.

TYPES OF COATING

- 210 LIGHTWEIGHT GYPSUM PLASTER TO INTERNAL WALLS AS SHOWN ON DRAWING WD102
- Substrate: Concrete blockwork as section F10.
 - Preparation: Bonding agent recommended by plaster manufacturer.
 - Manufacturer: British Gypsum or Equivalent.
 - Undercoats: To BS EN 13279-1.
 - Product reference: Thistle Hardwall.
 - Thickness (excluding dubbing out and keys): 10mm min..
 - Final coat: Finish plaster to BS EN 13279-1.
 - Product reference: Thistle Multi Finish.
 - Thickness: 2-3 mm. - Finish: Smooth.
 - Accessories: Beads and stops .
- 280 GYPSUM PLASTER SKIM COAT ON PLASTERBOARD
- Plasterboard: 12.5 mm .
 - Preparation: Bonding agent recommended by plaster manufacturer .
 - Plaster: Board finish/ finish plaster to BS EN 13279-1. - Manufacturer: Contractor's choice .
 - Product reference: Contractor's choice .
 - Thickness: 2-3mm .
 - Finish: Smooth.
 - Accessories: Beads and stops .

GENERAL

- 413A SAMPLES
- General: Provide representative samples of the following: INTERNAL PLASTER FINISH.
Note: provide colour sample for clients approval
- 418A CONTROL SAMPLES
- Complete sample areas, being part of the finished work, in locations as follows: INTERNAL PLASTER FINISH.
Note: Complete sample area for clients approval and retain for reference until completion of project.
- 421 SCAFFOLDING
- General: Prevent putlog holes and other breaks in coatings.

MATERIALS AND MARKING OF MORTAR

- 430 READY-TO-USE CEMENT GAUGED RENDER MORTARS
- Time and temperature limitations: Use within limits prescribed by mortar manufacturer
 - Retempering: Restore workability with water only within prescribed time limits.
- 438 CEMENTS FOR MORTARS
- Cement: To BS EN 197-1.

- - Types: Portland cement, CEM I.
Portland slag cement, CEM II.
Portland fly ash cement, CEM II.
 - Strength class: 32.5, 42.5 or 52.5.
 - White cement: To BS EN 197-1.
 - Type: Portland cement, CEM1.
 - Strength class: 52.5.
 - Sulfate resisting Portland cement: To BS EN 197-1. - Strength class: 42.5.
 - Masonry cement: To BS EN 998-1 and Kitemarked.
- 440 SAND FOR CEMENT GAUGED MORTARS
- Standard: To BS EN 13139.
 - Grading: 0/2 or 0/4 (CP or MP); Category 2 fines.
 - Colour and texture: Consistent. Obtain from one source.
- 443 LIME FOR CEMENT GAUGED MORTARS
- Standard: To BS EN 459-1.
 - Type: CL 90S.
- 449 ADMIXTURES FOR CEMENT GAUGED MORTARS
- Suitable admixtures: Select from:
 - Air entraining (plasticizing) admixtures: To BS EN 934-2 and compatible with other mortar constituents.
 - Other admixtures: Submit proposals.
 - Prohibited admixtures: Calcium chloride and any admixture containing calcium chloride.
- 450 CHLORIDE CONTENT OF MORTARS
- Chloride content (maximum): 0.1% by dry mass.
- 495 MIXING
- Render mortars (site prepared):
 - Batching: By volume. Use clean and accurate gauge boxes or buckets.
 - Mix proportions: Based on damp sand. Adjust for dry sand.
 - Lime:sand: Mix thoroughly. Allow to stand, without drying out, for at least 16 hours before using.
 - Mixes: Of uniform consistence and free from lumps. Do not retemper or reconstitute mixes.
 - Contamination: Prevent intermixing with other materials.
- 497 COLD WEATHER
- General: Do not use frozen materials or apply coatings on frozen or frost bound substrates.
 - External work: Avoid when air temperature is at or below 5°C and falling or below 3°C and rising. Maintain temperature of work above freezing until coatings have fully hardened.
 - Internal work: Take precautions to enable internal coating work to proceed without detriment when air temperature is below 3°C.

PREPARING SUBSTRATES

- 510 SUITABILITY OF SUBSTRATES
- Soundness: Free from loose areas and significant cracks and gaps.
 - Cutting, chasing, making good, fixing of conduits and services outlets and the like: Completed.
 - Tolerances: Permitting specified flatness/ regularity of finished coatings.

-
- Cleanliness: Free from dirt, dust, efflorescence and mould, and other contaminants incompatible with coatings.

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- 527 RAKING OUT FOR KEY
 - Joints in existing masonry: Rake out to a depth of 13 mm (minimum).
 - Dust and debris: Remove from joints.
- 531 ROUGHENING FOR KEY
 - Substrates: Roughen thoroughly and evenly.
 - Depth of surface removal: Minimum necessary to provide an effective key.
- 538 STIPPLE KEY
 - Materials:
 - Cement: To BS EN 197-1.
 - Sand: Clean, coarse.
 - Admixture: SBR bonding agent, Agrément certified.
 - Mix proportions (cement:sand): 1:1.5–2.
 - Consistency: Thick slurry, well stirred.
 - Application: Brushed and stippled to form deep, close textured key.
 - Curing: Controlled to achieve a firm bond to substrate.
- 541 BONDING AGENT APPLICATION
 - 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
 - Location and extent: Agree, at least on a provisional basis, before work commences. Minimize extent of removal and renewal.

BACKINGS/ BEADS/ JOINTS

- 600 ADDITIONAL FRAMING SUPPORTS FOR BACKINGS
 - Framing: Accurately position and securely fix to give full support to fixtures, fittings and service outlets.
 - Support board edges and perimeters: As recommended by board manufacturer to suit type and performance of board.
- 605 GYPSUM PLASTERBOARD BACKINGS
 - Type: To BS EN 520 Type A.
 - Core density (minimum): 650 kg/m³.
 - Exposed surface and edge profiles: Suitable to receive specified plaster finish.
- 630 BEADS/ STOPS FOR INTERNAL USE
 - Standard: In accordance with BS EN 13914-2, Table 2.
 - Material: Galvanized steel to BS EN 13658-1.
- 640 BEADS/ STOPS GENERALLY
 - Location: External angles and stop ends except where specified otherwise.
 - Corners: Neat mitres at return angles.
 - Fixing: Secure, using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
 - Beads/ stops for external render: Fix mechanically.
 - Finishing: After coatings have been applied, remove surplus material while still wet, from surfaces of beads/ stops exposed to view.
- 646 CRACK CONTROL AT JUNCTIONS BETWEEN DISSIMILAR SOLID SUBSTRATES

- Locations: Where defined movement joints are not required. Where dissimilar solid substrate materials are in same plane and rigidly bonded or tied together.
- Crack control materials:
 - Isolating layer: Building paper to BS 1521.
 - Metal lathing: Internally: Galvanized steel plain expanded metal with spacers.
- Installation: Fix metal lathing over isolating layer. Stagger fixings along both edges of lathing.
- Width of installation over single junctions:
 - Isolating layer: 150 mm. - Lathing: 300 mm.
- Width of installation across face of dissimilar substrate material (column, beam, etc. with face width not greater than 450 mm):
 - Isolating layer: 25 mm (minimum) beyond junctions with adjacent substrate.
 - Lathing: 100 mm (minimum) beyond edges of isolating layer.

673 PLASTERING OVER CONDUITS/ SERVICE CHASES

- General: Prevent cracking over conduits and other services.
- Services chased into substrate: Isolate from coating by covering with galvanized metal lathing, fixed at staggered centres along both edges.

INTERNAL PLASTERING

710 APPLICATION GENERALLY

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

715 FLATNESS/ SURFACE REGULARITY

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

720 DUBBING OUT

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

725 UNDERCOATS GENERALLY

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

•
742 THIN COAT PLASTER

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

747 PROJECTION PLASTER

- Application: Evenly and in one continuous operation between angles and joints.
- Finish: A level open textured surface before finishing manually.

777 SMOOTH FINISH

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

M21 Insulation with rendered finish

To be read with Preliminaries/General conditions.

GENERAL/ SYSTEM REQUIREMENTS

- 110 SURVEY OF STRUCTURAL SUBSTRATE
- Survey report: Included in Contract documentation.
- 120 SURVEY OF STRUCTURAL SUBSTRATE
- Timing: Before starting work covered in this section.
 - Objective: To confirm suitability for application of external wall insulation system.
 - Survey report: Submit, covering:
 - The form and condition of the structural substrate.
 - A schedule of repairs and/ or additional works necessary to render the substrate suitable to receive the system.
 - A schedule of services, fixtures and fittings requiring removal to facilitate installation of the system.
 - Proposals for treatment of cold bridges that may occur as a result of installing the system, e.g. at door and window reveals, concrete floor edges, movement joints.
 - Any other relevant information.
- 160 REMEDIAL WORK
- Remedial work shown to be necessary by survey: Forms part of this Contract and is specified elsewhere .
- 180 STRUCTURAL SUBSTRATE
- Description: Concrete Substrate.
 - Preparation: Existing substrate should be clean, dry and free of loose coatings, dirt, algae, fungus or deleterious materials etc. Make good as necessary..
- 210A EXTERNAL WALL INSULATION SYSTEM
- Manufacturer: Sto Ltd.
 - Web: www.sto.co.uk.
 - Email: info.uk@sto.com.
 - Product reference: StoTherm Mineral K System
 - Insulation:
 - Type: Sto Mineral Fibre Insulation Slab - Thickness: 120mm.
 - Method of fixing: Levell-Uni adhesive with dowels
 - Beads/ Trims: Sto aluminium starter tracks.
 - Render:
 - Reinforcing base coat: StoArmat Novo mineral reinforcing plaster - Reinforcing mesh: Sto Glass Fibre Mesh applied into base coat. - Intermediate coat: Sto-Primer vapour-permeable preparation coat - Decorative coat: StoSilco smooth silicone render.
 - Colour/ Aggregate: RAL 1015.
 - Render Thickness: 1.5mm
 - Additional requirements: None.
- 305 CONTRACTOR'S DESIGN FOR INSULATION SYSTEM TO EXTERNAL WALLS GENERALLY
- Design responsibility: Determine type size, number and spacing of fixings.
 - Structural and fire requirements: - Generally: As section B50.
 - Modifications: None.

- Design: Complete the design in accordance with the designated code of practice to satisfy specified performance criteria.
- Functional requirements: As specified in this section.
- Additional requirements: Location, size and acceptable loading on anchorages to be checked for suitability with design and detailing of supporting structure.
- Design and production information: As Preliminaries sections.
- Timing of submissions: As Preliminaries section A31.

310 DESIGN

Complete the detailed design of the system and associated features shown on the drawings to meet the requirements of this specification.

