

ARCHITECTURAL SPECIFICATION

Summer Works 2026 for Climate Action, to refurbish 3 Existing Science labs and associated Prep Area, repair roof and all associated works. Refurbishment of 2 No. Home Economics rooms. Bike Racks and EV charging provision will also be installed.

at

St Tiernan's Community School, Parkvale, Balally, Dublin 16, D16 KW26

For

The Board of Management for St Tiernan's Community School.

June 2026

C20 Demolition

To be read with Preliminaries/General conditions

GENERAL REQUIREMENTS

- 110 **DESK STUDY/ SURVEY**
- Scope: Before starting demolition work, examine available information, carry out a survey of the structures, site and surrounding area.
 - Report and method statements: Submit, describing:
 - Form, condition and details of the structures, site and surrounding area.
Extent: existing concrete shelter.
 - Form, location and removal methods of flammable, toxic or hazardous materials.
 - Form, location and removal methods of materials for reuse or recycling.
 - Type and location of adjoining or surrounding premises which may be adversely affected by noise, vibration, dust or removal of structure.
 - Identification and location of services above and below ground, including those required for the Contractor's own use. Arrangements for disconnection and removal of services.
 - Type and location of features of historical, archaeological, geological or ecological importance.
 - Sequence and method of demolition including details of specific pre-weakening.
 - Arrangements for protection of personnel and the public including exclusion of unauthorized persons.
 - Arrangements for control of site transport and traffic.
 - Proposed programme of work.
 - Special requirements: _____.
 - Format of report: _____.
- 120 **EXTENT OF DEMOLITION**
- General: Subject to retention requirements specified elsewhere demolish structures down to .
- 130 **GROUNDWORKS**
- General:
 - Old foundations, slabs and the like: Break out where and to the extent stated.
 - Contaminated material: Remove and carry out remediation required by the Enforcing Authority.
- 140 **BENCH MARKS**
- Unrecorded bench marks and other survey information: Give notice when found.
 - Do not remove or destroy.
- 150 **FEATURES TO BE RETAINED**
- General: Keep in place and protect the following: _____.

SERVICES AFFECTED BY DEMOLITION

- 210 **SERVICES REGULATIONS**
- Work carried out to or which affects new or existing services: Carry out in accordance with the Byelaws or Regulations of the relevant Statutory Authority.
- 220 **LOCATION OF SERVICES**

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- Services affected by the Works: Locate and mark positions.
- Mains services: Arrange with the appropriate authorities for location and marking of positions.
- Standard: In accordance with National Joint Utilities Group (NJUG) 'Guidelines on the positioning and colour coding of utilities' apparatus'.

230 DISCONNECTION - ARRANGED BY CONTRACTOR

- General: Arrange with the appropriate authorities for disconnection of services and removal of fittings and equipment prior to starting demolition.

231 DISCONNECTION - ARRANGED BY EMPLOYER

- General: The Employer will arrange with the appropriate authorities for disconnection of services and removal of fittings and equipment prior to demolition as agreed:
- Timing: Do not start demolition until disconnections are completed.

232 DISCONNECTION - ARRANGED BY EMPLOYER AND CONTRACTOR

- Responsibility: The Employer will arrange with the appropriate authorities for disconnection of services and removal of fittings and equipment prior to demolition as agreed
- Disconnection of remaining services: Arrange with the appropriate authorities. Remove fittings and equipment.
- Timing: Do not start demolition until disconnections are completed.

240 DISCONNECTION OF DRAINS

- General: Locate disconnect and seal disused drain connections.
- Sealing: Within the site and permanent.

250 DRAINS IN USE

- General: Protect drains, manholes, inspection chambers, gullies, vent pipes and fittings still in use and ensure that they are kept free of debris.
- Damage: Make good damage arising from demolition work. Leave clean and in working order at completion.

260 BYPASS CONNECTIONS

- General: Provide as necessary to maintain continuity of services to occupied areas of the same and adjoining properties.
- Minimum notice to occupiers: 72 hours if shutdown is necessary during changeover.

270 SERVICES WHICH ARE TO REMAIN

- Damage: Give notice and notify service authority or owner of damage arising from the execution of the works.
- Repairs: Complete as directed, and to the satisfaction of the service authority or owner.

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 demolition to be used.

320 GAS OR VAPOUR RISKS

- Precautions: Prevent fire or explosion caused by gas or vapour.

330 DUST CONTROL

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- Method: Reduce by periodically spraying demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.
- 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 progresses.
 - Damage: Minimize. Promptly repair.
 - Leave no unnecessary or unstable projections.
 - Make good to ensure safety, stability, weather protection and security.
 - Support to foundations: Do not disturb.
 - Defects: Report when exposed or becoming apparent.
- 360 **STRUCTURES TO BE RETAINED**
 - Parts which are to be kept in place: Protect.
 - Extent of work: Cut away and strip out with care to reduce the amount of making good to a minimum.
- 370 **PARTLY DEMOLISHED STRUCTURES**
 - General: Leave in a stable condition, with adequate temporary support at each stage to prevent risk of uncontrolled collapse. Keep safe outside working hours.
 - Temporary works: Prevent debris from overloading.
 - Unauthorised persons: Prevent access.
- 380 **DANGEROUS OPENINGS**
 - General: Illuminate and protect. Keep safe outside working hours.
- 390 **ASBESTOS CONTAINING MATERIALS**
 - General: These are known to be present in the structures to be demolished in the following locations: Boys and Girls toilet
 - Removal: By a Contractor licensed by the Health and Safety Executive and prior to other works starting in these locations.
- 391 **ASBESTOS CONTAINING MATERIALS**
 - Discovery: Give notice immediately of suspected asbestos containing materials discovered during demolition work. Avoid disturbing such materials.
 - Methods for safe removal. Submit details.
- 410 **UNFORESEEN HAZARDS**
 - Unrecorded voids, tanks, chemicals, etc. discovered during demolition: Give notice.
 - Methods for safe removal, filling, etc: Submit details.
- 440 **SITE CONDITION AT COMPLETION**
 - Debris: Clear away and leave the site in a tidy condition.
- 442 **SITE SURFACE AT COMPLETION**
 - Levels: Grade the site to follow the levels of adjacent areas.
 - Temporary surface: Cover the site to protect tarmac.
- MATERIALS ARISING**
- 510 **CONTRACTOR'S PROPERTY**
 - Components and materials arising from the demolition work: Property of the Contractor except where otherwise provided.

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- Remove from site as work proceeds.

511 EMPLOYER'S PROPERTY

- Components and materials to remain the property of the Employer:
- Protection:
 - Maintain until these items are removed by the Employer, reused in the Works or the end of the Contract.

520 RECYCLED MATERIALS

- Materials arising from demolition work: May be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification.
- Evidence of compliance: Submit full details and supporting documentation.
- Verification: Allow adequate time in programme for verification of compliance.

F10 BLOCK WALLING

F10/1 STRUCTURAL SPECIFICATION

- (a) Refer also to Structural Specification for block-work, mortar, wall-ties and ancillary items.
- (b) MINIMUM AVERAGE COMPRESSIVE STRENGTH: Concrete Blocks shall comply with I.S. 20, and the Structural Engineer's specification, and shall have a Minimum average compressive strength of 5N/mm² except where otherwise noted on the Structural Drawings.

F10/2 TYPE(S) OF WALLING

- (a) 215mm HOLLOW LOAD BEARING INTERNAL CONCRETE BLOCKWORK:
 - Type: Fine Textured Range 450 blockwork by Roadstone, or Kilsaran, or Harney, or Acheson & Glover, or equal and approved.
 - Work size(s): 440x215x215mm
 - Finish/colour: Fair-faced and painted
 - Bond & joints: Stretcher bond; 10mm Bucket handle joint
 - Features: 1st block layer above FFL, 100 x 215 x 450mm Solid block laid on the flat
 - Manufacturer and reference: To be approved by Architect
- (b) 100mm NON LOAD BEARING INTERNAL CONCRETE BLOCKWORK:
 - Type: Fine Textured Range 450 blockwork by Roadstone, or Kilsaran, or Harney, or Acheson & Glover, or equal and approved.
 - Work size(s)/Finish: 440x215x100mm, Fair-faced and painted
 - Bond & joints: Stretcher bond; 10mm Bucket handle joint
 - Manufacturer and reference: To be approved by Architect
- (c) 215mm LOAD BEARING CONCRETE BLOCKWORK to inside face external wall:
 - Type: Hollow Blocks, Roadstone "Aristocrat", or Harney Internal Masonry Paint Grade, or Kilsaran E-Block, or Acheson & Glover Deco Block, O'Reilly Concrete ORB ENVIRO Fairfaced Cavity block (23.0kg) or equal and approved.

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- Manufacturer and reference: Roadstone Dublin, or Kilsaran Concrete Group or Harney Masonry, or Acheson & Glover.
- Standards: to IS20: 1987 under an IS/ISO 9002/EN9002 registered quality system.
- Work size(s): 440x215x215mm
- Finish/colour: Tight texture for painting.
- Bond & joints: Stretcher bond; 10mm Bucket handle joint
- Features: 1st block layer above FFL, 100 x 215 x 450mm Solid block laid on the flat
- Air Tightness: 100mm Solids and 215mm Hollows are to achieve an air tightness of less than $3\text{m}^3/\text{hr}/\text{m}^2$ at 50 Pa as tested by BSRIA (British Services Research and Information Association) or other approved independent testing laboratory.

(d) CONCRETE COMMON BLOCKWORK TO EXTERNAL RENDERED WALLS

- Type: Solid
- Work size(s): 440x100x100mm
- Bond: Stretcher bond
- Manufacturer and reference: To be approved by Employer's Representative.

F10/3 WORKMANSHIP GENERALLY

- (a) RELATED WORK is specified in the following sections: F30 Accessories/Sundry items for brick/block/stone walling. F31 Precast concrete sills/lintels/copings/features
- (b) CODE OF PRACTICE: all block-work shall comply with BS 5628, Code of Practice for the use of masonry, Parts 1,2 & 3. Recommendations of this code are part of this specification.
- (c) BASIC WORKMANSHIP: comply with the relevant clauses of B.S. 8000:part 3
- (d) ACCURACY: Notwithstanding BS 8000:Part 3, clause 3.1.2, arrange the setting out, erection, juxtaposition of components to ensure a satisfactory fit at junctions, that there are no practically or visually unacceptable changes in plane, line or level and that the finished work has a true and regular appearance. Ensure compliance with any required critical dimensions given in the specification or on the drawings.
- (e) AIR TIGHT SEALING: Ensure all mortar joints filled through full depth of block on all faces in line with requirements of Section A10. Ensure airtight seal to all adjacent materials.
- (f) FIRE STOPPING: Ensure a tight fit between blockwork and cavity barriers to prevent fire and smoke penetration.
- (g) HOLES, RECESSES AND CHASES IN BRICK/BLOCK WALLING: Comply with the relevant clause in section P31.
- (h) ACOUSTIC SEALING:
 - Ensure a tight fit between blockwork and all adjacent finishes.
 - Allow wall to dry and shrinking to be complete before packing surround joints with mortar from one side. Allow to dry before sealing with acoustic mastic from other side.