320 INTEGRITY

The installation must be weathertight under all anticipated conditions. Consult with Sto Ltd for specific details and relating to particular conditions.

The installation must be capable of resisting all dead loads and design live loads, including impact and wind loads, and accommodate all thermal movements without damage. Render systems may not be applied to horizontal or nearhorizontal surfaces. To enable the integrity of the system to be maintained at parapets / wall heads, it will be necessary to install copings or cappings. Render systems may not be continued over wall heads / parapets without the provision of suitable protection.

330 IMPACT LOADING

Resistance to hard body impact and perforation as categorised below shall be:

Category II - 10 Joules using a single layer of Sto Glass Fibre Reinforcing Mesh - and the render shall not be perforated using a 12mm indenter. (The standard ETA requirement for impact resistance is based upon impacts using energy of 3 Joules & 10 Joules).

The above categories are defined in the Guideline for European Technical Approval ETAG 004 and correspond to the degrees of exposure in use. They do not include an allowance for acts of vandalism

340 WIND LOADING

Wind Loading should be calculated either to BS 6399 part 2: 1997 or BS EN 1991 - 1 - 4: 2005 + A1: 2010. In accordance with BS EN 1990: 2002, it is recommended that a load factor of 1.5 be applied to the calculated values to determine the ultimate wind suction load to be resisted by the system.

Loading patterns should be subdivided into zoned areas throughout the façade.

TO ENABLE ECONOMIC DESIGN, ACCURATE CALCULATIONS INDICATING NEGATIVE WIND LOADS MUST BE PRESENTED TO STO LTD AT THE EARLIEST POSSIBLE OPPORTUNITY.

Should it be necessary to provide additional mechanical fixings to accommodate wind loads, there will be an additional cost.

360 SAMPLES

- Procedure: Submit samples/ examples of designated items for approval. Keep approved samples on site for the duration of the contract for inspection/ comparison purposes.
- Designated items: 150x150mm Sample of STO Mineral K Construction & Colour Sample RAL1015 .

380 UNIFORMITY OF COLOUR AND TEXTURE OF COATING MIXES

- Type/ proportion of constituent materials: Unchanged once samples of coatings have been approved.
- Supplies of materials: Sufficient to give consistent and uniform colour and texture.

INSTALLATION

410 INSTALLATION

- Installer: The system manufacturer, or a contractor approved by the system manufacturer.

420 ADVERSE WEATHER

- Materials/ Surfaces: Do not use frozen materials and do not apply materials to frost bound surfaces.
- Adhesives/ Mortars/ Renders: Do not apply when air temperature is:
 - At or below 5°C on a falling thermometer or below 3°C on a rising thermometer, or when temperature of the air or wall surface is above 30°C and the surface is not protected. - Outside range recommended by manufacturer, if different from above.
- Temperature of the work: Maintain above minimum level recommended by manufacturer until adhesive/ mortar/ render has fully hardened.
- Newly rendered surfaces: Protect against adverse weather conditions.
- Render coatings damaged by adverse weather: Replace.

430 SUBSTRATES

- Condition before pretreatment/ application of insulation system: Structurally sound, adequately true and level, dry, free from contamination by dirt, dust, efflorescence, organic growths or other deleterious substances and in a suitable condition to receive specified insulation system.

435 REMOVAL OF EXISTING COMPONENTS

- Requirement: Existing Gas Pipes are to be removed from site.

440 ON SITE PULL OUT TESTS ON FIXING PINS

- Objective: To prove suitability of structural substrate and determine size and number of fixings required.
- Pull out test load: 2 x design load.
- Notice: Give notice of testing timetable to Architect. - Period of notice: Five working days.

490 CONSTRUCTION/ MOVEMENT JOINT INSTALLATION

- Location: Coincident with movement joints in substrate.
- Formation: Accurately to bridge joint, with a constant projection.
- Modifications to joint locations/ design: Agree revisions before proceeding.

530 SEALANT JOINTS

- Locations: At all interfaces between insulation / render and dissimilar materials .
- Sealant: Type recommended by system manufacturer .
- Joints: Formed in accordance with section Z22 and system manufacturer's recommendations using any necessary joint fillers, backing strips, etc.

550 INSPECTION OF COMPLETED INSTALLATION

- Timing: As soon as possible after completion of the work and before removing scaffolding.
- Notice for inspection (minimum): Five working days.
- Submit : Description of inspection and remedial works carried out.

M50 Rubber/ plastics/ cork/ lino/ carpet tiling/ sheeting

To be read with Preliminaries/ General conditions.

TYPES OF COVERING**150A SHEET FLOORING**

- Manufacturer: Altro or Equivalent - Web: www.altro.co.uk.
 - Email: enquiries@altro.com.
 - Product reference: Altro Classic 25
- Thickness: 2.5mm
- Fire Performance: TO EN 13501-1, Class Bfl-s1=8kW/m2 - pass
- Colour: Legend X2544R11.
- Accessories: Stair nosings/ trims.
- Location: [As shown on Drawing WD102].

170A CARPETING

- Manufacturer: Heckmondwike FB.
 - Web: www.heckmondwike-fb.co.uk.
 - Email: sales@heckmondwike-fb.co.uk.
 - Product reference: Diamond
- Location: Front & Rear Entrance to Ground Floor Lobbies as shown in Drawing WD102
- Colour: Charcoal.
- Type: Fibre bonded entrance area carpet with diamond surface pattern.
- Thickness: 10.5 mm.
- Width: 500x500mm Tile
- Backing: Rubber waffle

195 FLOOR FINISH MATERIALS SPECIFICATION

- Minimum BRE 'Green Guide to Specification Online' rating: As schedule.

GENERAL REQUIREMENTS**210 WORKMANSHIP GENERALLY**

- Base condition after preparation: Rigid, dry, sound, smooth and free from grease, dirt and other contaminants.
- Finished coverings: Accurately fitted, tightly jointed, securely bonded, smooth and free from air bubbles, rippling, adhesive marks and stains.

220 SAMPLES

- Covering samples: Before placing orders, submit representative sample of each type.

230 CONTROL SAMPLES

- General: Complete areas of finished work in approved locations as follows, and obtain approval of appearance before proceeding: Heavy Duty Vinyl Sheet & Heckmondwike Carpeting .

250 LAYOUT - ROLL MATERIALS

- Setting out of seams: Agree setting out for sheeting types M50/ 150 & 170 .

252 LAYOUT - PATTERNS

- Setting out: Agree setting out for covering types M50/ 170A .

270 EXTRA MATERIAL

- Provision of extra material: At completion, hand to Employer extra material of each type of covering to extent of 5%.

330 COMMENCEMENT

- Required condition of works prior to laying materials:
 - Building is weathertight and well dried out.
 - Wet trades have finished work.
 - Paintwork is finished and dry.
 - Conflicting overhead work is complete.
 - Floor service outlets, duct covers and other fixtures around which materials are to be cut are fixed.
- Notification: Submit not less than 48 hours before commencing laying.

340 CONDITIONING

- Prior to laying: Condition materials by unpacking and separating in spaces where they are to be laid. Maintain resilient flooring rolls in an upright position. Unroll carpet and keep flat on a supporting surface.
- Conditioning time and temperature (minimum): As recommended by manufacturer with time extended by a factor of two for materials stored or transported at a temperature of less than 10°C immediately prior to laying.

350 ENVIRONMENT

- Temperature and humidity: Before, during and after laying, maintain approximately at levels which will prevail after building is occupied.
- Ventilation: Before during and after laying, maintain adequate provision.

PREPARING BASES**420 EXISTING BASES**

- Notification: Before commencing work, confirm that existing bases will, after preparation, be suitable to receive coverings.
- Suitability of bases and conditions within any area: Commencement of laying of coverings will be taken as acceptance of suitability.

470 BASES FROM WHICH EXISTING FLOOR COVERINGS HAVE BEEN REMOVED

- Substrate: Clear of covering and as much adhesive as possible. Skim with smoothing underlayment compound to give smooth, even surface.

480 EXISTING FLOOR COVERINGS TO BE OVERLAID

- Substrate: Make good by local resticking and patching or filling with smoothing underlayment compound to give smooth, even surface.

LAYING COVERINGS**610 SETTING OUT TILES**

- Method: Set out from centre of area/ room, so that wherever possible:
 - Tiles along opposite edges are of equal size.
 - Edge tiles are more than 50% of full tile width.

620 COLOUR CONSISTENCY

- Finished work in any one area/ room: Free from banding or patchiness.

640 ADHESIVE FIXING GENERALLY

Adhesive type: As specified, as recommended by covering/ underlay, manufacturer or as approved.

- Primer: Type and usage as recommended by adhesive manufacturer.
- Application: As necessary to achieve good bond.
- Finished surface: Free from trowel ridges, high spots caused by particles on the substrate, and other irregularities.

650 SEAMS

- Patterns: Matched.
- Joints: Tight without gaps.

670 BORDERS/ AND FEATURE STRIPS IN SHEET MATERIAL

- Curl: Not acceptable.
- Corners: Mitre joints.

680 SEAM WELDING COVERINGS

- Commencement: At least 24 hours after laying, or after adhesive has set.
- Joints: Neat, smooth, strongly bonded, flush with finished surface.

720 DOORWAYS

- Joint location: On centre line of door leaf.

740 EDGINGS AND COVER STRIPS

- Manufacturer: Contractor's choice .
 - Product reference: Contractor's choice .
- Material/ finish: Stainless Steel .
- Fixing: Secure with edge of covering gripped. Use matching fasteners where exposed to view

750 STAIR NOSINGS AND TRIMS

- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Material/ finish: Stainless Steel.
- Fixing: Secure, level and with mitred joints. Adjusted to suit thickness of covering with continuous packing strips of hardboard or plywood. Nosings and packing strips bedded in gap -filling adhesive recommended by nosing manufacturer. - Screw fixing with matching plugs: Required.

760 STAIR COVERINGS - SEPARATE RISERS AND TREADS

- Fixing: Accurately cut. Fit risers before treads.

780 TRAFFICKING AFTER LAYING

- Covering types: All.
- Traffic free period: Until adhesive is set.

COMPLETION**820 FINISHING HEAVY DUTY VINYL SHEET**

- Cleaning operations:

- - Wash floor with water containing neutral (pH 6-9) detergent. If necessary, lightly scrub heavily soiled areas.
 - Rinse with clean water, removing surplus to prevent damage to adhesive. Allow to dry.
 - Emulsion polish: Two coats of a type recommended by covering manufacturer.
- 861 SLIP RESISTANCE TESTING
- Testing authority: A UKAS accredited laboratory.
- Floor covering(s) to be tested: M50/150A.
 - Test: To BS 7976-1, -2 and -3.
 - Floor covering condition: Dry and wet.
 - Witnessing/ Certification: Arrange for tests to be witnessed/ certified by: Consultant.
 - Report: Submit.
- 880 WASTE
- Spare covering material: Retain suitable material for patching. On completion submit pieces for selection. Hand over selected pieces to Employer.

M60 Painting/clear finishing

To be read with Preliminaries/General conditions.

COATING SYSTEMS

- 110 EMULSION PAINT TO INTERNAL PLASTERED WALLS TO COMMON AREAS
- Manufacturer: Dulux Trade or Equivalent.
 - Product reference: Vinyl Soft Sheen or Equivalent.
 - Surfaces: All Internal Plastered walls to common areas.
 - Preparation: Ensure surfaces to be painted are sound, clean, dry.
 - Initial coats: 10% thinned primer.
 - - Number of coats: 1.
 - Undercoats: Vinyl Silk mist coat - 1 part clean water to 5 parts paint). - Number of coats: 1.
 - Finishing coats: Vinyl Silk Mid Sheen, Roller Applied. - Number of coats: 2.
- 120 EMULSION PAINT TO INTERNAL PLASTERED CEILINGS TO COMMON AREAS
- Manufacturer: Dulux Trade or Equivalent.
 - Product reference: Vinyl Matt or Equivalent.
 - Surfaces: All Internal Plastered ceilings to common areas.
 - Preparation: Ensure surfaces to be painted are sound, clean, dry.
 - Initial coats: None.
 - - Number of coats: N/A.
 - Undercoats: Vinyl Matt mist coat - 1 part clean water to 5 parts paint). - Number of coats: 1.
 - Finishing coats: Vinyl Matt, Roller Applied. - Number of coats: 2.
- 130 GLOSS PAINT TO INTERNAL EXPOSED SOFTWOOD
- Manufacturer: Dulux Trade or Equivalent. - Product reference: High Gloss.
 - Surfaces: All internal softwood.
 - Preparation: Ensure surfaces are free from all defective or poorly adhering material, dirt, grease and wax.
 - Initial coats: Wood Primer. - Number of coats: 1.
 - Undercoats: Undercoat.
 - Number of coats: 1.
 - Finishing coats: High Gloss, Brush Applied.
 - Number of coats: 2.
- 160A DECORATIVE WOODSTAIN/ VARNISH/ PRESERVATIVE TO INTERNAL HARDWOOD
- Manufacturer: Dulux Trade or Equivalent.
 - - Product reference: Polyurethane Varnish.
 - Surfaces: All internal hardwood surfaces.
 - Preparation:

To get the best results, ensure surfaces to be varnished are sound, clean and dry (new surfaces particularly must be fully dry) before treating. Remove all loose and defective coatings, if necessary stripping back to bare wood. Special precautions should be taken during surface preparation of pre-1960s paint surfaces over wood and metal as they may contain harmful lead.

- Thoroughly rub down all surfaces in the direction of the grain to provide a 'key', using 'wet flattening' methods where possible, then wipe off with a damp, lint free cloth. Fill any surface defects, open joints etc. Do not use linseed oil putty for making good with natural wood finishes.

In multi-coat work, it is advisable to lightly rub down between coats, in the direction of the grain, using a suitable grade of abrasive paper and then wipe off with a damp, lint free cloth.

- Initial coats: Thinned coat of varnish.
 - Number of coats: 1.
- Finishing coats: Polyurethane Varnish, Brush Applied. - Number of coats: 3.

160B DECORATIVE WOODSTAIN/ VARNISH/ PRESERVATIVE TO EXTERNAL HARDWOOD

- Manufacturer: Dulux Trade or Equivalenet. - Product reference: Yacht Varnish.
- Surfaces: All external hardwood surfaces.
 - Preparation:

To get the best results, ensure surfaces to be varnished are sound, clean and dry. Remove all loose and defective coatings and previous paintwork, if necessary stripping back to bare wood. Special precautions should be taken during surface preparation of pre-1960s paint surfaces over wood and metal as they may contain harmful lead.

Thoroughly rub down all surfaces in the direction of the grain to remove any grey, weathered wood and surface sheen from remaining coatings, and then dust off (refer to COSHH Assessment). Seal all bare wood with 2 coats of Aquatech Preservative Basecoat+ (BP) from Dulux Trade* including any new or bare replacement beading. Excess basecoat should be wiped off surrounding paintwork.

Fill any surface defects, open joints, etc. and replace any missing glazing material. Do not use linseed oil putty for glazing (or making good with natural wood finishes).

In multi-coat work, rub down between coats...

- Initial coats: Aquatech Preservative Basecoat+ (BP).
 - Number of coats: 2.
- Finishing coats: Polyurethane Varnish, Brush Applied.
 - Number of coats: 3.

175 PROTECTIVE COATING TO EXISTING BALCONY RAILINGS

- Manufacturer: Dulux Trade, brand of AkzoNobel or Equivalent.
- Product reference: Metalshield Gloss.
- Surfaces: Existing external metal railings to balconies.
 - Preparation: Clean down existing surface with wire brush to ensure surface is free of rust, surface dirt and grease. Remove existing gloss paint as clauses 400, 440 and 461.
- Initial coats: As recommended by manufacturer. - Number of coats: 1.
- Undercoats: Metalshield Primer.
 - Number of coats: 1.
- Finishing coats: As per Manufacturer's recommendations.
- Application: Brush.
 - Number of coats: 2.
 - Slip resistance value - water wet (minimum): Not applicable .

-

GENERALLY**210 COATING MATERIALS**

- Manufacturers: Obtain materials from any of the following:
Contractor's Choice.
- Selected manufacturers: Submit names before commencement of coating work.

215 HANDLING AND STORAGE

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

220 COMPATIBILITY

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

240 SURFACES NOT TO BE COATED

- INTERNAL FLOORS.

250 SURFACES TO BE CLEANED BUT NOT COATED

- INTERNAL FLOORS, WALLS & CEILINGS.

280 PROTECTION

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

300 CONTROL SAMPLES

- Sample areas of finished work: Carry out, including preparation, as follows:
Types of coating Location
M60/ 110 . INTERNAL WALL OF LOBBY 1 .
- Approval of appearance: Obtain before commencement of general coating work.

320 INSPECTION BY COATING MANUFACTURERS

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

321 INSPECTION OF WORK STAGES

Programme for inspections: Submit as follows:

Types of coating Inspection at completion of
M60/ 110 . FIRST COAT .

- Inspection: Give prior notice when each stage is ready for inspection.

PREPARATION

400 PREPARATION GENERALLY

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

420 FIXTURES AND FITTINGS

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

425 IRONMONGERY

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

430 EXISTING IRONMONGERY

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

440 PREVIOUSLY COATED SURFACES GENERALLY

Preparation: In accordance with BS 6150, clause 11.5.

- Contaminated or hazardous surfaces: Give notice of:
 - Coatings suspected of containing lead.

- - Substrates suspected of containing asbestos or other hazardous materials.
 - Significant rot, corrosion or other degradation of substrates.
 - Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
 - Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
 - Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
 - Alkali affected coatings: Completely remove.
 - Retained coatings:
 - Thoroughly clean to remove dirt, grease and contaminants.
 - Gloss coated surfaces: Provide key.
 - Partly removed coatings:
 - Additional preparatory coats: Apply to restore original coating thicknesses.
 - Junctions: Provide flush surface.
 - Completely stripped surfaces: Prepare as for uncoated surfaces.
- 471 PREPRIMED WOOD
- Areas of defective primer: Take back to bare wood and reprime.
- 481 UNCOATED WOOD
- General: Provide smooth, even finish with arrises and moulding edges lightly rounded or eased.
 - Heads of fasteners: Countersink sufficient to hold stoppers/fillers.
 - Resinous areas and knots: Apply two coats of knotting.
- 490 PREVIOUSLY COATED STEEL
- Defective paintwork: Remove to leave a firm edge and clean bright metal.
 - Sound paintwork: Provide key for subsequent coats.
 - Corrosion and loose scale: Take back to bare metal.
 - Residual rust: Treat with a proprietary removal solution.
 - Bare metal: Apply primer as soon as possible.
 - Remaining areas: Degrease.
- 570 UNCOATED MASONRY/ RENDERING
- Loose and flaking material: remove.
- 580 UNCOATED PLASTER
- Nibs, trowel marks and plaster splashes: Scrape off.
 - Overtrowelled 'polished' areas: Key lightly.
- 590 UNCOATED PLASTERBOARD
- Depressions around fixings: Fill with stoppers/ fillers
- 611 WALL COVERINGS
- Retained wall coverings: Check that they are in good condition and well adhered to substrate.
 - Previously covered walls: Wash down to remove paper residues, adhesive and size.
- 622 ORGANIC GROWTHS
- Dead and loose growths and infected coatings: Scrape off and remove from site.

-
- Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.
- Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.

APPLICATION**711 COATING GENERALLY**

- Application standard: In accordance with BS 6150, clause 9.
- Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
- Surfaces: Clean and dry at time of application.
- Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
- Overpainting: Do not paint over intumescent strips or silicone mastics.
- Priming coats:
 - Thickness: To suit surface porosity.
 - Application: As soon as possible on same day as preparation is completed.
- Finish:
 - Even, smooth and of uniform colour.
 - Free from brush marks, sags, runs and other defects. - Cut in neatly.
- Doors, opening windows and other moving parts: Ease before coating and between coats.

720 PRIMING JOINERY

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

730 WORKSHOP COATING OF CONCEALED JOINERY SURFACES

- General: Apply coatings to all surfaces of components.

731 SITE COATING OF CONCEALED JOINERY SURFACES

- General: After priming, apply additional coatings to surfaces that will be concealed when fixed in place.
 - Components: INTERNAL SKIRTINGS AND ARCHITRAVES.
 - Additional coatings: One undercoat.

770 EXTERNAL DOORS

- Bottom edges: Prime and coat before hanging doors.

780 BEAD GLAZING TO COATED WOOD

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

800 GLAZING

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

810 WATER REPELLENT

- Application: Liberally flood surface, giving complete and even coverage.

N Furniture/Equipment

N10 General fixtures/ furnishings/ equipment

To be read with Preliminaries/General conditions.

PRODUCTS

290 MATWELL FRAMES TO FRONT ENTRANCE

- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Format: Recessed.
 - Material: Aluminium.
 - Finish: Galvanized. - Colour: Silver.
- Size: AS PER DRAWINGS.
- Angles:
 - Corners: Mitred and welded.
 - Angle size: 50 x 50 x 5 mm thick.
- Predrilled: Not required.

300 ENTRANCE MATTING TO FRONT ENTRANCE

- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Arrangement: Inset internal.
- Material: Rubber with nylon fibres and aluminium strip.
- Pattern: Double wipe linked.
- Colour: TBC.
- Size: 12mm.
- Integral accessories: Aluminium matwell frame.