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- Minimum 45dB sound reduction required between classrooms and between classrooms and any other spaces.
- (i) TESTING:
 - The contractor shall maintain on site the following apparatus that shall be kept in good repair throughout the contract and shall remain the property of the Contractor.
 - A maximum and minimum thermometer to be kept in position close to the Works for measuring the atmospheric shade temperature.
 - Soil thermometer for measuring the mortar and ground temperatures.
 - Apparatus for making mortar cubes or prisms in accordance with Clause 13 of BS 4551.
- (j) SITE STORAGE: Store bricks/blocks in stable stacks clear of the ground and clearly identified by type, strength, grade, etc. Protect from adverse weather and keep clean and dry.
- (k) LAYING GENERALLY:
 - Lay bricks/blocks on a full bed of mortar; do not furrow. Fill all cross-joints and collar joints; do not tip and tail. Build walls in stretching half lap bond when not specified otherwise. Plumb perpend of facework every third or fifth cross joint along a course and even out the joint widths in between.
 - Overhand Laying will be permitted subject to compliance with this specification and approval of samples and methods of carrying out the work.
 - Rack back when raising quoins and other advance work. Do not use toothing.
 - Raise no portion of the work more than 1.2 m above another at any time.
 - In facework, complete each lift in one period of operation.
 - Do not carry up any one leaf more than 1.5 m in one day unless permitted by the Employer's Representative.
 - Bring both leaves of cavity walls to the same level at every course containing vertical twist type ties or other rigid ties, Every third tie course for double triangle/butterfly ties, and Courses in which lintels are to be bedded. Carefully predetermine setting out to ensure that full length masonry units occur below lintel ends.
 - When not specified otherwise, finish joints neatly to the specified profile(s) as the work proceeds. As the work proceeds, strike off joints that will not be exposed to view in the finished work.
- (l) ADVERSE WEATHER:
 - Do not use frozen materials and do not lay on frozen surfaces.
 - Do not lay bricks/blocks when the air temperature is at or below 5°C and falling or below 2°C and rising. Maintain temperature of the work above freezing until mortar has fully hardened.
 - Protect newly erected walling from rain & snow by covering when precipitation occurs, and at all times when the work is not proceeding.
 - Rake out and replace cement gauged or hydraulic lime mortar damaged by frost. When instructed, rebuild damaged work.

F10/4 ADDITIONAL REQUIREMENTS FOR FACEWORK

- (a) THE TERM FACEWORK, where used in this specification, applies to all block walls finished fair. Where any facework is to be painted, the only specification requirement to be waived is that relating to colour.
- (b) SAMPLES: Submit samples of blocks and selected bricks representing the range of variation in appearance and obtain approval of appearance before placing orders with suppliers.

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- (c) REFERENCE PANEL(S):
- Prepare 1575x1125mm panel(s) as set out below including example of U block at typical lintol and retain on site for duration of project.
 - After drying out, obtain approval of appearance and workmanship before proceeding.
 - Construct panels in an approved location using randomly sampled blocks representative of those to be used but rejecting any that are damaged.
 - LOAD BEARING HOLLOW CONCRETE BLOCKWORK to inner leaf of external wall, bucket handle joint, 215mm selected airtight blocks Hollow Blocks, Roadstone "Aristocrat", or Harney Internal Masonry Paint Grade, or Kilsaran E-Block, or Acheson & Glover Deco Block, or equal and approved. TIED TO PANEL OF:
 - 215mm HOLLOW LOAD BEARING INTERNAL PARTITION CONCRETE BLOCKWORK bucket handle joint.
- (d) APPEARANCE:
- Set out and lay blocks to match appearance of relevant approved reference panel(s).
 - Select blocks with unchipped arrises. Cut with a masonry saw where cut edges will be exposed to view. e.g. underside sloped beam.
 - Keep courses evenly spaced using gauge rods. Set out carefully to ensure satisfactory junctions and joints with adjoining or built-in elements and components.
 - Complete each lift in one period of operation.
 - Protect facework against damage and disfigurement during the course of the works, particularly arrises of openings and corners.
- (e) GROUND LEVEL: Facework to start not less than 150 mm below finished level of external paving or soil except where shown otherwise.
- (f) BOND: Except where a straight vertical joint is specified, new and existing facework in the same plane to be bonded together at every course to give a continuous appearance. Stepped bonding should be used for junctions of new work to existing. Saw-toothed bonding will not be permitted at any time.

F30 ACCESSORIES/SUNDRY ITEMS FOR BLOCK WALLING

F30/1 GENERAL

- (a) EQUAL APPROVED: The phrases "equal approved" or "equivalent" shall mean, the material or product named, or an equivalent product of equal quality and performance.
- (b) CLEANLINESS: Clean off surplus mortar from joints on cavity faces as the work proceeds. Keep cavities, ties and dpc's free from mortar and debris with laths or other suitable means.
- (c) WEEP HOLES: Neatly form as work proceeds (later drilling not permitted) 10 mm diameter weep holes in horizontal joint immediately above base of cavity, external openings and stepped dpc's at not greater than 1000 mm centres coinciding with perpend joints. Ensure that holes are not blocked. Provide not less than two holes over openings.
- (d) CAVITY INSULATION
- Insulation: **190mm Kingspan Areofullfill Platinum Insulation** or equal approved
 - Maximum elemental wall u-value = **0.31W/m²K** (Calculated in accordance with BS EN ISO 6946)
 - Thermal Conductivity of insulation **W/m K = 0.031**.
 - Size to suit wall tie spacings, Minimum residual cavity width 10mm

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- Fix securely to inner leaf, ensuring that:
 - edges are not damaged & boards are close butted at horizontal and vertical joints and at closures
 - joints between boards are kept clean and dry and free from mortar droppings, grout and other debris & the residual cavity is not blocked or bridged by offcuts of insulation.
- Place and secure each course of insulation before building up inner leaf above level of previous course of insulation.

(e) BUILT IN ITEMS

- Subject to the contractor providing full details he may be permitted to incorporate built-in items at a later stage.
- Where in facing work the units require cutting and shaping to trim built-in items the method of forming the units shall be subject to approval.
- Rolled steel and proprietary beams and lintels shall have an approved coating on all surfaces in contact with the units and mortar, and they shall be laid on a stiff, smooth and level mortar bed not exceeding 15mm thickness.
- All fixings, holding down bolts, joist hangers, anchorages and ties required for stabilizing the walls or columns, or locating other parts of the Works, or for transferring loads to the walling, shall be incorporated as the work process.
- All fixing blocks, inserts and bearing plates shall have an approved protective treatment on all surfaces in contact with the walling units and mortar.
- Unless shown on the Drawings the Contractor shall obtain the approval for the size and position of any timber fixing blocks or bearing plates required in the Works.

F30/2 REINFORCING/FIXING ACCESSORIES

(a) WALL TIES FOR ALL CAVITY WALLS

- To BS 1243, types as specified by Structural Engineer & fitted with plastics insulation retaining clips recommended by manufacturer for this type of tie.
- Material/finish: Stainless steel Size(s): To SE specification

(b) FIXING TIES IN MASONRY CAVITY WALLS:

- Bed not less than 50 mm into bed joint of each leaf.
- Slope slightly downwards towards outer leaf with drip centred in the cavity and pointing downwards. Do not bend ties to suit coursing.
- Evenly space at centres as per SE specification mm horizontally, staggered in alternate courses, and at as per SE specification mm centres vertically, unless specified otherwise.
- Provide additional ties within 225 mm of reveals of unbonded openings as per SE specification

(c) JOINT REINFORCEMENT FOR BLOCKWORK WALLS Stainless Steel to external leaf Brick/Block work, Galvanised Steel to inner leaf blockwork, to engineer's specification. Width: Approximately 40-50 mm. Lay on an even bed of mortar in a continuous strip with 225 mm laps at joints and full laps at angles. Keep back 20 mm from face of external work, 12 mm back from face of internal work and finish mortar joint to normal thickness.

F30/3 FLEXIBLE DAMP PROOF COURSES/CAVITY TRAYS

(a) DAMP PROOF COURSE:

- Manufacturer and reference: Ruberoid Hyload Pitch Polymer

(b) FLEXIBLE SHEET CAVITY TRAYS:

- Manufacturer and reference: to Employer's Representative approval.

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(c) JUNCTIONS/STOP ENDS FORMED IN SITU:

- Where preformed junction cloaks/stop ends are not specified form three dimensional changes of shape in dpcs and/or cavity trays carefully and neatly to ensure a fully watertight installation, using folds wherever possible to achieve the required shape.
- Seal all laps using adhesive/mastic/ torching in accordance with manufacturer's recommendations.
- Preformed junction cloaks/stop ends may be used in lieu, subject to approval.

(d) ABUTMENT TRAYS:

- Manufacturer and reference: AT Intra Weep Abutment Trays
- Location: junction where sloping edge of a pitched roof abuts wall
- Standards: NHBC Standards 1992 for 'External masonry walls' section 6.1 -D6(a) and BS 8215: 1991 'Design and installation of damp proof courses in masonry construction'
- Upstand: 140mm minimum to BS 5628: Part 3: 1985, BS 8215:
- Integral weep to BS 8215: 1991

F30/4 INSTALLATION OF DPCS/CAVITY TRAYS

(a) COLD WEATHER WORKING: In cold weather warm dpc rolls before unrolling, to avoid cracking.

(b) HORIZONTAL DPCS:

- Lay in continuous lengths on a full even bed of fresh mortar, with 100 mm laps at joints and full laps at angles.
- Width of dpc to be at least full width of masonry leaf unless otherwise specified. Do not cover edges of dpc with mortar.
- Where there are separate dpcs in each leaf of a cavity wall, ensure that edges do not project into the cavity.
- Immediately lay at least one further course of masonry on a thin even bed of fresh mortar. Keep finished joint thickness as close to normal as practicable.

(c) GROUND LEVEL DPCS: Ensure continuity of dpc with damp proof membrane.

(d) STEPPED DPCS: Where dpcs are installed in external walls on sloping ground, ensure that they are never less than 150 mm above finished ground level.

(e) SILL DPCS To be in one piece and turned up at the back if the sill is in contact with any part of the inner leaf.

(f) COPING/CAPPING DPCS: Bed dpcs and copings/cappings in one operation to ensure maximum bond between masonry units, mortar and dpc. Provide rigid support for dpcs in cavity walls.

(g) DPCS AT ROOF ABUTMENTS: Seal overlaps and junctions with adhesive recommended by manufacturer.

(h) CAVITY TRAYS FORMED IN SITU:

- Dpcs which span cavities to prevent the downward ingress of water to be:
 - Accurately formed to the profiles shown on drawings, and firmly secured.
 - In unjointed lengths wherever possible, otherwise lapped at least 100 mm and sealed using adhesive /mastic/torching to with manufacturer's recommendations to ensure a fully watertight installation.
 - Fully supported over the cavity, when horizontal, by a cavity closer.
 - Prevented from sagging when stepped up towards the inner leaf.

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- Carefully cleaned to remove debris and mortar droppings before they set.
 - Carefully protected from perforation and other damage
- (i) CAVITY TRAYS OVER OPENINGS AND OTHER CAVITY BRIDGINGS to extend not less than 150 mm beyond ends of lintels/bridgings.
- (j) FACEWORK: Leading edge of dpcs/cavity trays to project 5 mm from face of wall in all locations
- (k) VERTICAL DPCS to be in one piece wherever possible; otherwise overlap by not less than 100 mm with upper piece outermost.
- (l) JAMB DPCS: Ensure that dpcs to jambs of openings:
- Fully lap behind cavity tray/lintel at head and over horizontal dpc at sill.
 - Project not less than 25 mm into cavity AND are in full contact with frames.
- (m) CAVITY TRAYS AND DPC installation to comply to relevant sections of BS 8215

F30/5 JOINTS

- (a) SUITABILITY OF JOINTS:
- Before commencing, check that, joint dimensions are within limits specified for the sealant, that the Sealant material and it's application method are chemically compatible with adjacent materials, substrate etc, that surfaces are smooth and undamaged, and that preparatory work which must be done before assembly of the joint has been carried out.
 - Inform Employer's Representative if joints are not suitable to receive sealant and submit proposals for rectification.
- (b) PREPARING JOINTS:
- Clean surfaces to which sealant must adhere using methods and materials recommended by sealant manufacturer. Remove all temporary coatings, tapes, loosely adhering material, dust, oil, grease and other contaminants which may affect bond.
 - Keep joints clean and protect from damage until sealant is applied.
 - Backing strip, bond breaker, primer to be types recommended for the purpose by sealant manufacturer. Insert backing strips and/or bond breaker tape into joint leaving no gaps.
 - Cover adjacent surfaces with masking tape to prevent staining and protect surfaces which would be difficult to clean if smeared with primer or sealant.
- (c) APPLYING SEALANTS:
- Ensure that operatives observe manufacturer's and statutory requirements for storage and safe usage of sealants. Use equipment and methods recommended by sealant manufacturer and apply within the recommended application life of primer and sealant, and the recommended air and substrate temperature ranges.
 - Do not apply to damp surfaces (unless recommended otherwise), to surfaces affected by ice or snow or during inclement weather. Do not heat joints to dry them or raise the temperature.
 - Fill joints completely, leaving no gaps, excluding all air and ensuring firm adhesion of sealant to required joint surfaces. Tool the sealant to a neat, slightly concave profile unless specified otherwise. Protect until cured.
- (d) MOVEMENT JOINTS WITH SEALANT where detailed
- Drawing: CE-001-A-602 – also see engineer's drawings
 - Filler: Flexcell or equal approved to Engineer's Specification