EXECUTION

720 INSTALLATION GENERALLY

- General: As Preliminaries section A33.
- Fixing and fasteners: As section Z20.
- Services: Not applicable.

770 TRIMS

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

COMPLETION

910 GENERAL

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

920 APPLIANCES

- Test: Ensure that all functions and features work correctly.
- Documentation: Submit guarantees, instruction manuals, etc.

P Building fabric sundries

P10 Sundry insulation/ proofing work**SUNDRY INSULATION/ PROOFING WORK**

To be read with Preliminaries/ General conditions.

TYPES OF INSULATION**185A SOFFIT INSULATION BOARD**

- Manufacturer: ROCKWOOL Ltd or Equivalent - Web: www.rockwool.co.uk.
 - Email: info@rockwool.com.
 - Product reference: ROCKWOOL Soffit Slab.
- Thickness: 130 mm.
- Size: 1000 x 600 mm.
- Facing: Plain.

190A FLAT ROOF INSULATION FITTED BETWEEN UPSTAND STUDS •

- Manufacturer: ROCKWOOL Ltd or Equivalent - Web: www.rockwool.co.uk.
- Email: info@rockwool.com.
 - Product reference: ROCKWOOL Hardrock Multi-fix DD
 - Facing: Plain.
 - Thickness: 105 mm.

310 VAPOUR CONTROL LAYER TO OUTER FACE OF EXISTING WALLS BEHIND NEW RAINSCREEN CLADDING AND INSULATED RENDER

- Manufacturer: Visqueen or Equivalent.
 - Product reference: Visqueen Fully Bonded Self Adhesive Vapour Barrier .
- Material: multi layer reinforced HDPE membrane with an aluminium foil.
- Minimum vapour resistance: 2000 MNs/g.
- Installation requirements:
 - Setting out: Joints minimized.
 - Method of fixing: Primer and adhesive to concrete blockwork.
 - Joints: At supports only, lapped 150 mm minimum.
 - Openings: Membrane fixed to reveals.
 - Joints and edges: Sealed with double sided tape with vapour resistivity not less than the vapour control layer.
- Penetrations: Sealed.
- Other requirements: Prime substrates as necessary.

432A FIREPROOF INSULATION •

- Manufacturer: ROCKWOOL Ltd. -
Web: www.rockwool.co.uk.
- Email: info@rockwool.com.
 - Product reference: ROCKWOOL SP 60 Firestop Slab.
 - Dimensions: 75 mm x 650 mm x 1000 mm.
 - Facing: Aluminium faced foil both sides.

- Reaction to fire class: A1 to BS EN 13501-1.
- Accessories: SP Firestop fixing brackets.

435 VENTILATED CAVITY BARRIERS

- Manufacturer: Rockwool.
 - Product reference: SP Firestop VRB.
- Material: stone wool barrier with a continuous intumescent strip to its leading edge, encapsulated by a weather-resistant polythene sleeve .
- Size: 205mm wide, 1m lengths.
- Thickness: 75mm.
- Fire resistance rating: To BS 476-20, 60/60 integrity/ insulation.
- Free air provision: 25mm.
- Installation requirements: Continuous, with minimum joints.
 - Fasteners: two galvanised steel fixing brackets and 4 x pigtail screws per meter length. The brackets should be mechanically and securely fixed to the wall at a maximum of 500mm centres using non-combustible fixings..
- Other requirements: The product should be impaled mid-barrier depth by the fixing brackets, with the brackets penetrating the barrier to approximately three quarters of the width of the product. Imperfections of up to 10mm can be filled with Rockwool Acoustic Intumescent Mastic. Adjacent lengths should be tightly butt jointed together.

For cut lengths a minimum of two fixing brackets should be used. It is important to ensure that the barrier is pushed back to be fully in contact with the supporting wall.

The SP Firestop VRB requires the installation of 4 x 65mm pigtail screws (supplied) impaled through the outer intumescent side of the product at a maximum of 250mm centres..

P12 Fire stopping systems

To be read with Preliminaries/ General conditions.

GENERAL

110 FIRE STOPPING SYSTEM TO MULTIPLE SERVICE PENETRATIONS

- Penetration seal/ Gap filler: Submit proposals.

140 FIRE STOPPING SYSTEM TO MULTIPLE SERVICES PENETRATIONS GENERALLY

- Fire resistance: As clause 240.
- Board barrier:
 - Material: Rockwool 50mm Ablative Coated Batt.
Thickness: 50 mm.
Number of layers: One.
 - Framing: bead of Acoustic Intumescent Sealant applied around the external edges then friction fitted to opening. All joints, including those around the perimeter of the Batt, are then pointed with FIREPRO® Acoustic Intumescent Sealant to complete the seal.. - Finish: Not applicable.
- Capping sealant: Not required. - Colour: Black.

160 LINEAR GAP SEALING GENERALLY

- Fire resistance: As clause 240.
- Gap width or height (nominal): 25 mm.
- Gap filler: Acoustic Intumescent Sealant.
- Capping sealant: Not required. - Colour: Not applicable.

SYSTEM PERFORMANCE

210 DESIGN

- Design: Complete the design of the fire stopping system.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

240 FIRE PERFORMANCE GENERALLY

- Resistance to fire: To BS EN 13501-2, EI 120.
- Reaction to fire: In accordance with Building Regulations, Class 0.
- Smoke resistance:
 - Air leakage rate (maximum): 3 m³/m².hr.

260 DESIGN LIFE

- Effective design life: 30 years.

PRODUCTS

305 PRODUCT CERTIFICATION

- Certification: For products specified generically, submit evidence of compliance with the specification.
- Acceptable evidence: Agrément certificate.

325 BOARDS - MINERAL BOUND LIGHTWEIGHT

- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.

335 INTUMESCENT FOAM

- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- 338 INTUMESCENT MASTIC
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- 340A INTUMESCENT MORTAR
 - Manufacturer: ROCKWOOL Ltd.
 - Web: www.rockwool.co.uk.
 - Email: info@rockwool.com.
 - Product reference: ROCKWOOL Firepro Firestop Compound
- 345 INTUMESCENT PILLOWS
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Composition: Sealed polyethylene bags containing graphite and vermiculite granules treated with fire activated chemicals.
 - Integral reinforced eyelets: Required.
 - Linking cable: Non-corrosive cotton-coated wire.
- 350 INTUMESCENT PUTTY
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- 365 MINERAL WOOL RIGID BATTS - ABLATIVE COATED
 - Standard: To BS EN 13162.
 - Manufacturer: Rockwool.
 - Product reference: Submit proposals.
 - Recycled content: 50% (minimum) to BS EN ISO 14021.
- 370 PIPE COLLAR - CONCEALED INTUMESCENT
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- 375 PIPE COLLAR - INSULATED WRAP
 - Manufacturer: Contractor's choice .
 - Product reference: Submit proposals.

EXECUTION

- 620 WORKMANSHIP GENERALLY
 - Gaps: Seal gaps between building elements and services, to provide fire resistance and resist the passage of smoke.
 - Adjacent surfaces: Prevent overrun of sealant or mortar on to finished surfaces.
- 660 APPLYING INTUMESCENT FOAM
 - New joints: Remove builder's debris, mortar droppings, grease, and other contaminants.
 - Old joints: Clean and remove existing sealant from each joint.
 - Priming: Lightly moisten substrate with water.
 - Application: Fill joint to approximately half its depth, and allow foam to expand to face of joint.
 - Trimming: Trim excess foam to give a neat, flush appearance.
- 680 INSTALLING INTUMESCENT PILLOWS
 - Number of pillows (per m² of opening): Number necessary to achieve fire resistance.

- Orientation of bags: Parallel to plane of construction element containing opening.
- 690 APPLYING INTUMESCENT PUTTY
- Sequence: Install putty after services are permanently installed.
 - Loose dust and combustible materials: Remove from the opening.
- 710 INSTALLING MINERAL WOOL BATTS
- Installing batts: Fit tight into void between the penetrating services and the surrounding construction to form a solid barrier.
 - Brackets: Impale batts on proprietary pressed steel brackets at 500 mm maximum centres and not greater than 250 mm from ends of batts.. Bracket fixing: 150mm centres.
 - Face of batts: Flush with the surface of wall, floor or soffit.
 - Joints between batts: Close butt joints, seal with acoustic intumescent sealant.
 - Gaps between services and barrier: Seal with fire resisting sealant.
- 730 FIXING PIPE COLLARS
- Collar fixing: Plugged and screwed with 38mm x No. 10 wood screws.
 - Gap around collar: Seal with intumescent foam.
 - Length of wraps: Project 50 mm from each side of the element.
- 740 INSERTING SEALANT BACKING MATERIAL
- Preparation: Removed debris from service penetration.
 - Installation: Insert joint filler to full depth of joint leaving sufficient depth to apply sealant .
- 745 APPLYING SEALANTS GENERALLY
- Application: As section Z22.
- COMPLETION**
- 910 CLEANING
- Masking tapes: Remove.
 - Cleaning: Clean off splashes and droppings. Wipe down finishes.
- 920 INSPECTION
- Notice for inspection (minimum): 5 working days.

P20 Unframed isolated trims/ skirtings/ sundry items

To be read with Preliminaries/ General conditions

- 110 **SOFTWOOD WINDOW BOARDS**
- Quality of wood and fixing: To BS 1186-3.
 - Species: European whitewood.
 - Class: 1.
 - Moisture content at time of fixing: 9-13%.
 - Preservative treatment: Not required.
 - Fire rating: To BS 476-7, Class 1.
 - Profile: Bullnosed.
 - Finished size: 19X169mm.
 - Finish as delivered: Prepared and primed, as section M60.
 - Fixing: Nailed to 19x19mm softwood battens at 300mm centres.
- 112 **SOFTWOOD ARCHITRAVES GENERALLY**
- Quality of wood and fixing: To BS 1186-3.
 - Species: European whitewood.
 - Class: 1.
 - Moisture content at time of fixing: 9-13%.
 - Preservative treatment: Not required.
 - Fire rating: To BS 476-7, Class 1.
 - Profile: Bevelled.
 - Finished size: 19x144mm.
 - Finish as delivered: Prepared and primed, as section M60.
 - Fixing: Nailed to wall at 300mm centres.
- 115 **SOFTWOOD SKIRTINGS GENERALLY**
- Quality of wood and fixing: To BS 1186-3.
 - Species: European whitewood.
 - Class: 1.
 - Moisture content at time of fixing: 9-13%.
 - Preservative treatment: Not required.
 - Fire rating: To BS 476-7, Class 1.
 - Profile: Bevelled.
 - Finished size: 19X75mm.
 - Finish as delivered: Prepared and primed, as section M60.
 - Fixing: Nailed to wall at 300mm centres.
- 120 **HARDWOOD SADDLE BOARDS GENERALLY**
- Quality of wood and fixing: To BS 1186-3.
 - Species: Mahogany.
 - Class: 2.
 - Moisture content at time of fixing: 9 -13%.
 - Preservative treatment: Not required.
 - Fire rating: To BS 476-7, Class 1.
 - Profile: Bevelled.