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- Sealant: twin pack polysulphide: to B.S. 6213. Compatible with DPC material, to Employer's Representative. Colour: To match render/finished colour.
 - Build in as the work proceeds ensuring no projections into cavities and correct depth of joint to receive sealant system. Thickness of filler to match design width of joint.
- (e) MOVEMENT JOINTS WITHOUT SEALANT where detailed
- Drawing: CE-001-A-602 also see engineer's drawings
 - Filler: Flexcell or equal approved to Engineer's Specification
 - Build in as the work proceeds, completely filling the joint but without projecting into cavities. Thickness of filler to match design width of joint.
- (f) FIRE RESISTANT MOVEMENT JOINTS WITHOUT SEALANT where detailed
- Fire resistant filler: Compriband or similar compressible filler to Engineer's Specification
 - Fire resistance period: no less than that of wall or slab.
 - Compress, insert and slide into place in open joint. Install with accessories or adhesives where recommended by manufacturer.
- (g) POINTING IN FLASHINGS: Remove dust, lightly wet and neatly point with mortar specified for walling. Ensure joint is completely filled and finish flush.
- (h) PINNING UP TO SOFFITS: Completely fill joint at top of loadbearing walls with mortar, well rammed into position using temporary shuttering.
- (i) TOPS OF NON-LOADBEARING WALLS:
- Securely fix restraints to soffit and completely fill space between wall and soffit leaving no gaps to ensure compliance with design requirements.
 - Joint filler to provide minimum acoustic rating of 40dB and fire resistance matching fire rating of wall.

F30/6 PROPRIETARY SILLS/LINTELS/COPINGS/DRESSINGS

- (a) PROPRIETARY METAL LINTELS:
- To BS 5977-2, as per SE specification
 - Bed on mortar used for adjacent work with bearing of not less than 150 mm unless specified otherwise. Use slate packing pieces.

G20 CARPENTRY/TIMBER FRAMING/FIRST FIXING

To be read with Project Particulars & preliminaries

G20/1 GENERAL INFORMATION/REQUIREMENTS

- (a) DRAWINGS, ETC. must show:
- Geometry of structure
 - Timber species sizes and grades or strength classes
 - Target/finished sizes of all structural timber sections
 - All joints not detailed on Engineer's drawings, their locations, and evidence as to their structural adequacy.
- (b) PROTOTYPE TESTS: Approval will be given to contractor- designed structures that are not amenable to calculation in accordance with BS 5268:Part 2 provided that they comply with design requirements when tested to BS 5268: Part 2, Section 8.

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(c) STRENGTH GRADING of timber:

- To be carried out by companies currently registered under a third party quality assurance scheme operated by any of the certification bodies approved by the UK Timber Grading Committee.
- Timber of a basic thickness less than 100 mm and not specified for wet exposure to be strength 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 wet exposure conditions to be clearly marked as 'WET' or 'CRN'.
- Structural timber members cut from large graded sections to be regraded to approval and marked accordingly.

G20/2 TYPE(S) OF TIMBER

(a) GRADED SOFTWOOD FOR STRUCTURAL USE GENERALLY

- Strength graded to the appropriate standard or rules for the specified grade and so marked.
- Species and origin: to be agreed Grade: To BS 4978 and BS EN 519
- Preservative treatment: As section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C 8 Type/desired service life: 40 years

(b) UNGRADED SOFTWOOD FOR INTERNAL NON-STRUCTURAL USE - FRAMING TO DUCTS ETC.

- Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
- Surface finish: sawn
- Preservative treatment: As section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C 8
- Type/desired service life: 40 years

(c) PLYWOOD OR MDF FOR SUPPORT TO WINDOW HEAD AND SILL DETAILS – WBP

Alternatively Medite Ecologique MDF (Zero Formaldehyde) may be used.

- Manufactured to an approved national standard.
- Thickness: 19 mm
- Appearance class: to BS EN 635: 111
- Bond quality: to BS EN 314:Part 2: 2
- Finish: unsanded where concealed, sanded where not concealed
- Preservative treatment: As section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C 8
- Type and desired service life: 40 years

G20/3 WORKMANSHIP GENERALLY

(a) CROSS SECTION DIMENSIONS OF STRUCTURAL SOFTWOOD AND POPLAR TIMBER:

- Dimensions on drawings are target sizes as defined in BS EN 336.
- The tolerance indicators (T1) and (T2) specify the maximum permitted deviations from target sizes as stated in BS EN 336, clause 5.3:
 - Tolerance class 1 (T1) for sawn surfaces
 - Tolerance class 2 (T2) for planed surfaces.

(b) CROSS SECTION DIMENSIONS OF NONSTRUCTURAL SOFTWOOD TIMBER:

- Dimensions on drawings are finished sizes.

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- Maximum permitted deviations from finished sizes to be as stated in BS EN 1313:Part1:
 - Clause 6 for sawn sections
 - Clause NA. 2 for further processed sections.
- (c) CROSS SECTION DIMENSIONS OF STRUCTURAL & NONSTRUCTURAL HARDWOOD TIMBER
 - Dimensions on drawings are finished sizes.
 - Maximum permitted deviations from finished sizes to be as stated in BS 5450:
 - Clause 6.1 for sawn sections.
 - Clause 8.3 for further processed sections.
- (d) WARPING OF TIMBER: The amount of bow, spring, twist and cup in a piece of timber of specified grade must not exceed the limits set down in BS 4978 or BS EN 519 for softwood, or BS 5756 for hardwood.
- (e) SELECTION, AND USE OF TIMBER
 - Do not use timber members which are damaged, crushed or split beyond the limits permitted by their grading.
 - Ensure that notches and holes are not so positioned in relation to knots or other defects that the strength of members will be reduced.
 - Do not use scarf joints, finger joints or splice plates without approval.
- (f) PROCESSING TREATED TIMBER:
 - Carry out as much cutting and machining as possible before treatment.
 - Retreat all treated timber which is sawn along the length, ploughed, thickened, planed or otherwise extensively processed.
 - Treat timber surfaces exposed by minor cutting and drilling with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.
- (g) MOISTURE CONTENT of timber at time of erection to be not more than:
 - Covered in generally unheated spaces: 24%
 - Covered in generally heated spaces: 20%
 - Internal in continuously heated spaces: 20%
 - When instructed by Architect, test timber sections with an approved electrical moisture meter used in accordance with manufacturer's recommendations. Test 5% but not less than 10 lengths of each cross-section in the centre of the length. 90% of values obtained to be within the specified range. Provide Architect with records of all tests.
- (h) PROTECTION:
 - Keep timber dry and do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing. Store timber and components 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.
 - Arrange sequence of construction and cover timber as necessary during and after erection to ensure that specified moisture content is not exceeded.
 - Keep trussed rafters vertical during handling and storage.
 - Store and handle on site in accordance with manufacturer's directions and with Truss Plate Association technical bulletin sheets No 2 and No 3.
- (i) SEAL exposed end grain of the following with an extra coat of primer before delivery to site.
- (j) PAINTED FINISHES: Structural timber which is to be painted to be primed as specified before delivery to site.

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- (k) CLEAR FINISHES: Structural timber which is to be clear finished to be kept clean and first coat of specified finish applied before delivery to site.
- (l) EXPOSED TIMBER: Prevent damage to and marking of surfaces and arrises of planed structural timber which will be exposed to view in completed work.

G20/4 JOINTING TIMBER

- (a) JOINTING/FIXING GENERALLY: Where not specified otherwise, select fixing and jointing methods and types, sizes and spacings of fasteners in compliance with section Z20. Fasteners to comply with relevant British Standards.

G20/5 ERECTION AND INSTALLATION

- (a) PRE-ERECTION CHECKING:
 - Not less than 10 days before proposed start date, check foundations and other structures to which timber structure will be attached for accuracy of setting out, and holding down bolts for position, protruding length, condition and slackness.
 - Report any inaccuracies and defects to Main Contractor and Architect without delay.
 - Obtain permission of Architect to commence erection.
- (b) MODIFICATIONS/REPAIRS:
 - Inform Architect of any defects due to detailing or fabrication errors. Obtain approval of proposed methods of rectification before starting modification or remedial work.
 - Timber members/components may be rejected if, in the opinion of the Architect, the nature and/or number of defects would result in an excessive amount of site repair.
- (c) TEMPORARY BRACING: Provide as necessary to maintain structural timber components in position and to ensure complete stability during construction.
- (d) ADDITIONAL SUPPORTS:
 - Where not shown on drawings, position and fix additional studs, noggings or battens for appliances, fixtures, edges of sheets, etc., in accordance with manufacturers' recommendations.
 - All additional studs, noggings or battens to be of adequate size and have the same treatment, if any, as adjacent timber supports.
- (e) BEARINGS:
 - Timber surfaces which are to transmit loads to be finished to ensure close contact over the whole of the designed bearing area.
 - Packings, where necessary, to cover the whole of the designed bearing area, to have a crushing strength not less than the timber being supported and, in external locations, to be rot and corrosion proof.
- (f) WALL PLATES: Ensure that wall plates are:
 - Positioned and aligned to give the correct span and level for trusses, joists, etc.
 - Fully bedded in fresh mortar.
 - In lengths of not less than 3 m with half lap joints.
- (g) INSPECTION:
 - Give Architect reasonable opportunity to inspect structural timberwork before covering up.

- Inspect all accessible bolts at the end of the Defects Liability Period and tighten if necessary.

J40 RADON BARRIER/DAMP PROOF MEMBRANES

To be read with Project Particulars & preliminaries

- (a) RADON MITIGATION SYSTEM: GENERAL INSTALLATION to Employer's Representative specification.
- (b) GAS RETARDANT/DAMP PROOF MEMBRANE
 - Manufacturer and reference: Monarflex RMB400 as per IAB CERT. NO. 98/0075 or equal approved
 - Drawings: CE-001-A-203 and structural engineer's drawings
 - Lay sheets neatly and tuck well into angles to prevent bridging and creasing. Laying and joining of sheets, seal around penetrating pipes and columns, all in strict accordance with Irish Agreement Certificate No. 98/0075
- (c) ASSOCIATED PIPEWORK/SUMPS ETC
 - Manufacturer and reference: NECOFLEX LTD., KILCOOLE, CO. WICKLOW.
 - Radon Sumps: 'EASI SUMP' or equal approved as PER IAB CERT. NO. 01/0130.
 - All internal rising walls to be constructed with gaps of 110mm diam every 1m at similar level to sumps to ensure permeability of hardcore throughout.
 - Sumps to be piped to outside as shown and capped in footpath with easi sump cap link
 - Building to be tested at a later stage by others to ascertain if activation system is required i.e. external radon vent pipe and fan units
- (d) WORKMANSHIP GENERALLY:
 - Apply materials carefully to provide a completely waterproof, continuous membrane.
 - Ensure that surfaces to be covered are clean, dry, smooth and free from voids, sharp protrusions and frost.
 - Protect finished sheeting adequately to prevent puncturing during following work.
 - Cover sheeting with permanent overlying construction as soon as possible. Immediately prior covering check for damage and repair as necessary.
 - Certificate of completion from specialist installer to be submitted to Employer's Representative and inserted in Building Manual.
- (e) PRIMER(S): Type(s) recommended for the purpose by the sheet manufacturer. Apply by mopping, brushing or spraying to achieve an even and full cover of the surface. Allow to dry thoroughly before covering.
- (f) BONDING COMPOUND(S):
 - Hot laid oxidised bitumen to BS 3690:Part 2, grade as recommended by the sheet manufacturer for the conditions and type of surface.
 - Lay at a temperature sufficient to ensure full bonding over the whole surface. Do not overheat Cold laid bonding compound of a type recommended by the sheet manufacturer may be used small areas and repair work.
- (g) ANGLES IN FULLY BONDED SHEETING:
 - Fit internal angles with a bitumen impregnated fibre fillet, not less than 40 x 40 mm, bedded in bitumen mastic or bonding compound.