- Finished size: 19 x 120 mm.
 - Finish as delivered: Sanded.
 - Fixing: Plugged, screwed and pelleted at 250 centres.
- 240 PLYWOOD BELOW PARAPET COPINGS
- Manufacturer: Contractor's choice. - Product reference: WBP Grade.
 - Face ply species: Contractor's choice.
 - Appearance class to BS EN 635: Class I/II.
 - Bond quality to BS EN 314-2: Class 1.
 - Fire rating: To BS 476-7, Class 1.
 - Thickness: 19 mm.
 - Edges: As drawing WD06 Detail 08.
 - Finish: Prepared and primed as section M60 .
 - Support/ Fixing: Brass cups and screws at 450 mm centres.
- 270 PLASTICS VENEERED BOARD TO ROOF - REFER TO DRAWING WD10 DETAIL 14
- Standard: To BS 4965. - Durability class: D2.
 - Laminate grade: VG.
 - Fire rating: Not applicable.
 - Colour/Finish: White.
 - Balancing veneer: Non-decorative.
 - Finished thickness: 19x175mm.
 - Edges: Fully bonded and trimmed, to all edges.
 - Support/ Fixing: Pinned and glued to softwood grounds.

EXECUTION

- 510 INSTALLATION GENERALLY
- Joinery workmanship: As section Z10.
 - Metal workmanship: As section Z11.
 - Methods of fixing and fasteners: As section Z20 where not specified.
 - Straight runs: To be in one piece, or in long lengths with as few joints as possible.
 - Running joints: Location and method of forming to be agreed where not detailed.
 - Joints at angles: Mitre, unless shown otherwise.
 - Position and level: To be agreed where not detailed.

P21 Door/ window ironmongery

To be read with Preliminaries/ General conditions.

PRE-TENDER**10 QUANTITIES AND LOCATIONS**

- Quantities and locations of ironmongery are in the ironmongery schedule .
- Fixing: As sections L10 and L20.

GENERAL**120 IRONMONGERY RANGE SELECTED BY CONTRACTOR**

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

121 IRONMONGERY FROM SINGLE PROPRIETARY RANGE

- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .
- Principal material/ finish: Satin stainless steel, grade 1.4301 (304) .
- Items unavailable within selected range: Submit proposals.

140 SAMPLES

- General: Before placing orders with suppliers submit labelled samples of the following: Door Handles .
 - Conformity: Retain samples on site for the duration of the contract. Ensure conformity of ironmongery as delivered with labelled samples.

170 IRONMONGERY FOR FIRE DOORS

- Relevant products: Ironmongery fixed to, or morticed into, the component parts of a fire resisting door assembly.
- Compliance: Ironmongery included in successful tests to BS 476-22 or BS EN 1634-1 on door assemblies similar to those proposed.
 - Certification: Submit CERTIFIRE certificates .
- Melting point of components (except decorative non functional parts): 800°C minimum.

180 STRENGTH CLASS OR CATEGORY OF DUTY FOR DOOR IRONMONGERY

- Requirement: To BS EN 1192, Class 1..
- General: Durability of ironmongery components to be compatible with stated category of duty of each door leaf.
 - Exclusions: Ironmongery with specific duty or 'category of use' defined elsewhere.
 - Documentation: Before placing orders with suppliers submit documentation showing product compliance with stated category of duty.

DOOR HANGING DEVICES**315 PERFORMANCE SPECIFICATION FOR SINGLE AXIS DOOR HINGES GENERALLY**

- Standard: To BS EN 1935.
 - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
- Minimum classification grades: - Category of use: 2 .
 - Durability: 7 .
 - Test door mass: 80kg .

- Suitability for use on fire/ smoke doors: 1 .
- Safety: 1.
- Corrosion resistance: 4 .
- Security - Burglar resistance: 1 . - Hinge grade: 13 .
- Type: As schedule .
- Size: 102 x 76 mm .
- Material/ finish: Satin stainless steel, grade 1.4301 (304) .
- Other requirements: Radiused corners .

WINDOW HANGING DEVICES

370 WINDOW HINGES GENERALLY

- Manufacturer: Contractor's choice .
- Product reference: Submit proposals .
- Type: Stormproof with restrictors .
- Size: As per window manufacturer's recommendations .
- Material/ finish: Satin stainless steel, grade 1.4301 (304) .

380 SLIDING FRICTION STAY HINGES GENERALLY

- Manufacturer: Contractor's choice .
- Product reference: Submit proposals .
- Type: Projecting side hung with restrictors .
- Size: As per window manufacturer's recommendations .
- Material/ finish: Austenitic stainless steel .

385 PIVOT HINGES GENERALLY

- Manufacturer: Contractor's choice .
- Product reference: Submit proposals .
- Type: Reversible horizontal pivots with integral restrictor .
- Material/ finish: Extruded aluminium, powder coated, colour TBA .

DOOR OPERATING DEVICES

412 PERFORMANCE SPECIFICATION FOR OVERHEAD DOOR CLOSERS GENERALLY

- Standard: To BS EN 1154.
- Door closing devices to fire/ smoke control doors: CE marked.
- Minimum classification grades: - Category of use: 4 .
- Durability: 8.
- Door closer power size: Adjustable 3-6 .
- Suitability for use on fire/ smoke doors: 1 .
- Safety: 1.
- Corrosion resistance: 3 .
- Type: Concealed except on fire doors .
- Other functions: Back check and delayed closing .
- Casing finish: As schedule .
- Operational adjustment:
 - Variable power: Matched to the sizes and weights of doors.
 - Latched doors: Override latches and/ or door seals when fitted.
 - Unlatched doors: Hold shut under normal working conditions. - Closing against smoke seals of fire doors: Positive. No gaps.

452 PERFORMANCE SPECIFICATION FOR FLOOR SPRINGS GENERALLY

- Standard: To BS EN 1154.
- Door closing devices to fire/ smoke control doors: CE marked.
- Minimum classification grades: - Category of use: 4 .

- Durability: 8.
- Door closer power size: Adjustable 3-6 .
- Suitability for use on fire/ smoke doors: 1 .
- Safety: 1.
- Corrosion resistance: 3 .
- Other functions: Back check and delayed closing .
- Material/ finish: As schedule .
- Operational adjustment:
 - Variable power: Matched to size, weight and location of doors.
 - Latched doors: Override latches and/ or door seals when fitted. - Unlatched doors: Hold shut under normal working conditions.

DOOR SECURING DEVICES

525 PERFORMANCE SPECIFICATION FOR DOOR LOCKS AND LATCHES GENERALLY

- Standard: To BS EN 12209.
- Minimum classification grades: - Category of use: 3.
 - Durability: S.
 - Door mass and closing force: 8.
 - Suitability for use on fire/ smoke doors: 1. - Safety: 0.
 - Corrosion resistance and temperature: D.
 - Security and drill resistance: 5.
 - Field of door application: B.
 - Type of key operation and locking: D.
 - Type of spindle operation: 3.
 - Key identification requirement: B.
- Backset: 44 mm.
- Material/ finish: Stainless steel faceplate.
- Keying: As schedule.

572 PERFORMANCE SPECIFICATION FOR EMERGENCY EXIT DEVICES GENERALLY

- Standard: To BS EN 179.
 - Emergency exit devices for locked doors on escape routes: CE marked.
- Minimum classification grades: - Category of use: 3.
 - Durability: 7 .
 - Door mass: 6 .
 - Suitability for use on fire/ smoke doors: 1 .
 - Safety: 1.
 - Corrosion resistance: 3 .
 - Security: 3 .
 - Projection of operating element: 1 .
 - Type of operation: A: Lever handle operation .
- Material/ finish: Satin stainless steel .
- Additional requirements: None .

578 PERFORMANCE SPECIFICATION FOR PANIC EXIT DEVICES GENERALLY

- Standard: To BS EN 1125.
 - Panic exit devices for locked doors on escape routes: CE marked.
- Minimum classification grades: - Category of use: 3.
 - Durability: 7 .
 - Door mass: 6 .
 - Suitability for use on fire/ smoke doors: 1 .
 - Safety: 1.
 - Corrosion resistance: 3 .
 - Security: 2.

- Projection of bar: 1 .
- Type of bar operation: B: Touch bar operation .
- Material/ finish: Satin stainless steel .
- Additional requirements: None .

WINDOW SECURING DEVICES

590 WINDOW ESPAGNOLETTE BOLTS GENERALLY

- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .
- Type: Roller bolt .
- Size: As schedule .
- Backset: 40 mm .
- Material/ finish: Electro-galvanized steel .
- Additional requirements: Window lever handles as clause 910 .

DOOR FURNITURE

622 PERFORMANCE SPECIFICATION FOR LEVER HANDLE SETS GENERALLY

- Standard: To BS EN 1906.
- Minimum classification grades: - Category of use: 3 .
 - Durability: 7 .
 - Door mass: - (no classification).
 - Fire resistance: A .
 - Safety: 1 .
 - Corrosion resistance: 3 .
 - Security: 3 .
 - Type of operation: A .
- Style: Round pattern with return to door .
- Size: 19 mm diameter .
- Material/ finish: Satin stainless steel, grade .
- Mounting: As schedule .
- Additional requirements: None .

651 PERFORMANCE SPECIFICATION FOR PULL HANDLES GENERALLY

- Standard: To BS 8424.
- Minimum classification grades: - Category of use: 3.
 - Durability: 2.
 - Door mass: - (no classification).
 - Suitability for use on fire/ smoke doors: 1.
 - Safety: 1.
 - Corrosion resistance: 3.
- Shape: D handle.
- Diameter: 22 mm.
- Distance between centres: 300 mm.
- Material/ finish: Satin stainless steel, grade 1.4401 (316).
- Mounting: Bolt through.
- Additional requirements None.

670 PUSH PLATES GENERALLY

- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .
- Size: 325 x 75 mm .
- Material/ finish: Satin stainless steel, grade 1.4401 (316) .
- Mounting: Face fix .