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- Reinforce all angles with a strip of the specified damp proofing material, not less than 300 mm wide, applied before the main sheeting.
 - Continue main sheeting around angles, extending not less than 100 mm on to adjacent surface
- (h) JUNCTIONS WITH DPCS:
- Ensure that dpm is taken up the faces of rising walls in staircases and at external walls, and bonded to the wall face and up to the level of the dpc with 50mm AN tape PB by Comproband or equal approved.
 - Identify position of adjoining damp proof courses and expose to view where concealed.
 - Thoroughly clean away all mortar, debris and dirt from vicinity of dpcs, including any projecting portions of dpcs.
 - Dpcs which project from the wall: Fully lap and fully bond/seal sheeting to dpc projection using bonding compound or mastic tape.
 - Dpcs which do not project from the wall: Extend sheeting 50 mm past dpc and fully bond to wall using bonding compound or mastic tape.
- (i) PIPES, DUCTS, CABLES, ETC: Where these pass through sheeting, make junctions completely watertight by forming collars fully bonded/sealed to both pipes and sheeting.
- (j) BACKFILL PROTECTION: Cover tanking against which backfill material will be placed with 12mm thick bitumen impregnated fibreboard. Provide temporary support as necessary to ensure both remain fully in contact with tanking during backfilling operations.
- (k) PRE-FORMED RADON MODULAR SUMP UNITS TO CONCRETE FLOORS
- Manufacturer and reference: Radon Supplies Ltd.
 - Ref: Radoncare vent and sump or equally approved.
 - Accessories: Pipes as required.
 - Installation to manufacturer's recommendations in accordance with SE drawings.

J42 Single layer polymeric sheet roof coverings

To be read with Preliminaries/ General conditions.

TYPES OF COVERING

- 110 WARM ROOF COVERING to existing boy and girls toilets
- Substrate: concrete deck.
 - Preparation: Not required.
 - Roof covering system: As drawing-Manufacturer: Sarnafil Limited, Roberds Way, Bowthorpe Industrial Estate, Norwich, Norfolk NR5 9JD Tel: 01603 748985 Fax: 01603 743954 Email: roofing@sarnafil.co.uk Web: www.sarnafil.co.uk .
 - Lower protective layer (loose laid): Not required.
 - Vapour control layer: Polyethylene sheet as clause 395 .
 - Insulation: As drawing .
 - Separating layer (loose laid): As drawing .
 - Waterproof membrane: As drawing.
- Width: Contractor's choice.
Thickness: As drawing .
Colour: Light grey upper surface.
- Upper protective layer (loose laid): Determined by contractor.
 - Surface protection: Walkways as clause 485.

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- Accessories: Sarnatred walkway tiles, Sarnadrain Outlets
Flexible Couplings for Rigid PVC and FPO Rainwater Outlets
Lightening Conductor Clips.

PERFORMANCE

210 ROOF PERFORMANCE

- Roof covering: Secure, free draining and weathertight.

220 VAPOUR CONTROL LAYER

- Interstitial condensation risk of roof: Determine as recommended in BS 6229. Modify calculation method to conform to BS 5250.
- 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: 55%.
Vapour pressure: 1.17 kPa.
- Winter interstitial condensate:
 - Calculated amount (maximum): 0.35 kg/m².
 - Calculated annual net retention: Nil.
- Vapour control layer: If calculated amounts of condensate exceed allowed amounts, provide a suitable membrane or sealed deck 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): 0.25 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 British Standard, or Agrément certified.

240 ATTACHMENT OF INSULATION AND WATERPROOFING MEMBRANE

- Requirement: Determine methods of attachment to resist wind loads. Provide for relative movement of materials and effects of vapour pressure. Do not reduce performance of vapour control layer.
- Wind loads: Calculate to BS 6399-2, Standard Method.
 - 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.
 - Size effect factor (Ca): 1.
 - External pressure coefficients (Cpe): to be confirmed by engineer.
 - Internal pressure coefficients (Cpi): to be confirmed by engineer.

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PRODUCTS

- 325 ADHESIVE FOR WATERPROOF MEMBRANE
- Type: As recommended by sheet manufacturer for conditions and surface.
 - Manufacturer: FDT (UK) Ltd. Mannheim House, Gelders Hall Road, Shepshed, Leicestershire LE12 9NH. Tel: 01509 505714. Fax: 01509 505475. Email sales@fdt.uk.com Web: www.singleply.co.uk .
 - Product reference: Rhepanol®-Adhesive 90.
- 330 TIMBER FOR 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: Type recommended for purpose by waterproof membrane manufacturer.
- 340 PREFORMED SLEEVES, TRIMS, ETC
- Type: Flanged sleeve formed from roof membrane.
 - Manufacturer: As roof covering.
 - Product reference: As roof covering.
 - Colour: Light grey.
 - Size (minimum): 80 x 150 mm upstand..
- 355 MECHANICAL FASTENERS, WASHERS, PRESSURE PLATES, ETC
- Type: As recommended for the purpose by sheet manufacturer..
 - Manufacturer: As roof covering.
 - Product reference: As recommended for the purpose by sheet manufacturer.
- 375 MINOR MOVEMENT JOINTS IN SUBSTRATES
- Manufacturer: Vexcolt (UK) Ltd. 49 Summer House, Summer Way, Exeter EX4 8JD. Tel: 01392 467567. Fax: 01392 467705 Email sales@vexcolt.com Web: www.vexcolt.co.uk .
 - Product reference: React 661-A01-025. Fire barrier: 2100-A02-025/2 / 2100-A09-025/2 .
- 395 VAPOUR CONTROL LAYER
- Type: As recommended by sheet manufacturer..
 - Manufacturer: As recommended by sheet manufacturer.
 - Product reference: As recommended by sheet manufacturer.
 - Thickness: As recommended by sheet manufacturer.
 - Vapour resistance: As recommended by sheet manufacturer.
- 420 RIGID URETHANE FOAM WARM ROOF INSULATION
- Type: Foil faced rigid urethane insulation board.
 - Manufacturer: Kingspan Insulation Ltd, Pembridge, Leominster, Herefordshire HR6 9LA. Tel: 0870 8508555 Fax: 0870 8508666. Email: literature.uk@insulation.kingspan.com Web: www.insulation.kingspan.com.
 - Product reference: Kingspan Thermaroom TR26 LPC/FM zero ODP.
 - Density: 32-48 kg/m³.
 - Thickness: 90 mm.
 - Facing: Foil.
- 480 PIPE COLLARS
- Manufacturer: As roof covering.
 - Product reference: As recommended for the purpose by sheet manufacturer.
 - Size: As drawing .

EXECUTION GENERALLY

510 ADVERSE WEATHER

- General: Do not lay membrane at temperatures below 5°C or in wet or damp conditions unless effective temporary cover is provided over working area.
- Unfinished areas of roof: Keep dry and protect edges of laid membrane from wind action.

520 INCOMPLETE WORK

- End of working day: Provide temporary seal to prevent water infiltration.
- On resumption of work: Cut away tail of membrane from completed area and remove from roof.

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.

550 CONTROL SAMPLES

- Type of covering: As drawing .
- Sample area (minimum): 30 m².
- Location: to be agreed .

SUBSTRATES/ VAPOUR CONTROL LAYERS/ WARM ROOF INSULATION

610 SUITABILITY OF SUBSTRATE

- Surfaces to be covered: Firmly fixed, clean, dry, smooth, free from frost, contaminants, voids and protrusions.
- Preliminary work: Complete, including grading to correct falls and formation of upstands, kerbs, box gutters, sumps, grooves, chases, expansion joints and fixing of battens, fillets, anchoring plugs/ strips, etc.
- Moisture content and stability of substrate: Must not impair integrity of roof.

640 FIXING TIMBER TRIMS

- Fixing centres (maximum): 450 mm.
- Fasteners: Sherardized steel screws..

670 LAYING VAPOUR CONTROL LAYER

- Laying: Sheets loose, flat and smooth.
- Side and head laps: 50 and 75 mm respectively. Seal using materials and method recommended by membrane manufacturer.
- Upstands, kerbs and other penetrations: Enclose edges of insulation. Fully seal at abutment by bonding or taping.

680 LAYING WARM ROOF INSULATION

- Setting out:
 - Long edges: Fully supported and running at right angles to side laps in single ply membrane.
 - End edges: Adequately supported.
 - Joints: Butted together.
 - End joints: Staggered.
- Attachment: Full bed of cold bitumen bonding compound.
- Mechanical fixing: Determined by contractor as clause 240.
- Completion: Boards must be in good condition, well fitting and firmly fixed.

WATERPROOF COVERINGS/ ACCESSORIES

710 MECHANICAL FIXING OF WATERPROOF MEMBRANE

- Setting out: Perpendicular to the deck direction.

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- Laying: Loose lay, do not wrinkle or stretch.
- Installing fasteners:
 - Use manufacturer's recommended methods and equipment.
 - Insertion: Correct and consistent.
- Washers/ Pressure plates/ Bars:
 - Distance from fixed edge (minimum): 10 mm.
 - Fixing: Flush with membrane.
- Sheet overlaps: Extend beyond washers/ pressure plates by minimum 50 mm.
- Surface condition at completion: Fully sealed, smooth, weatherproof and free draining.

720 ADHESIVE BONDING OF WATERPROOF MEMBRANE

- Laying membrane:
 - On a continuous even coating of adhesive.
 - Do not wrinkle or stretch.
- Attachment: Strip bonded.
- Surface condition at completion: Fully sealed, smooth, weatherproof and free draining.

730 WELDED JOINTING

- Laying: Loose lay, do not wrinkle or stretch.
- Side and end joints:
 - Laps (minimum): 50 mm.
 - Preparation: Clean and dry surfaces for full width of joint.
 - Sealing: Weld together.
- Condition at completion: Fully sealed, smooth, weatherproof and free draining.
- Accessories: Even bead of liquid PVC to each joint.

740 ADHESIVE JOINTING

- Side and end joints:
 - Laps (minimum): 50 mm.
 - Preparation: Prime, clean and dry surfaces for full width of joint and lap.
 - Sealing: Apply continuous even coverage of adhesive to both surfaces. Mate and roll together. Do not wrinkle or stretch membrane.
- Condition of membrane at completion: Fully sealed, weatherproof and free draining.
- Accessories: Even bead of liquid PVC to each joint.

750 TAPE JOINTING

- Side and end joints:
 - Laps (minimum): 50 mm.
 - Preparation: Prime, clean and dry surfaces for full width of joint.
 - Sealing: Apply self adhesive tape. Mate and roll together. Do not wrinkle or stretch membrane.
- Condition of membrane at completion: Fully sealed, weatherproof and free draining.

760 PERIMETER OF MEMBRANE

- General: Secure membrane at roof edge conditions, changes of plane, curb flashings, upstands to roof lights, etc. with mechanical fasteners.

765 PERIMETER DETAILS FOR THERMOPLASTIC MEMBRANES

- Upstands, edge trims, drips, kerbs, etc: Secure preformed metal sections to roof structure with mechanical fasteners.
- Roof membrane: Dress over perimeter profile. Overlap beyond fasteners by minimum 50 mm.
 - Sealing: Weld together.

770 PERIMETER DETAILS FOR THERMOPLASTIC MEMBRANES

- Upstands, edge trims, drips, kerbs, etc: Form flashings from waterproof membrane material.

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- Roof membrane: Terminate in horizontal plane immediately adjacent to change in direction and secure with mechanical fasteners.
- Flashings: Dress over perimeter profile. Overlap horizontal roof membrane beyond perimeter securement by minimum 50 mm.
- Sealing: Mechanically fix and weld at overlap.

775 PERIMETER DETAILS FOR ELASTOMERIC MEMBRANES

- Upstands, edge trims, drips, kerbs, etc: Preformed from waterproof membrane material.
- Reinforcing strip:
 - Lay at edge of horizontal roof plane.
 - Securing: Mechanically fasten.
- Roof membrane: Dress over perimeter profiles.
 - Sealing: Bond to substrate and to secured perimeter reinforcing strip.

780 ROOF PENETRATIONS THROUGH THERMOPLASTIC MEMBRANES

- Roof membrane: Cut around penetrations and secure to deck.
- Flanged sleeve:
 - Type: Form from roof membrane complete with base flange.
 - Installation: Dress over and around penetration.
 - Roof membrane overlap to flange (minimum): 50 mm beyond fasteners.
 - Sealing: Weld flange to roof membrane.
 - Protection to top edge of sleeve: Flashing or weathering cravat.

785 ROOF PENETRATIONS THROUGH ELASTOMERIC MEMBRANES

- Roof membrane: Cut around penetrations.
- Flanged sleeve:
 - Type: Form from roof membrane complete with base flange.
 - Installation: Dress over and around penetration.
 - Seating: Flush to roof membrane.
 - Roof membrane overlap to flange (minimum): 75 mm beyond fasteners.
 - Sealing: Bond top edge to pipe with mastic sealant and secure with clamping ring.

SURFACING

810 LAYING INVERTED ROOF INSULATION

- Condition of substrate: Clean.
- Setting out: Loose lay with staggered joints. Minimize cutting and avoid small cut pieces at perimeters and penetrations.
 - Joints: Butt together.
- Projections, upstands, rainwater outlets, etc: Cut insulation cleanly and fit closely around.
- Completion:
 - Boards to be in good condition, well fitting, with no springing or rocking.
 - Cover to prevent wind uplift and flotation as soon as practicable.

940 COMPLETION

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

K10 PLASTERBOARD DRY LININGS/PARTITIONS/CEILINGS

To be read with Project Particulars & Preliminaries

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K10/1 TYPE(S) OF DRY LINING

- (b) CEILINGS
 - Timber framework in addition to joists/trusses: 50 x 38mm planed softwood
 - Lining(s): 12.5mm 1200x2400mm Gyptone BIG Quattro 47, 4 tapered edges, acoustic tissue backing.
 - Finishing: Gyproc paper tape jointing system
 - All materials unless otherwise indicated shall be supplied by Gypsum Industries, and shall be installed in accordance with their current published instructions and generally in accordance with BS 8212.
 - Accessories: angle beads, trims as required.

A10/2 GENERALLY/PREPARATION

- (a) ADDITIONAL SUPPORTS FOR FIXTURES AND FITTINGS: Provide or ensure provision of accurately positioned and securely fixed framing to support fixtures, fittings and services. After fixing boards, mark positions of framing for following trades.
- (b) ADDITIONAL SUPPORTS FOR BOARD EDGES AND PERIMETERS: Provide or ensure provision of additional framing, accurately positioned and securely fixed, to give full support to board edges and lining perimeters in accordance with board manufacturer's recommendations.
- (c) SERVICE PENETRATIONS: The Main Contractor must liaise with other contractors to ensure that fire resistance and other specified performance requirements are not impaired by service penetrations. In particular:
 - Form framed openings accurately for grouped services, ducts, etc. allowing for associated fire barriers.
 - Provide insulation backings to recessed electrical outlets and switches as recommended by the plasterboard manufacturer.
- (d) PLASTERBOARD GENERALLY: To BS 1230:Part 1, types 1 to 5 with exposed surface and edge profiles suitable to receive the specified finish.

A10/3 FIXING/FINISHING

- (a) DRY LINING GENERALLY:
 - Fixing, jointing and finishing materials and accessories, where not specified otherwise, to be as recommended by the board manufacturer.
 - Handle & store materials in accordance with BS 8212, section 5. Do not use damaged boards.
 - Use operatives properly trained for dry lining work and who have attended a recognised training scheme.
 - Fix boards only in areas which have been made weathertight. Prevent frost damage.
 - Cut boards neatly and accurately without damage to core or tearing of paper facing. Keep cut edges to a minimum and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.
 - Fix boards securely and firmly to suitably prepared and accurately leveled backgrounds. Set heads of fastenings in a depression; do not break paper or gypsum core. Finish neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.

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(b) ACOUSTIC SEALANT:

- Sealant: Gyproc Sealant to board manufacturer's recommendation.
- Location: To perimeter junctions with walls, floors, ceilings and around openings.
- Before fixing boarding, apply as a continuous bead to clean, dry, dust-free surfaces, leaving no gaps. After application of sealant, fill gaps greater than about 6 mm with jointing compound recommended by plasterboard manufacturer.

(c) FIRE STOPPING: Seal any gaps at junctions of linings and cavity barriers with perimeter abutments, service penetrations, etc. using tightly packed mineral wool or approved intumescent sealant, to prevent penetration of smoke and flame.

(d) JOINTS BETWEEN BOARDS:

- Tapered edged plasterboards: Lightly butted. Leave a 3 mm gap where cut/unbound edges occur. Square edged plasterboards to be finished with textured plastic compound: 3 mm gap.
- Square edged fibre reinforced gypsum boards: 5 mm gap.

(e) FIXING PLASTERBOARD TO METAL SUPPORTS:

- Fix securely to all supports, working from the centre of each board using proprietary drywall screws at maximum centers to board manufacturer's recommendations.
- Position screws not less than 10 mm from the edge of the board. Set heads in a depression; do not break paper or gypsum core.
- Type and length of screws as recommended in BS 8212, section 2.2.3, unless specified otherwise.

(f) TAPED SEAMLESS FINISH TO PLASTERBOARD:

- Lightly sand cut edges of boards to remove paper burrs.
- Fill all joints, gaps and internal angles with joint compound and cover with continuous lengths of paper tape, fully bedded. Reinforce external angles, stop ends, etc. with the specified bead/corner tape.
- When set, cover with joint finish, feathered out to give a flush, smooth, seamless surface.
- Spot nail/screw depressions with joint filler to give a flush surface.
- Fill minor indents. After joint, angle and spotting treatments have dried, lightly sand to remove any minor imperfections.
- Apply specified primer/sealer to give a continuous consistent texture to surface of boards.

L10 WINDOWS/EXTERNAL DOORS

L10/1 PRELIMINARY INFORMATION/REQUIREMENTS

EVIDENCE OF PERFORMANCE:

Provide independently certified test evidence that all specified window and curtain wall systems, double glazed units and sealants along with other variants of components comply with specified performance requirements.

SITE DIMENSIONS

Allow for site dimensions to be taken and incorporated into fabrication drawings before starting production of the windows and associated fittings. Screen sizes shown on drawings are based upon the assumption that main steel frame and block work to the building is set out to a high degree of accuracy. To take account of building tolerances it may be necessary to re-size screen and fittings and it is the Contractor's responsibility to ensure these revisions are agreed with the Architect before shop drawings are produced. The work sizes for overall length and height shall be documented. The site survey of the windows will be the responsibility of the window contractor and comply with BS 8213-4:2007, Windows, doors and roof lights – Part 4: Code of practice for the survey and installation of windows and external doorsteps.

SHOP DRAWINGS

A full set of shop drawings are to be completed and issued to the design team for approval, which show all interfacing details with the building structure. These details should indicate what aluminium system is being used and the location where it is being used and that no risk of cold bridging exists. Thermal analysis software such as Flixo or equivalent is to be used to confirm the thermal efficiency of all interfacing details, aluminium profiles and glazing materials. All isolators and barriers are to be called up on these drawings, which are being used to prevent bimetallic corrosion. All the details are to be fully labelled, dated and revisions noted and approval of the design team should be received prior to works commencing.

CONTROL SAMPLES:

After finalizing all details, prepare 1200mm high X 900mm wide sample of fixed and top-hung openable vent, complete with all ironmongery, as part of the quantity required for the project, and obtain approval of appearance and workmanship by the Architect before proceeding with manufacture of the remaining quantity.

L10/2 COMPONENTS

ALUMINIUM WINDOWS:

- The proposed window system should be a thermally broken window constructed using double polyamide strips and when assembled should have a minimum of 3 chambers forming a high performance thermal barrier with double cleated corners for operational strength. The total dept of the assembled window section from front to back should not be any less than 50mm and should contain centre seals in the cavities. The proposed window system should be an open out casement window with a wrap around espagniollette multipoint locking system allowing for extra large sashes. The system names are given for guidance only and documentation will still be required showing how the proposed system meets with the requirements of the contract.

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- Materials: All profiles to be extruded from aluminium alloy 6060 T6, T5 or T4 to BS EN 12020-2; 2001 / BS EN 755-9; 2001 and with polyamide thermal break sections manufactured from glass reinforced nylon sections capable of withstanding temperatures in excess of 200 °C. All windows shall be manufactured to comply with BS4873.
- When ancillary components such as sills, couplings etc. are formed from sheet materials they shall be fabricated from designated alloys 1200, 3103, 5005 or 5251 conforming to BS EN 485-2:1995 in temper suitable for the particular type of application and degree of forming to be adopted.
- Structure: All structural profiles shall be designed so as the maximum deflection of any member shall not show any evidence of permanent deformation once the load has been removed in line with C.W.C.T. Clause 5.5.2.2:
 - $0 \leq 3000\text{mm} = L/200$
 - $3000\text{mm} \leq 7500\text{mm} = L/300+5$All structural profiles' stability and suitability must be confirmed by the fabricators engineers. Details/evidence of all calculations shall be submitted by the fabricator with for approval prior to commencing installation.
- exceed L/200 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 manufacturer's technical literature.
- Manufacturer and reference: "APA ST60", or "Technal FXi65 Polyamide Commercial Window System", or "Metal Technology 4-20Hi+ Thermally Enhanced Polyamide Casement", or other equal and approved.
- The window, screen installation will include all products, fixings, and interface components necessary to provide a weatherproof and air tight (Class A4) enclosure in accordance with the design requirements and contract conditions.
- Minimum Exposure category (Design wind load): 1200 (Pa) or higher if deemed necessary by BS6399 - Part 2: 1997.

CURTAIN WALL SCREENS:

- Supporting structure: MS RHS sections to engineers details
- Curtain walling system:
- Manufacturer: APA Systems Ltd., or other equal and approved.
- Product reference: Façade TB50
- Type - Drained, ventilated and pressure equalized using an injection molded gargoyles
 - All transom mullion junctions are to be formed with an overlap joint.
 - A seal is to be formed between the underside of the transom and the mullion using an extruded and preformed EPDM piece
- All powder coating conforming to BS EN 12206-1:2004: Coating of aluminium
- Polyester powder coated to the "Qualicoat standard" with a 30 year guarantee.
 - All aluminium profiles, panels and flashings are to be painted in the same factory using the one batch powder
- Internal framing member:
- Material: Aluminium.
- Finish powder coating to Qualicoat standard
- Minimum film thickness: 60 micrometers.
- External cover cap: Material: Aluminium. Finish: Powder coating to Qualicoat Standard.
- Minimum film thickness: 60 micrometers.
- Glazing retention system: Pressure plate with clip on caps
- Panel/facing type: Composite infill panels, external cover plate fixed.
 - External material: Aluminium sheet.
 - External finish: Powder coating to Qualicoat standard
 - Internal material: Aluminium sheet.
 - Internal finish: Powder coating to Qualicoat standard
 - Core insulation: Phenolic board to relevant U value and thickness.
- Accessories: 2mm insulated Perimeter flashings PPC to Qualicoat standard.

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- Incorporated components: Opening lights and doors
- Incorporated components Fully insulated and drained gutter
- General: During detailed design, submit samples of: 400mm x 400mm glazed cruciform sample of the proposed façade system (must include exact glass spec as being used on the project). Obtain approval of appearance before proceeding.
- Soft body impact loads - curtain walling to BS EN 14019
The curtain wall system to tested by a United Kingdom Accreditation Service (UKAS) registered test laboratory using to the minimum requirements of CWCT part 8 sequence B. Before commencement of curtain walling fabrication and installation, submit proof of compliance with this specification. The system should be fully tested using the following standards
 - BS EN 12152
 - BS EN 12153
 - BS EN 12154
 - BS EN 12155
 - BS EN 12179
 - BS EN 13116
 - DD ENV 13050
 - BS EN 13830

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 for borosilicate glass.
 - BS EN 1863 for heat strengthened soda lime silicate glass.
 - BS EN 12150 for thermally toughened soda lime silicate glass.
 - BS EN 13024 for thermally toughened borosilicate glass.
 - BS EN ISO 12543 for laminated glass.
- Glass quality: Clean and free from obvious scratches, bubbles, cracks, rippling, dimples and other defects.
- Glass 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.