- Additional requirements: Rounded edges and radiused corners .
- 690 KICK PLATES GENERALLY
- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .
 - Size: 900 x 225 mm .
 - Material/ finish: Satin stainless steel, grade 1.4401 (316) .
 - Mounting: Face fix .
 - Additional requirements: Rounded edges and radiused corners .
- 710 ESCUTCHEONS GENERALLY
- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .
 - Material/ finish: Satin stainless steel, grade 1.4401 (316) .
 - Keyhole type: Euro profile cylinder .
 - Usage: To cylinder locks where no handle backplate is specified to be fitted .
- 720 DOOR STOPS
- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .
 - Type: Floor mounted rubber buffer on stainless steel shoe for concrete fixing .
 - Usage: To doors opening against walls other than those fitted with closers with a back check facility .
- 731 PERFORMANCE SPECIFICATION FOR LETTER PLATES GENERALLY
- Standard: To BS EN 13724.
 - Minimum classification grades: - Type of aperture: 4.
 - Aperture size: 3 .
 - Corrosion resistance: 3 .
 - Security: 2.
 - Operation: Inward opening sprung flap .
 - Material/ finish: Satin stainless steel, grade 1.4401 (316) .
 - Features: Extended plate at one end for number .
- 850 THRESHOLD WEATHERSTRIP GENERALLY
- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .
 - Type: Domed neoprene in low profile metal carrier .
 - Size: To suit door .
 - Material/ finish: Satin anodized aluminium .
- 855 WEATHERSTRIP TO DOOR HEAD AND JAMBS GENERALLY
- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .
 - Type: Elastomeric compression strip in metal carrier .
 - Size: To suit door .
 - Material/ finish: Satin anodized aluminium .
- 890 DOOR VIEWERS GENERALLY
- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .
 - Angle of vision: 180° .
 - Material/ finish: Chrome plated .
 - Viewer body diameter: 12 mm .
 - Door thickness: 44 mm .

896 DOOR MOUNTED FIRE RESISTING AIR TRANSFER GRILLES

- Manufacturer: Contractor's choice .
- Product reference: Submit proposals .
- Type: Intumescent .
- Size: As drawings .
- Fire resistance: 60 minutes .
- Material/ finish: Satin stainless steel, grade 1.4401 (316) .

WINDOW FURNITURE**900 CASEMENT HANDLES GENERALLY**

- Manufacturer: Contractor's choice .
- Product reference: Submit proposals .
- Type: Locking .
- Material/ finish: Satin anodized aluminium .
- Features: Style to match existing .

905 CASEMENT STAYS GENERALLY

- Manufacturer: Contractor's choice .
- Product reference: Submit proposals .
- Type: Casement friction stay .
- Size: As schedule .
- Material/ finish: Satin anodized aluminium .
- Features: Style to match existing .

910 WINDOW LEVER HANDLES GENERALLY

- Manufacturer: Contractor's choice .
- Product reference: Submit proposals .
- Type: Locking handle with ventilation tongue .
- Material/ finish: Satin anodized aluminium .
- Features: Style to match existing .

930 FRICTION RESTRICTOR CASEMENT STAYS GENERALLY

- Manufacturer: Contractor's choice .
- Product reference: Submit proposals .
- Type: As schedule .
- Size: As schedule .
- Material/ finish: Satin anodized aluminium .
- Features: Style to match existing .

R Disposal systems

R10 Rainwater drainage systems

To be read with Preliminaries/ General conditions.

GENERAL

110 GRAVITY RAINWATER DRAINAGE SYSTEM

- Rainwater outlets: Rainwater collector units.
- Gutters: Roof Drainage Channels.
- Pipework: Aluminium Spigot and Socket.
- Below ground drainage: .
- Disposal: To surface water drainage.
- Controls: Not applicable.
- Accessories: .

SYSTEM PERFORMANCE

210 DESIGN

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

221 COLLECTION AND DISTRIBUTION OF RAINWATER

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

PRODUCTS

311 ALUMINIUM GUTTERS

- Standard: Agrément certified.
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Profile: Half round.
- Type/ Thickness: Extruded, 1.6 mm thickness.
- Nominal size: 150 mm.
- Finish: Polyester powder coating.
- Colour: Contractor's Choice.
- Brackets: Rafter type.
 - Fixings: Stainless steel screws.
 - Size: 25 x 3.5 mm.
- Accessories: Jointing clips and Stop ends.

365A PROPRIETARY RAINWATER OUTLETS

Harmer Insulated Graduated Vertical Spigot roof outle
 " Manufacturer: Alumasc Exterior Building Products Ltd
 Address: White House Works, Bold Road, Sutton, St Helens, Merseyside WA9 4JG

" Product reference: Harmer Insulated Graduated Vertical Spigot roof outlet

" Type: 1017EB, dome grating /1017EB/F, flat grating /As drawing ____ /Contractor's choice " Accessories: Not required /1014EB extension piece /1016 terrace grate /As drawing ____ /Contractor's choice

EXECUTION

600 PREPARATION

- Work to be completed before commencing work specified in this section:
 - Below ground drainage. Alternatively, make temporary arrangements for dispersal of rainwater without damage or disfigurement of the building fabric and surroundings.
 - Painting of surfaces which will be concealed or inaccessible.

605 INSTALLATION GENERALLY

- Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
- Plastics and galvanized steel pipes: Do not bend.
- Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
- Protection:
 - Fit purpose made temporary caps to prevent ingress of debris.
 - Fit access covers, cleaning eyes and blanking plates as the work proceeds.

630 INSTALLING RAINWATER OUTLETS

- Fixing: Secure. Fix before connecting pipework.
 - Method: As drawing WD08.
- Junctions between outlets and pipework: Accommodate movement in structure and pipework.

635 FIXING PIPEWORK

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

700 ACCESS FOR TESTING AND MAINTENANCE

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

COMPLETION

900 TESTING GENERALLY

- Dates for testing: Give notice.
 - Period of notice (minimum): 5 Days.
- Preparation:
 - Pipework: Complete, securely fixed, free from defects, obstruction and debris before testing.

- Testing:
 - Supply clean water, assistance and apparatus. - Do not use smoke to trace leaks.
 - Records: Submit a record of tests.
- 905 INTERNAL PIPEWORK TEST - ENGLAND, WALES, IRELAND AND NORTHERN IRELAND
- Preparation: Temporarily seal open ends of pipework with plugs.
 - Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug.
 - Testing: Pump air into pipework until gauge registers 38 mm.
 - Required performance:
 - Allow a period for temperature stabilization, after which the pressure of 38 mm is to be maintained without loss for at least 3 minutes.
- 910 GUTTER TEST
- Preparation: Temporarily block all outlets.
 - Testing: Fill gutters to overflow level and after 5 minutes closely inspect for leakage.
- 915 MAINTENANCE INSTRUCTIONS
- 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
- 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.
 - Access covers, rodding eyes, outlet gratings and the like: Secure complete with fixings.

Z Building fabric reference specification

Z10 Purpose made joinery

To be read with Preliminaries/ General conditions.

110 FABRICATION

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

120 CROSS SECTION DIMENSIONS OF TIMBER

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

130 PRESERVATIVE TREATED WOOD

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

140 MOISTURE CONTENT

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

210 LAMINATED PLASTICS VENEERED BOARDS/ PANELS

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

220 WOOD VENEERED BOARDS/ PANELS

- Core material and veneers: Conditioned before bonding.
- Setting out: Veneer features and grain pattern aligned regularly and symmetrically unless instructed otherwise.
- Balancing veneer: Applied to reverse side of core material.
 - Moisture and temperature movement characteristics: As facing veneer.

- Veneer edges: Tight butted and flush, with no gaps.
- Tolerance of veneer thickness (maximum): ± 0.5 mm.
- Finished components: Free from defects, including bow, twist, scratches, chipping, splits, blebs, indentations, glue marks and staining.
- Surface finish: Fine, smooth, free from sanding marks.

250 FINISHING

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

Z11 Purpose made metalwork

To be read with Preliminaries/ General conditions.

310 MATERIALS GENERALLY

- Grades of metals, section dimensions and properties: To appropriate British Standards. When not specified, select grades and sections appropriate for the purpose.
- Prefinished metal: May be used if methods of fabrication do not damage or alter appearance of finish, and finish is adequately protected.
- 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

- Hot rolled structural steels (excluding structural hollow sections and tubes): To BS EN 100251.
- Fine grain steels, including special steels: To BS EN 10025-3 and -4.
- Steels with improved atmospheric corrosion resistance: To BS EN 10025-5.

330 STEEL PLATE, SHEET AND STRIP

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

340 HOT ROLLED STEEL PLATE, SHEET AND STRIP

- Flat products, high yield strength for cold forming: To BS EN 10149-1, -2 and -3.
- Carbon steel sheet and strip for cold forming: To BS EN 10111.
- 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

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

360 COATED STEEL FLAT PRODUCTS

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

370 STEEL STRUCTURAL HOLLOW SECTIONS (SHS)

- Non alloy and fine grain steels, hot finished: To BS EN 10210-1 and -2.
- Non-alloy and fine grain steels, cold formed welded: To BS EN 10219-2.
- Weather resistant steels, hot finished: To BS 7668.

380 OTHER STEEL SECTIONS

Equal flange tees: To BS EN 10055.

- Equal and unequal angles: To BS EN 10056-1 and -2.
- Wire, carbon steel for general engineering purposes: To BS 1052.
- Wire and wire products, general: To BS EN 10218-2.
- Tubes:
 - Seamless circular: To BS EN 10297-1.

- Seamless cold drawn: To BS EN 10305-1.
- Welded and cold sized square and rectangular: To BS EN 10305-5.
- Welded circular: To BS EN 10296-1.
- Welded cold drawn: To BS EN 10305-2. - Welded cold sized: To BS EN 10305-3.

400 STAINLESS STEEL PRODUCTS

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

410 ALUMINIUM ALLOY PRODUCTS

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

420 COPPER ALLOY PRODUCTS

- Sheet, strip, plate and circles for general purposes: To BS EN 1652.
- Sheet and strip for building purposes: To BS EN 1172.
- Rods: To BS EN 12163.
- Profiles and rectangular bars: To BS EN 12167.
- Wire: To BS EN 12166.
- Tubes: To BS EN 12449.

FABRICATION

515 FABRICATION GENERALLY

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

520 COLD FORMED WORK

- Profiles: Accurate, with straight arrises.

525 ADHESIVE BONDING

- Preparation of surfaces of metals to receive adhesives:
 - Degrease.
 - Abrade mechanically or chemically etch. -
 - Prime: To suit adhesive.
- Adhesive bond: Form under pressure.

527 WELDING GENERALLY.

Welding procedures:

- Method and standard: Metal arc welding to BS EN 1011-1 and - 2.. - Welding Procedure Specification (WPS): Not required.
- Preparation:
 - Joint preparation: Clean thoroughly.
 - Surfaces of materials that will be self-finished and visible in the completed work: protect from weld splatter.
- Jointing:
 - Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
 - Dissimilar metals: Filler metal grade to be approved by a qualified metallurgist.
 - Strength requirements: Welds to achieve design loads.
 - Heat straightening: Not permitted.
 - Complex assemblies: Agree priority for welding members to minimize distortion caused by subsequent welds.
 - Tack welds: Use only for temporary attachment.
 - Jigs: Provide to support and restrain members during welding.
 - Filler plates: Not permitted.
 - Lap joints: Minimum 5 x metal thickness or 25 mm, whichever is greater. - Weld terminations: Clean and sound.