GLASS AND GLAZING:

- 24mm/28mm double glazed units, soft coat low "E" 90% argon filled glazing units. Safety glass to be 6.4mm laminated or 6mm toughened to BS 6262 & BS6201- Glass in Buildings. All glazing must be installed in accordance with BS 6262 and the double glazed unit manufacturer's and system supplier's instructions.
- All windows shall contain sealed units, which shall be manufactured in accordance with EN1279 Parts 2 and 3 and carry the necessary and appropriate guarantee.
- To comply with EN1279, hermetically sealed and Kite mark certified
- The total solar transmittance of the window shall not be greater than 60%
- The glazing light transmittance factor shall not be less than 70%
- Clerestory high level windows to GP Hall and Roof Windows to have outer panes of double-glazed units in 6mm Pilkington Activ Neutral self-cleaning glass.
- U-value: The centre pane "U" Value of each sealed unit should achieve a target figure of 1.1Wm²/K. Each fabricator/installer must demonstrate compliant glass choice with tender return. All glazing shall conform to BS6262. Use thermally broken warm edge spacer with a PSI value of no greater 0.04 in the double glazed units to increase thermal efficiencies.
- Any perimeter taping must be transparent to permit inspection of unit edge condition. No tapes, foil, linen, aluminium or metal edging around the perimeter of the insulated glass edge seals will be permitted.
- 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 internal 'snap in' extruded aluminium beads with wedge gasket internally and captive 'E' gaskets externally. External snap in gaskets will be

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considered provided beads have security clips. 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.

DIMENSIONAL TOLERANCES ON GLASS

- Measurement of tolerances: Before any thermal toughening/heat strengthening.
- Pane dimensions less than 1500 mm:
 - For 3 to 6 mm thick glass: ± 1.0 mm.
 - For 8 to 12 mm thick glass: ± 1.5 mm.
 - For 15 mm thick glass: ± 2.0 mm.
 - For 19 mm and 25 mm thick glass: ± 2.5 mm.
- Pane dimensions more than 1500 mm
 - For 3 to 6 mm thick glass: ± 1.5 mm.
 - For 8 to 12 mm thick glass: ± 2.0 mm.
 - For 15 mm thick glass: ± 2.5 mm.
 - For 19 mm and 25 mm thick glass: ± 3.0 mm.
- Pane squareness: Not more than 4 mm difference in diagonal measurements.

GLASS THICKNESS AND AESTHETIC VIEW

With the variety of glass panel sizes required in the different window types it is expected that different glass thicknesses will be required to meet with structural requirements and relevant BS EN standards. The light transmission of all variations of double glazed unit shall be aesthetically the same and sample of no less than 300mm x 300mm of each double glazed unit type being used is to be provided to the design team to prove compliance. The use of low iron glass for the outer pane should be considered to reduce the green effects of thicker glass types when used beside standard thickness units. (For example where a 6mm 16mm 6mm units is being used and the panel next to it needs to be 6mm 14mm 8mm, the 8mm may need to be low iron glass such as Optiwhite or similar to keep the clarity, colour and light transmission similar).

DISTORTIONAL TOLERANCES ON GLASS

- Measurement of tolerances: After any thermal toughening! heat strengthening.
- Maximum bow: 0.2% of pane dimension.
- Maximum roller wave:
 - For 3 to 5 mm thick glass: 0.5 mm.
 - For 6 to 10 mm thick glass: 0.3 mm.
 - For 12 mm and thicker glass: 0.15 mm.
- Maximum edge dip:
 - For 3 to 5 mm thick glass: 0.8 mm.
 - For 6 to 10 mm thick glass: 0.5 mm.
 - For 12 mm and thicker glass: 0.25 mm.

HEAT SOAKED THERMALLY TOUGHENED GLASS

- Standard: To BS EN 14179. - Holding period: 2 hours.

INSULATING GLASS UNITS

- Standard and labels for hermetically sealed units: To BS EN 1279.
- Label: Each pane.
- Colour of warm edge perimeter spacers: Black.
- Perimeter taping: Not permitted .
- Perimeter seals:
 - Resistant to UV light degradation on exposed edges.
 - - Compatible with structural, assembly and weather sealants.

INFILL PANEL FACINGS

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- Tolerances:
- Deviation in size (maximum): ± 1 mm.
- Deviation in flatness from plane per 2 m length (maximum): ± 1 mm.
- Rigidity: Adequate to comply with design! performance requirements.

GASKETS

- Material: Non-cellular rubber to BS 4255-1. Cellular rubber to ASTM-C509. Continuity: Outer gaskets of single front sealed curtain walling systems and inner gaskets of drained and ventilated or pressure equalized curtain walling systems must be formed in a complete frame with sealed joints. Vulcanized rubber gaskets must have factory moulded corner joints. Durability: Resistant to oxidation, ozone and UV degradation.
- To minimise gaps in joints and shrinkage internal gaskets are to be serrated to allow for the gasket to be continuous and not requiring mitre jointing at corners. The internal gaskets are to have one joint only which is to be sealed and located at a low critical area.

WEATHERSTRIPPING

- Weatherstripping shall be one of the following:
- Ethylene propylene diene monomer (epdm); or
- Plasticized PVC (PVC-P); or
- Polychloroprene (CR); or
- Polypropylene pile; or
- Sheathed cellular elastomeric polymer; or
- Silicone (Si); or
- Thermoplastic elastomer (TPE).
- NOTE 1 Non-cellular forms of materials a), b) and c) are specified in BS 4255-1.
- NOTE 2 Guidance on weatherstripping products is given in BPF WG 345/1 [1].

FINISHES, SEALANTS AND IRONMONGERY:

- Polyurethane Foam: To fill gaps around windows and door frames to be fire-retardant grade to DIN standard 4102 or other as approved
- Silicone Mastic: Minimum 10mm recessed joint complete with compatible backing rod. Dow Corning or similar low modulus silicone sealant mastic to BS 5889, to selected colours.
- Finish: Polyester Powder coating Interpon D or Syntapulvin (Not a mixture of both) applied by Qualicoat approved applicator using a standard RAL colour in matt finish to EN12206-1 (2004). Prior to the application of the polyester powder coating the aluminium profiles are to be pretreated using an 8-stage process of acid etching, chromate primer and water rinsing. A guarantee of 25 years must be submitted to architect in advance of starting the project on site. It is noted that this period of time is subject to the location or proximity of the school to a marine environment **or** an industrial environment.
- 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 are processed in one batch to ensure continuity of finish. All Polyester Powder coating must come from the same manufacturer to minimise variation in colour.
- Fixings and fastenings: stainless steel to BS EN ISO 3506-1, 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 brackets, rivets and shear pins: To relevant parts of BS EN 755.
- All corner joints to be secured by pneumatically crimping into both corner cleats. All corner joints and "T" joints should be sealed during construction using suitable 'small gap' sealant and two part adhesive to increase the stability of the joints.
- Joints in frames shall be made either by welding or by mechanical means (e.g. cleating and screwing) and shall have flush, stepped or lapped surfaces. For flush joints formed by mechanical means, any deviation from the same plane shall be within the limits set by the use of extrusion tolerances given in BS EN 755-9.

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- Ironmongery/accessories: All ironmongery supplied by selected manufacturer.
- Handles shall suit espagnolette wrap around multipoint locking type as selected. The opening is to be restricted to a distance to be 100mm maximum for child safety and to ensure adequate free openable area. To meet the required security level and safety standard all lower opening vent frames shall be fitted with one non releasable locking restrictor. These will restrict the window opening to 100mm in line with the rapid ventilation calculations. These should be fitted in accordance with manufacturer's recommendations and as detailed in their technical literature.
- Hinges shall be 17mm stainless steel, balanced and restricted stay hinges capable of carrying the weight of the sashes. All opening vents on all levels shall be fitted with a pair of storm balanced stainless steel friction hinges sized in accordance with manufacturer's technical literature and fitted in accordance with the manufacturer's recommendations.
- Security: The window system shall be manufactured supplied and installed in strict accordance with the criteria laid down in BS7950. When the completed window is tested in accordance with BS 7950:1997, A.4 and A.5.1, it shall not be possible to gain entry. Guidance for security against crime is given in BS 8220.
- The windows shall incorporate an internal pressure equalised drainage system with external snap on cover caps. All windows shall be designed and manufactured in compliance with BS4873 and BS8200.

REMOTE WINDOW OPENING DEVICES: (locations as per drawings)

TELESCOPIC MANUAL OPENING DEVICES

- Telescopic manual remote opening devices to be "Teleflex Gear" or "BJP Window Controls" or similar or equal approved, for locations see window schedule.
- Window sash shall be controlled by 1 No. Morse Midi operator (Part No. 714600); windows shall be opened using Morse 250mm chain openers (213241) with conduit, Teleflex cable and saddle fixings to wall. All components shall be finished in a white polyester powder coated paint finish. As per window schedule.

'WINDOW PULL' OPENING DEVICES

Where shown, upper vents shall be operated by a 'window pull' pole engaging an adapted standard single handle espagnolette locking handle. 'Window Pull' pole by www.keydistribution.co.uk or equal approved.

16 no. @ 610mm long (window types WT-C, WT-E, WT-F, WT-H, WT-I)

RAPID VENTILATION:

Each window assembly must be manufactured in accordance with Part F of the current Building Regulations and achieve a total free area of 1/20th of the floor area of the room. The selected fabricator must demonstrate compliance through calculations.

BACKGROUND VENTILATION:

- Where indicated on window schedule, each window shall incorporate a thermally broken Ducoplus 60, or other equal and approved, glazed-In Ventilator and shall be polyester powder coated offering a single colour facility to match the window profiles. They should be fitted with an external, aluminium hood. The glazed in vents should be fitted with rod control.
- Each vent must be capable of providing a minimum free airflow in accordance with Part F of the current Building Regulations. Vents shall be tested to BS6375 Part 1 1989, and achieve Category C – 600Pa wind & water tightness

TEST REQUIREMENTS:

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- The proposed window system must have been fully tested to the following standards by a UKAS registered testing laboratory with the classification of the results being based on BS6375 Part 1 2009. Minimum allowable results as follows:

WINDOWS			
Classification	Test Method & Classification Standard	Achieved	
Air Permeability; -	BS EN 1026:2000 BS EN 12207:2000	Max Test Pressure 600Pa	Class 4
Watertightness:	BS EN 1027:2000 BS EN 12208:2000	900Pa	E900
Wind resistance;	BS EN 12211:2000 BS EN 12210:2000	P1; 1600Pa P2: 800Pa P3: 2400Pa	C4

The proposed window system should be fully tested by an UKAS register test laboratory to BS6375 part 2 with an appropriate size of an sash and frame being subjected to the following sequence

- Test 1 Operational Strength BS EN 12046-1 bsen 13115 Class 1 (10N)
- Test 2 Mechanical strength BS14608 Static Torsion (300N for 5 minutes) Class 3 to BS EN 13115
- Test 3 Mechanical Strength BS EN 14608 Racking (600N for 5 minutes) Class 3 to BS EN 13115
- Test 4 Repeat opening and closing BS EN 1191 (30,000 cycles) achieving Class 3 to BS EN 13115
- Test 5 Load bearing and safety devices BS EN 14608 (600N for 5 minutes) Class 3 to BS EN 13115

CURTAIN WALLING

The proposed curtain wall system is to be fully tested to the following standards by a UKAS registered test laboratory using the CWCT sequence of testing for building envelopes.

	Peak Test Pressures	Result or Classification Required
Water Penetration Static	600Pa	R7
Water Penetration Dynamic	600Pa	Pass
Air Leakage Infiltration	600Pa	A4
Wind Resistance Serviceability	1600Pa	Pass
Wind Resistance Safety	2400Pa	Pass
Dynamic Aero Engine	600pa	Pass
Dynamic EN Fan	300pa to 900pa	Pass
Safety to	3600pa (positive and negative)	Pass
Impact Safety (Soft body) Internal		Pass I5
Impactl Safety (Soft body) External		Pass E5
Air permeability to 600pa (positive and negative) Permissible air leakage rates of 1.5m³/hr/m² for fixed lights and 2.0 m³/hr/lin.m for opening lights must not be exceeded when the curtain walling is subjected to the peak test pressure. Other test data required		
Due to the size of the panels of glass practical independent load test data will be required proving the cleats or transom to mullion connection joints can carry the expected dead load.		

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- There is solar shading to be integrated into the curtain wall screens and proof will be required that the brackets plus blades will not be damaged under wind load and the brackets can carry the live and dead loads. This should be proven using an aero engine/ wind turbine test where the blades being proposed are connected to a fully glazed curtain wall screen (4.0mts x 4.0mts in size) using the proposed fixing method and brackets and exposed to 160Km per hours wind load.

AVOIDANCE OF CONDENSATION

- Requirement: Notional psychometric conditions under which condensation must not form on building interior surfaces of framing members or any part of infill panels! facings are:
 - Notional outdoor psychometric conditions as BS 6229, table A 1.
 - Notional indoor psychometric conditions:
 - Temperature: 20°C.
 - Relative humidity: 55%.
 - Vapour pressure: 1.28 kPa

DURABILITY

- Relevant agents or degradation mechanisms: BS 7543.
- Design life of the window system: Not less than 25 years.
Secondary components: Submit details together with required maintenance regime, replacement periods and methods of replacement

THERMAL PROPERTIES AND REQUIREMENTS:

Thermal Transmittance to I.S. EN ISO 10077-1:2006. The double glazed unit U-value shall not be greater than 1.1Wm²/K and the combined U-value total of all the windows and curtain wall screens fully glazed shall not be greater than an average of 1.8Wm²/K. U-value: Design size: 1.20wide x 1.5 high top hung opening sash full size. Manufacturer to provide documentary evidence that the above sized window has a Uw thermal performance of 1.8 W/m²°K or better. The calculation method for determining the Uw shall use the combined values of Uf, Ug, and PSI proportionate to their areas. Each fabricator/installer must demonstrate compliant glass choice with tender return. All glazing to be Soft Coat Low E 90% Argon Filled double glazed Clear sealed units to BS 5713:1979 with a Ug value 1.2 W/m²K or less.

- Verification will be required that the system being offered meets or exceeds these requirements.
- Stating that the system being offered meets with Document L will not be accepted. The use of software such as Flixo, LogiKal, KalCad, or Rosinhimm will be accepted to prove a system meets with the specifications.
- All edges and interfaces must be fully insulated to prevent any form of cold bridging or thermal deficiency.
- All windows and screens are to have a secondary air seal as standard and all details should indicate the size shape and materials to be used in the formation of this seal.

EXTERNAL DOORS

- Materials: All profiles to be extruded from aluminium alloy 6060 T6, T5 or T4 to BS EN 12020-2; 2001 / BS 755-9; 2001 and where thermally broken, with polyamide thermal break sections manufactured from glass reinforced nylon sections capable of withstanding temperatures in excess of 200 °C.
- The door system is capable of being coupled together and internally beaded.
- The double and single rebate door configuration opening in and out, are to be fully tested to BS6375 Part 1 2009 by an independent UKAS registered test laboratory to the following standards.

ISO EN12207 Air Permeability	Class 3
ISO EN12208 Water tightness	Class 9A or better at 600pa
ISO EN12211 Wind resistance	PS = 2000pa

The proposed window system should be fully tested by an UKAS register test laboratory to BS6375 part 2 with an appropriate size of an sash and frame being subjected to the following sequence

- Test 1 Operational Strength BS EN 12046-1 bsen 13115 Class 1 (10N)
- Test 2 Mechanical strength BS14608 Static Torsion(300N for 5 minutes) Class 3 to BS EN 13115
- Test 3 Mechanical Strength BS EN 14608 Racking (600N for 5 minutes) Class 3 to BS EN 13115
- Test 4 Repeat opening and closing BS EN 1191 (200,000 cycles) achieving Class 3 to BS EN 13115
- Test 5 Load bearing and safety devices BS EN 14608 (600N for 5 minutes) Class 3 to BS EN 13115

- Frame joint sealing materials

When the completed window is tested in accordance with BS 6375-1 and BS 6375-2, there shall be no degradation of the sealing or the operational function of the window due to failure of the sealing materials.

- The proposed door must have a non-interrupted and continuous 8mm cover to the rebate.
- All corners are to be double cleated for operational strength
- The hinges used must be face fixed and be capable of taking loads in excess of 150Kgs.
- Fully weathered Wheelchair threshold are to be used where necessary.
- Multipoint locking systems complete with adjustable receivers are to be fitted. The main entrance doors are to have a multipoint key operated locking mechanism fitted with no lever or pad handles

- Design for glazing

The frame design is such that:

The glazing complies with current Building Regulations;

The doors can be glazed in accordance with BS 6262;

Re-glazing is possible without the need to remove the outer frame from the structure of the building;

It is possible to renew the weather-stripping without removing the outer frame from the structure of the building;

It is possible to replace the hardware without removing the outer frame from the structure of the building.

Doors shall be glazed in accordance with the recommendations given in BS 6262.

28mm double glazed units, soft coat low "E" 90% argon filled glazing units. Safety glass to be in accordance with BS 6262 & BS 6201- Glass in Buildings. All glazing must be installed in accordance with BS 6262 and the double glazed unit manufacturer's and system supplier's instructions.

ENTRANCE DOORS:

- APA Systems Ltd ST60 or Metal Technology's System 5-20Hi+ Thermally Broken rebated door system, or other equal and approved.
- The door system proposed for this location shall be rebated open out double doors double-glazed both panes with laminated glass to BS 6201 and BS6262 with multipoint locking mechanism operated by key only with 300mm pull handles to spec by architects.
- Doors should be fully rebated and outward opening only and must be fitted with external drip bars. Door styles, top and bottom rails to be mitre cut and fixed securely by means of purpose made cast aluminium cleats, with stainless steel nails.
- Side styles including bead are to be 105mm wide along with a 80mm top rail and bottom rails including bead of 120mm.
- The dept of the door profiles is not to be less than 60mm
- Horizontal rails to have extruded internal security beads.

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- The doors are to open out and are to be controlled by exposed Dorma or equally approved overhead door closures. The closure shall be timed to allow the slave door to close prior to the other leaf.
- Doors to incorporate a weather bar to the bottom rail.
- The doors are to have thermally broken flush drained thresholds (14mm high) to be wheel chair accessible.
- Doors are to be fitted with pull handles, flush bolts and dead locks incorporating 3 point locking, (sample approval required).
- Door tested to BS6375 part 2 to 200,000 cycles

WORKMANSHIP

SITE INSTALLATION:

- All fabrication, site installation and glazing works are only to be carried out by qualified personnel fully trained in the aluminium system being used on the project.
- Verification of the personnel's qualifications to carry out the works maybe requested by the design team if deemed necessary.

PROTECTION OF COMPONENTS:

- All windows & doors to arrive with protective tape all around to avoid damage from render/plaster.
- Do not deliver to site components that cannot be put immediately into suitable clean, dry, floored and covered storage.
- Stack near vertical on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.
- All double glazed units delivered to site should be stored in such a manner as to prevent any solar or thermal shock and cracking.

PRIMING/SEALING:

- Before fixing components ensure that surfaces of timber, which will be inaccessible after installation, are primed or sealed as specified.

CORROSION PROTECTION:

- All bimetallic and crevice corrosion is to be prevented using PVC or nylon isolator membranes places strategically between the aluminium and other construction materials such as concrete or steel.
- Ensure that the isolator membranes are fully in tacked with no tares or holes and the proposed materials are fully compatible with any proposed sealer and is fully UV stabilized.
- The use of butyl or bitumen materials to prevent bimetallic corrosion is not allowed due to the incompatibility of the different materials to used as the sealing agents.
- Building in will not be permitted except where specifically stated on the drawings.

WINDOW INSTALLATION:

- Install windows into prepared openings, maintaining a maximum gap of 5 mm between the frame edge and the surrounding construction which is to be filled with foam filler after installation is complete refer to detail drgs.
 - Install windows without twist or diagonal racking.
- All secondary seals must be compatible with structural, assembly sealants and weather sealing with which they come into contact with
 - Windows to be fixed by independent lug fixing back to structure.
 - Windows must not rely on paneling for weight transfer.
 - Sizes must be checked prior to fabrication.
 - Windows shall be suitably packed in the aperture, so as not to impose an unnecessary dead loading on the fixing methods.
 - Fixing lugs screwed to masonry or steel reveals as specified below, refer also to architects details

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PREPARED OPENINGS:

- Ensure that dpc's are positioned correctly in relation to frames and are not displaced during fixing operations.
- Flashings, closers, etc: Locate and form correctly to provide weather tight junctions with the curtain walling. They should where necessary and specified include the vapor barrier along with a primary weather membrane and insulation to prevent any cold bridging, air and water ingress.

FIXING OF ALUMINIUM FRAMES:

- As section Z20 using stainless steel expanding bolts
- When not predrilled or specified otherwise, position fixings not more than 250 mm from each end of jamb, adjacent to each hanging point of opening lights, and at maximum 600 mm centres.

SEALANT JOINTS:

- To be Dow Corning moisture curing neutral low modulus silicone or similar In accordance with BS 6213. Classification and requirements: To BS EN ISO 11600.
 - Reaction to contact products and finishes: Stable and compatible
 - Colour: To be chosen by Architect from full available colour range
 - Prepare joints and apply sealant as section Z22.
 - Finish triangular fillets with a flat or slightly convex profile.

IRONMONGERY:

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

MAINTENANCE

- Maintenance manual: Incorporate details within the Building Manual in accordance with CWCT 'Standard for systemized building envelopes' clause 7.6.1. Materials certification and test reports to be included:

L20 DOORS/SHUTTERS/HATCHES

To be read with Preliminaries/General conditions.

L20/1 PRELIMINARY INFORMATION/REQUIREMENTS

- (a) EVIDENCE OF PERFORMANCE: Provide independently certified evidence that all specified variants of components comply with specified performance requirements including fire.
- (b) FIRE RESISTANCE: The specified performance is to be the minimum period attained when tested for integrity in accordance with BS 476:Part 8 or BS 476:Part 22.
- (c) SITE DIMENSIONS must be taken and recorded on shop drawings before starting to make external louvred doors.
- (d) MARKERS on doors to be provided indicating fire resistance
- (e) CERTIFICATION full door set assembly for each fire door type (including frame, leaf and ironmongery) to be certified by main contractor.

L20/2 COMPONENTS

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- (a) FOLDING SCREEN/DOOR between classrooms 1&2
- Drawing Reference:
 - Folding door system: Dublin Wall Multiwall Haro Type 100K folding partition.
 - Sound Reduction: 50 db sound reduction, system must have laboratory test certification.
 - Rolled steel or Aluminium finished in RAL 9010 ceiling sliding track fixed to beam above.
 - Door panel thickness 100mm with manually operated top and bottom sound seals.
 - Profiled aluminium trims, top and bottom acoustic seal telescopic end expander, with internal integrated rubber sealing flaps and magnetic strips.
 - Track system: Type O Single point suspension from ceiling track.
 - Finish: Laminate in selected colour with surface spread of flame rating of min. Class O.
 - Angle bead secured to 50 x 38mm timber grounds all by main contractor
 - Beam above as per structural specification
- (b) CEILING ACCESS PANEL
- Location: Each Classroom ceiling
 - Manufacturer: Jakdor Ltd
 - Type: CAD.EXP/24/SE – depending on which ceiling tile to be used
 - Size: 600mm x 1200mm
 - Finish: painted white ref. RAL9010 – ceiling tile to be cut to fit into panel.
 - Hinge type: Sliding Hinge Pin

L20/3 INSTALLATION

- (a) PROTECTION OF COMPONENTS: Do not deliver to site components which cannot be put immediately into suitable dry, floored and covered storage. Stack on bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc. Protect all frames and door leafs after installation until handover, Make good or replace any damaged items on Architect's instruction.
- (b) MOISTURE CONTENT: During delivery, storage, fixing and thereafter to Practical Completion maintain conditions of temperature and humidity to suit specified moisture content(s) of timber components. When instructed by Architect, test components with an approved moisture meter to manufacturer's recommendations.
- (c) BUILDING IN will not be permitted except where specifically stated.
- (d) BUILDING IN TIMBER FRAMES: Fix dpcs with galvanized clout nails to backs of frames which are to be built into external openings.
- (e) FIXING CENTRES FOR TIMBER FRAMES: When not predrilled or specified otherwise, position fixings 150 mm from each end of jamb, adjacent to each hanging point and at 600 mm maximum centres. All fixings to be counter sunk and pelleted with HW to match colour and grain of frame.
- (f) SEALANT JOINTS:
- Sealant and reference: polysulphide mastic. Colour: to match joinery
 - Prepare joints and apply sealant as section Z22 to all frames, externally and internally at all opes, and provide bedding mastic under all cills.
- (g) IRONMONGERY:
- Assemble and fix carefully and accurately using fastenings with matching finish supplied by ironmongery manufacturer. Prevent damage to ironmongery and

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adjacent surfaces. At completion check, adjust and lubricate as necessary to ensure correct functioning.