530 STAINLESS STEEL FABRICATION

- Guillotining or punching: Do not use for metal thicknesses greater than 10 mm.
- Thermal cutting:
 - Carbonation in the heat affected zone: Remove, after cutting.
- Bending:
 - Plates or bars: Cold bending radius not less than material thickness. - Tubes: Cold bending radius not less than 2 x tube diameter.
- Welding: In addition to general welding requirements: - Protect adjacent surfaces from weld spatter.
 - Pickle all welds before post fabrication treatments.
- Protection: Provide protection to fabricated components during transit and on site.

555 BRAZING

- Standard: To BS EN 14324.
- Testing:
 - Destructive testing: To BS EN 12797.
 - Nondestructive testing: To BS EN 12799.

FINISHING**710 FINISHING WELDED AND BRAZED JOINTS VISIBLE IN COMPLETE WORK**

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

745 PREPARATION FOR APPLICATION OF COATINGS

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

750 LIQUID ORGANIC COATING FOR ALUMINIUM ALLOY COMPONENTS

- Standard: To BS 4842.
- 760 ZINC AND CADMIUM PLATING OF IRON AND STEEL SURFACES
 - Zinc plating: To BS EN ISO 2081.
 - Cadmium plating: To BS EN ISO 2082.
- 770 CHROMIUM PLATING
 - Standard: To BS EN ISO 1456.
- 780 GALVANIZING
 - Standard: To BS EN ISO 1461.
 - Preparation:
 - Vent and drain holes: Provide in accordance with BS EN ISO 14713-1 and -2. Seal after sections have been drained and cooled.
 - Components subjected to cold working stresses: Heat treat to relieve stresses before galvanizing.
 - Welding slag: Remove.
 - Component cleaning: To BS EN ISO 8501-3. - Grade: St 2.
- 790 VITREOUS ENAMELLING
 - Standard: To BS EN ISO 28722.
 - Substrate metal: Steel to BS EN 10209.

COMPLETION

- 910 DOCUMENTATION
 - Submit:
 - Manufacturer's maintenance instructions.
 - Guarantees, warranties, test certificates, record schedules and log books.
- 920 COMPLETION
 - Protection: Remove.
 - Cleaning and maintenance: Carry out in accordance with procedures detailed in fabricators' guarantees.

Z12 Preservative/ fire retardant treatment

To be read with Preliminaries/ General conditions.

110 TREATMENT APPLICATION

- Timing: After cutting and machining timber, and before assembling components.
- Processor: Licensed by manufacturer of specified treatment solution.
 - Operatives: WPA certified.
- Certification: For each batch of timber provide a certificate of assurance that treatment has been carried out as specified.

120 COMMODITY SPECIFICATIONS

- Standard: In accordance with the Wood Protection Association (WPA) publication 'Industrial wood preservation specification and practice'.

130 PRESERVATIVE TREATMENT SOLUTION STRENGTHS/ TREATMENT CYCLES

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

140 COPPER-ORGANIC PRESERVATIVE TREATMENT

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

150 WATER-BASED ORGANIC PRESERVATIVE TREATMENT

- Solution:
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Application: High pressure impregnation.
- Moisture content of wood:
 - At time of treatment: Not more than 28%.
 - After treatment: Timber to be surface dry before use.

160 ORGANIC SOLVENT PRESERVATIVE TREATMENT

- Solution:
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Application: Double vacuum + low pressure impregnation, or immersion.
- Moisture content of wood:
 - At time of treatment: As specified for the timber/ component at time of fixing.
 - After treatment: Timber to be surface dry before use.

165 WATER-BASED MICROEMULSION PRESERVATIVE TREATMENT

- Solution:
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.

- Application: Double vacuum + low pressure impregnation.
 - Moisture content of wood:
 - At time of treatment: As specified for the timber/ component at time of fixing.
 - After treatment: Timber to be surface dry before use.
- 167 BORON COMPOUND PRESERVATIVE TREATMENT
- Solution:
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Application: High pressure impregnation.
 - Moisture content of wood:
 - At time of treatment: Not more than 28%.
 - After treatment: Timber to be surface dry before using.
- 210 FIRE RETARDANT TREATMENT
- Standard: In accordance with the Wood Protection Association (WPA) publication 'Industrial flame retardant treatment of wood and wood-based panel products'.
 - Solution type: EXT.
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Application: Vacuum + pressure impregnation.
 - Moisture content of wood:
 - At time of treatment: Not to exceed, 28% for large cross sectional timber, 22% for timber boarding and 15% for board material.
 - After treatment: Timber to be redried slowly at temperatures not exceeding 60°C to minimize distortion and degradation.
- 610 MAKING GOOD TO PRESERVATIVE TREATMENT ON-SITE
- Preservative solution: Compatible with off-site treatment.
 - Application: In accordance with preservative manufacturer's recommendations.
- 620 MAKING GOOD TO FIRE RETARDANT TREATMENT ON-SITE
- Fire retardant: Compatible with off-site treatment.
 - Application: In accordance with fire retardant manufacturer's recommendations.

Z20 Fixings and adhesives

Z20 Fixings and adhesives

To be read with Preliminaries/ General conditions.

PRODUCTS

- 310 FASTENERS GENERALLY
- Materials: To have:
 - Bimetallic corrosion resistance appropriate to items being fixed.
 - Atmospheric corrosion resistance appropriate to fixing location.
 - Appearance: Submit samples on request.
- 320 PACKINGS
- Materials: Noncompressible, corrosion proof.
 - Area of packings: Sufficient to transfer loads.
- 330 NAILED TIMBER FASTENERS
- Nails:
 - Steel: To BS 1202-1 or BS EN 10230-1.
 - Copper: To BS EN 1202-2.
 - Aluminium: To BS 1202-3.
- 340 MASONRY FIXINGS
- Light duty: Plugs and screws.
 - Heavy duty: Expansion anchors or chemical anchors.
- 350 PLUGS
- Type: Proprietary types to suit substrate, loads to be supported and conditions expected in use.
- 360 ANCHORS
- Types:
 - Expansion: For use in substrate strong enough to resist forces generated by expansion of anchor.
 - Adhesive or chemical:
 - For use in substrate where expansion of anchor would fracture substrate.
 - For use in irregular substrate where expansion anchors cannot transfer load on anchor.
 - Cavity: For use where the anchor is retained by toggles of the plug locking onto the inside face of the cavity.
- 370 WOOD SCREWS
- Type:
 - Wood screws (traditional pattern).
 - Standard: To BS 1210.
 - Wood screws.
 - Pattern: Parallel, fully threaded shank or twin thread types.
 - Washers and screw cups: Where required are to be of same material as screw.
- 380 MISCELLANEOUS SCREWS
- Type: To suit the fixing requirement of the components and substrate.
 - Pattern: Self-tapping, metallic drive screws, or power driven screws.

- Washers and screw cups: Where required to be of same material as screw.
- 390 ADHESIVES GENERALLY
 - Standards:
 - Hot-setting phenolic and aminoplastic: To BS 1203.
 - Thermosetting wood adhesives: To BS EN 12765.
 - Thermoplastic adhesives: To BS EN 204.

410 POWDER ACTUATED FIXING SYSTEMS

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

EXECUTION

610 FIXING GENERALLY

- 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.
- Components, substrates, fixings and fasteners of dissimilar metals: Isolate with washers/sleeves to avoid bimetallic corrosion.
- Appearance: Fixings to be in straight lines at regular centres.

620 FIXING THROUGH FINISHES

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

630 FIXING PACKINGS

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

640 FIXING CRAMPS

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

650 NAILED TIMBER FIXING

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

660 SCREW FIXING

- Finished level of countersunk screw heads:
 - Exposed: Flush with timber surface.
 - Concealed (holes filled or stopped): Sink minimum 2 mm below surface.

670 PELLETED COUNTERSUNK SCREW FIXING

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

680 PLUGGED COUNTERSUNK SCREW FIXING

- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Plugs: Glue in to full depth of hole.

- Finished level of plugs: Projecting above surface.

690 USING POWDER ACTUATED FIXING SYSTEMS

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

700 APPLYING ADHESIVES

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

Z21 Mortars

To be read with Preliminaries/ General conditions.

CEMENT GAUGED MORTARS

- 110 CEMENT GAUGED MORTAR MIXES
- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.
- 120 SAND FOR SITE MADE CEMENT GAUGED MASONRY MORTARS
- Standard: To BS EN 13139.
 - Grading: 0/2 (FP or MP).
 - Fines content where the proportion of sand in a mortar mix is specified as a range (e.g. 1:1: 5-6):
 - Lower proportion of sand: Use category 3 fines.
 - Higher proportion of sand: Use category 2 fines.
 - Sand for facework mortar: Maintain consistent colour and texture. Obtain from one source.
- 131 READY-MIXED LIME:SAND FOR CEMENT GAUGED MASONRY MORTARS
- Standard: To BS EN 998-2.
 - Lime: Nonhydraulic to BS EN 459-1. - Type: CL 90S.
 - Pigments for coloured mortars: To BS EN 12878.
- 135 SITE MADE LIME:SAND FOR CEMENT GAUGED MASONRY MORTARS
- Permitted use: Where a special colour is not required and in lieu of factory made ready-mixed material.
 - Lime: Nonhydraulic to BS EN 459-1.
 - Type: CL 90S.
 - 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
- Cement: To BS EN 197-1 and CE marked.
 - Types:
 - Portland cement, CEM I.
 - Portland limestone cement, CEM II/A-L or CEM II/A-LL.
 - Portland slag cement, CEM II/B-S.
 - Portland fly ash cement, CEM II/B-V.
 - Strength class: 32.5, 42.5 or 52.5.
 - White cement: To BS EN 197-1 and CE marked.
 - Type: Portland cement, CEM I. - Strength class: 52.5.
 - Sulfate resisting Portland cement:
 - Type:
 - To BS EN 197-1 Sulfate resisting Portland cement, CEM I/SR and CE marked.
 - To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked. - Strength class: 32.5, 42.5 or 52.5.
 - Masonry cement: To BS EN 413-1 and CE marked. - Class: MC 12.5.
- 180 ADMIXTURES FOR SITE MADE CEMENT GAUGED MORTARS
- Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
 - Other admixtures: Submit proposals.
 - Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

190 RETARDED READY TO USE CEMENT GAUGED MORTAR

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

200 STORAGE OF CEMENT GAUGED MORTAR MATERIALS

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

210 MAKING CEMENT GAUGED MORTARS

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

LIME:SAND MORTARS**310 LIME:SAND MORTAR MIXES**

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

320 SAND FOR LIME:SAND MASONRY MORTARS

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

330 READY PREPARED LIME PUTTY

- Type: Slaked directly from CL 90 quicklime to BS 890, using an excess of water.
 - Maturation: In pits/ containers that allow excess water to drain away.
 - Density of matured lime putty: 1.3 - 1.4 kg/litre.
- Maturation period before use (minimum): Seek instructions.

345 ADMIXTURES FOR HYDRAULIC LIME:SAND MORTARS

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

350 STORAGE OF LIME:SAND MORTAR MATERIALS

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

360 MAKING LIME:SAND MORTARS GENERALLY

- Batching: By volume. Use clean and accurate gauge boxes or buckets.

- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
 - Contamination: Prevent intermixing with other materials, including cement.
- 380 READY TO USE NONHYDRAULIC LIME:SAND MORTARS
- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Materials: Select from:
 - Lime putty slaked directly from quicklime to BS EN 459-1 and mixed thoroughly with sand.
 - Quicklime to BS EN 459-1 slaked directly with sand.
 - Maturation period before use (maximum): Seven days.
- 390 KNOCKING UP NONHYDRAULIC LIME:SAND MORTARS
- Knocking up before and during use: Achieve and maintain a workable consistency by compressing, beating and chopping. Do not add water. - Equipment: Roller pan mixer or submit proposals.
- 400 MAKING HYDRAULIC LIME:SAND MORTARS
- Mixing hydrated hydraulic lime:sand: Follow the lime manufacturer's recommendations for each stage of the mix.
 - Water quantity: Only sufficient to produce a workable mix.
 - Working time: Within limits recommended by the hydraulic lime manufacturer.

Z22 Sealants

To be read with Preliminaries/General conditions.

PRODUCTS

310 JOINTS GENERALLY

- Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.

EXECUTION

610 SUITABILITY OF JOINTS

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

620 PREPARING JOINTS

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

630 APPLYING SEALANTS

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

Z31 Powder coatings

To be read with Preliminaries/ General conditions.

120 POWDER COATING MATERIALS

- Manufacturer: Obtain from one only of the following: Contractor's choice.
- Selected manufacturer: Submit details before commencement of powder coating including:
 - Name and contact details.
 - Details of accreditation schemes.
 - Technical data of product including current Agrément certificates.

210 WORKING PROCEDURES

- Comply with the follow following standards.
 - Aluminium components: To BS 6496 or BS EN 12206-1.
 - Steel components: To BS EN 13438.
 - Safety standards: To British Coatings Federation 'Code of safe practice - Application of thermosetting powder coatings by electrostatic spraying'.

220 POWDER COATING APPLICATORS

- Applicator requirements:
 - Approved by powder coating manufacturer.
 - Currently certified to BS EN ISO 9001.
 - Comply with quality procedures, guarantee conditions, standards and tests required by powder coating manufacturer.
 - Applicator to use only one plant.
- Selected applicator: Submit details before commencement of powder coating including:
 - Name and contact details.
 - Details of accreditation schemes.

225 GUARANTEES

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

230 CONTROL SAMPLES

- Sequence: Prior to ordering materials for the works, obtain approval of appearance for:
 - Powder coated samples: Of various grades and forms of background metal to be used, showing any colour, texture and gloss variation.
 - Fabrication samples: Showing joint assembly, how powder coating is affected and how any cut metal edges are finished and protected.
- Samples to include the following information:
 - Product reference.
 - Colour.
 - Reference number.
 - Name.
 - Gloss level.

240 QUALITY ASSURANCE SYSTEM

- Requirement: Powder and coating application to the following designated components is to be tested and approved in accordance with the Qualicoat system.
 - Designated components: Aluminium Doors, Screens & Flashings.

250 COMPONENT DESIGN

- Condition of components to be powder coated:
 - To comply with relevant recommendations of BS 4479-1, -3, and -4.
 - Of suitable size to fit plant capacity.
 - Of suitable thickness to withstand oven curing.
- 310 PRETREATMENT OF ALUMINIUM COMPONENTS
- Condition of components to be pretreated:
 - Free from corrosion and damage.
 - All welding and jointing completed and finish off as specified.
 - Free from impurities including soil, grease, oil.
 - Suitable for and compatible with the pretreatment process.
 - Conversion coating requirements:
 - Chromate system: To BS 6496 or BS EN 12206-1.
 - Chromate-free system: To BS EN 12206-1. Submit details before using.
 - Rinsing requirements: Use demineralized water. Drain and dry.
- 320 PRETREATMENT OF STEEL COMPONENTS
- Condition of components to be pretreated:
 - Free from corrosion and damage.
 - All welding and jointing completed and finish off as specified.
 - Free from impurities including soil, grease, oil.
 - Suitable for and compatible with the pretreatment process.
 - Conversion coating requirements: To BS EN 13438.
 - Rinsing requirements: Use demineralized water. Drain and dry.
- 430 EXTENT OF POWDER COATINGS
- 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
- Surfaces to receive powder coatings: Free from dust or powder deposits.
 - Powder colours: Obtain from one batch of one manufacturer.
 - Commencement of powder coating: To be continuous from pretreatment.
 - Jig points: Not visible on coated components.
 - Curing: Controlled to attain metal temperatures and hold periods recommended by powder coating manufacturer.
 - 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.
 - Overcoating of components: Not acceptable.
- 440 PERFORMANCE AND APPEARANCE OF POWDER COATINGS
- For aluminium components:
 - Standard: To BS 6496 or BS EN 12206-1.
 - For steel components:
 - Standard: To BS EN 13438.
 - Visual inspection after powder coating: Significant surface viewing distances to be as specified in the relevant Standard, unless specified otherwise.
 - Colour and gloss levels: To conform with approved samples.
- 450 ALUMINIUM ALLOY FABRICATIONS
- Units may be assembled:
 - Before powder coating.
 - From components powder coated after cutting to size.

- Where approved, from components powder coated before cutting to size.
 - Exposure of uncoated background metal: Not acceptable.
 - Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.
- 460 STEEL FABRICATIONS
- Unit assembly: Wherever practical, before powder coating.
 - Exposure of uncoated background metal: Not acceptable.
 - Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.
- 470 FIXINGS
- 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/ REPLACEMENT
- Before delivery to site: Check all components for damage to powder coatings. Replace damaged components.
 - Site damage: Submit proposals for repair or replacement.
- 510 PROTECTION
- Powder coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
 - Protective coverings: Must be:
 - Resistant to weather conditions.
 - Partially removable to suit building in and access to fixing points.
 - Protective tapes in contact with powder coatings: Must be:
 - Low tack, self adhesive and light in colour.
 - 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.
 - Inspection of protection: Carry out monthly. Promptly repair any deterioration or deficiency.
- 535 DOCUMENTATION
- Submit the following information for each batch of powder coated components:
 - Supplier.
 - Trade name.
 - Colour.
 - Type of powder.
 - Method of application.
 - Batch and reference number.
 - Statutory requirements.
 - Test certificates.
 - Maintenance instructions.
- 540 COMPLETION
- Protection: Remove.
 - Cleaning and maintenance of powder coatings: Carry out in accordance with procedures detailed in powder coating manufacturer and applicator guarantees.

Z33 Anodizing

To be read with Preliminaries/ General conditions.

- 210 WORKING PROCEDURES
- Standard: To BS 3987 for anodic coatings on wrought aluminium.
- 220 ANODIZER REQUIREMENTS
- Processing:
 - Approved: By the Aluminium Finishing Association.
 - Certified: To BS EN ISO 9001.
 - Anodizing plant: Each anodizer to use only one plant.
- 230 GUARANTEES
- Anodizer guarantees: Submit sample copies before commencement of anodizing.
 - Project specific guarantees: Submit signed copies on completion of work.
 - Guarantees to cover: - Life expectancy.
 - Colour: Opacity and consistency.
 - Texture: Gloss, satin or matt.
 - Quality of coating.
- 240 CONTROL SAMPLES
- Sequence: Prior to ordering materials for the works, obtain approval of appearance for:
 - Anodic coated samples: Showing colour and texture variation.
 - Fabrication samples: Showing joint assembly, how anodic coating is affected and how cut metal edges are finished and protected.
- 255 QUALITY ASSURANCE SYSTEM
- Requirement: Powder and coating application to the following designated components is to be tested and approved in accordance with the Qualanod system. - Designated components: AS REQUIRED.
- 270 COMPONENT DESIGN
- Condition of components to be anodized:
 - To comply with relevant recommendations of BS 4479-1, and -5.
 - Of suitable size to fit plant capacity.
- 310 PRETREATMENT
- Condition of components to be anodized:
 - Free from corrosion and damage.
 - Suitable for and compatible with the pretreatment and anodizing process.
 - Process: In accordance with the specification requirements for the finish.
- 410 EXTENT OF ANODIC COATINGS
- 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
- Surfaces to receive anodic coatings: Clean.

- Commencement of anodic coating: To be continuous from pretreatment.
 - Jig points: To be agreed. Not on visible areas of anodic coated components.
 - Use of touch-up paint: Not acceptable.
- 430 PERFORMANCE AND APPEARANCE OF ANODIC COATINGS
- Standard: To BS 3987.
 - 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
- Units may be assembled:
 - Before anodizing, providing sufficient drainage holes are included in components to fully drain components.
 - From components anodized after cutting to size.
 - Where approved, from components anodized before cutting to size.
 - Exposure of uncoated background metal: Not acceptable.
 - Assembly sealants: Compatible with anodic coatings. Obtain approval of colour if sealants are visible after fabrication.
- 450 DAMAGED COMPONENTS - REPAIR/ REPLACEMENT
- Before delivery to site: Check all components for damage to anodic coatings. Replace damaged components.
 - Site damage: Submit proposals for repair or replacement.
- 510 PROTECTION
- Anodic coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
 - Protective coverings: Must be:
 - Resistant to weather conditions.
 - Partially removable to suit building in and access to fixing points.
 - Protective tapes in contact with anodizing to be:
 - Low tack, self adhesive and light in colour.
 - Applied and removed in accordance with tape and anodizers recommendations.
 - Inspection of protection: Carry out weekly. Promptly repair any deterioration or deficiency.
- 530 DOCUMENTATION
- Submit the following information for each batch of anodic coated components:
 - Supplier.
 - Trade name.
 - Colour (if required).
 - Batch and reference number. - Statutory requirements.
- 540 COMPLETION
- Protection: Remove.
 - Cleaning and maintenance of anodic coatings: Carry out in accordance with procedures detailed in anodizer's guarantees.