- Ensure that all ironmongery specified for fire rated doors is compliant with relevant rating. Evidence of performance to be provided. See clause 161 above.

L20/4 L30 FIRE TESTING

- (a) 1 HOUR STEEL ROLLER SHUTTER/CURTAIN: Test all fire rated roller shutters 3 months after Practical Completion in compliance with BS 5588.

L40 GENERAL GLAZING

To be read with Preliminaries/General conditions.

L40/1 GENERAL REQUIREMENTS

- (a) PREGLAZING of components will be permitted, but:
- Precautions to be taken to prevent displacement of glazing or compound. Submit details and obtain approval.
 - Panes with any displaced glazing or compound or with defective seals to be reglazed in situ.
- (b) WORKMANSHIP GENERALLY: Glazing generally: To BS 6262.
- The glazing must be wind and watertight under all conditions with full allowance made for deflections and other movements.
 - Panes/sheets to be accurately sized, with clean, un-disfigured surfaces and undamaged edges.
 - Avoid contact between glazing panes/units and alkaline materials such as cement and lime.
 - Keep materials dry until fixed. Keep insulating glass units and plastics glazing sheets protected from the sun and away from heat sources.
 - Ensure that glass/plastics, surround materials, sealers primers and paints/clear finishes to be used together are compatible. Comply with glazing and sealant manufacturers' recommendations.
- (c) PREPARATION: Ensure that preparation by others of surrounds rebates, grooves and beads is complete. Clean surfaces before installing glazing.
- (d) PREPARATION: Clean surrounds, rebates, grooves and beads, and prepare as specified before installing glazing.
- (e) GLASS: Generally to BS 952 and the relevant part(s) of BS EN 572, free from scratches, bubbles, cracks, rippling, dimples and other defects.
- (f) DIRECTIONALLY PATTERNED/WIRED GLASS: Fix with pattern/wires parallel to surround. Align in adjacent panes where seen together at close quarters.
- (g) HEAT TOUGHENED GLASS to be fixed in the following locations must be subjected to a heat soaking regime. All panes must be heat soaked. Provide certified evidence of treatment and include the suffix 'HS' to the permanent mark that indicates the type of glass. Heat soaking regime to be minimum 8 hours at minimum 280 degC. Location(s): Rooflights

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- (h) SAFETY GLAZING AND FIRE RESISTANT GLAZING: Each pane to be permanently marked with its type, class and BS or EN reference during manufacture, in a position which will be visible but not predominant after fixing.
- (i) EDGE TAPES TO INSULATING UNITS: Report to Architect any damage to edge tapes. Obtain approval of proposed method of repair.

L40/2 TYPES OF GLAZING

- (a) BEAD FIXED SINGLE GLAZING TO NON FIRE-RATED VISION PANELS
 - Drawing reference(s): CE-001-A-503, 504
 - Pane material: 6mm polished Georgian wired glazing to BS 6206
 - Surround/bead: Softwood frame and cloaked beading strips
 - Preparation: primed as required for glazing compound
 - Glazing compound:: to Architect approval
 - Apply glazing compound, using distance pieces to produce not less than 3 mm finished thickness of back bedding after inserting glazing.
 - Locate glazing centrally in the surround using setting and location blocks.
 - Apply front glazing compound, filling all voids, and insert distance pieces. Bed beads in compound and fix securely. Finish visible edge of compound internally and externally with a smooth chamfer.
- (b) FIRE RESISTANT GLAZING TO FR30 and FR60 RATED FIRE DOORS
 - Drawing reference(s): CE-001-A-503, 504
 - Fire rating: half / one hour integrity
 - Pane material: 6mm polished georgian wired safety glass
 - Surround/bead & beadfixing : as supplied by doorset manufacturers
 - Glazing system:Tape: intumescent strips Pointing sealant: silicone mastic
 - Apply glazing tape/strip to beads and fix as specified. Leave no gaps at corners.
 - Locate glazing centrally in surround using hardwood/ noncombustible setting and location blocks as required.Apply pointing sealant immediately after glazing and finish to a smooth chamfer.
- (c) BEAD FIXED INSULATING GLAZING TO ALL EXTERNAL DOORS AND WINDOWS
 - Drawing reference(s): CE-001-A-503, 504
 - Pane material: 24mm insulating glass units to BS5713 and Kitemarked certified
Inner panel: 6mm toughened clear float glass Outer pane: 6.4mm laminated clear float glass
 - Surround/bead: PPC Aluminium
 - Preparation: clean and smooth surfaces Bead fixing: clipped
 - Glazing system: gasket sections
 - Locate insulating unit centrally in surround using setting and location blocks.
 - Install gaskets and fit beads as recommended by the frame manufacturer. Cut gasket sections over length to ensure a tight fit without gaps at corners.
 - Ensure that drainage and ventilation holes are not obstructed.

M20 PLASTERED/RENDERED/ROUGHCAST COATINGS

To be read with Preliminaries/General conditions.

M20/1 TYPE(S) OF COATING

- (a) EXTERNAL RENDER TO BS 5262: 1991
 - Location: All external surfaces
 - Background: Concrete block
 - Render Coats: 3

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- (i) Scud / Slurry Coat to be 3 – 5mm
 - (ii) Scratched undercoat to be max 12mm.
 - (iii) Final Coat to be 5 – 8mm applied with wooden trowel with rubbed finish
- Colour: natural grey

M20/2 GENERAL REQUIREMENTS FOR WORKMANSHIP

- (a) **CONTROL SAMPLE(S):** Complete sample area(s), being part of the finished work, in approved location and obtain approval of appearance before proceeding: typical external render
- (b) **UNIFORMITY OF COLOUR AND TEXTURE:** Once samples of coatings have been approved do not change type or proportion of constituent materials. Ensure that supplies of materials are sufficient to give consistent and uniform colour and texture. Obtain each material from one source and mix different loads if necessary.
- (c) **PROPORTIONS FOR CEMENT GAUGED MORTARS:** Except where specified otherwise, mix proportions for cement gauged plaster/render undercoat mortars are to be in accordance with the following designations:

Mix type	Mix designation				
	1	2	3	4	5
Cement: lime: sand	1:¼:3	1: ½:4 to 1: ½:4½	1:1:5 to 1:1:6	1:2:8 to 1:2:9	1:3:10 to 1:3:12
Cement: premixed lime & sand (proportion of lime to sand given in brackets)	1:3 (1:12)	1:4 to 1: 4½ (1:9)	1:5 to 1:6 (1:6)	1:8 to 1:9 (1: 4½)	1:10 to 1:12 (1:4)
Cement: Sand (using plasticizer)	-	1:3 to 1:4	1:5 to 1:6	1:7 to 1:8	-
Masonry cement:sand	-	1:3 to 1:3½	1:4 to 1:6	1 :5½ to 1:6½	-

- (d) **CEMENT:** As specified in the type of coating clause(s).
 - Where Portland cement is specified Portland blastfurnace cement or Portland pulverized-fuel ash cement may be used as an alternative.
 - Where Portland cement, Portland blastfurnace cement, Portland pulverized-fuel ash cement or Sulfate-resisting Portland cement is specified use Class 42.5 or 52.5 material as defined by the appropriate British Standard.
 - All cements must comply with the appropriate British Standard and be licensed under the BSI Kitemark scheme for cement.
- (e) **READY-MIXED CEMENT GAUGED MORTARS** may be retarded provided they are to BS 4721, used within the working time and site temperatures recommended by the manufacturer and not remixed on site. Obtain from an approved manufacturer
- (f) **ADMIXTURES:**
 - Do not use admixtures unless specified or approved.
 - Do not use admixtures of any type with proprietary mixes.
 - Do not use calcium chloride or any admixtures containing calcium chloride

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- (g) MIXING:
 - Measure materials accurately by volume using clean gauge boxes. Proportions of specified mortar mixes are for damp sand. Adjust proportions if dry sand is used.
 - Mix materials thoroughly to a uniform consistency and appearance using suitable mechanical or manual means or, for proprietary mixes, as recommended by the manufacturer.
- (h) CONTAMINATION: Do not allow contamination of one type of material by another, or by any set material.
- (i) INITIAL SET: Do not use mixes after initial set has taken place. Do not retemper or reconstitute mixes, unless permitted by the manufacturer of proprietary mixes.
- (j) SCAFFOLDING: Use independent scaffolding to avoid putlog holes and other breaks in coatings.
- (k) CLEANLINESS: Protect thoroughly all existing work and approaches using suitable boards, sheets, etc. clean off all droppings on to finished work immediately.
- (l) COLD WEATHER: Do not carry out external work when air temperature is below 3°C and falling or below 1°C and rising. Take all necessary precautions to enable internal coating work to proceed without damage when air temperature is below 3°C. Do not use frozen materials and do not apply coatings to frozen or frost bound backgrounds.

M20/3 PREPARING BACKGROUNDS

- (a) ACCEPTANCE OF BACKGROUNDS: Before preparation or application of coatings ensure:
 - Backgrounds are secure, adequately true and level to achieve specified tolerances, free from contamination and loose areas, reasonably dry and in a suitable condition to receive specified coatings.
 - All cutting, chasing, fixing of concealed conduits, service outlets and the like, and making good of the background, is completed.
- (b) PREPARATION GENERALLY:
 - Remove efflorescence, dust and other loose material by thoroughly dry brushing.
 - Remove all traces of paint, grease, dirt and other materials incompatible with coating by scrubbing with water containing detergent and washing off with plenty of clean water. Allow to dry before applying coatings unless specified otherwise.
- (c) KEYING/BONDING: Prepare backgrounds as specified for the type of coating to be applied. Methods other than those specified may be submitted for approval.
- (d) IN SITU CONCRETE SURFACES: Scrub with water containing detergent to ensure complete removal of mould oil, surface retarders and other materials incompatible with coating. Rinse with clean water and allow to dry unless specified otherwise.
- (e) SMOOTH CONCRETE SURFACES: Where no keying mix or bonding agent is specified, wet smooth concrete surfaces immediately before plastering.
- (f) SPATTERDASH KEYING MIX:
 - 1 part Portland cement; 1½ -2 parts clean sharp, coarse sand.
 - Mix to a thick slurry and keep well stirred.
 - Throw onto previously dampened surface to a thickness of 3-5 mm and leave rough. Keep damp with fine waterspray or by covering with polyethylene until set. Allow to dry out slowly and harden before applying undercoat.

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- (g) BONDING AGENT: Type: SBR, Dilute to manufacturer's recommendations. Apply subsequent plaster/render coating whilst bonding agent is still tacky to ensure a good bond.

M20/4 BACKINGS/BEADS/JOINT

- (a) GYPSUM WALLBOARD BACKINGS:
- Plasterboard: 12.5 mm gypsum wallboard to BS 1230:Part 1, with grey paper face exposed.
 - Fixing and jointing materials and accessories to be as recommended by the board manufacturer. Fixing: in accordance with manufacturer's recommendations
- (b) BEADS/STOPS FOR INTERNAL USE: Galvanized steel to BS 6452:Part 1.
- (c) BEADS/STOPS FOR EXTERNAL USE: Material: **No external corners beads to be used on this used project**
- (d) BEADS/STOPS GENERALLY:
- Provide beads/stops at all external angles and stop ends except where specified otherwise.
 - Cut neatly, form mitres at return angles and remove sharp edges, swarf and other potentially dangerous projections.
 - Fix securely, using the longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with background. Use mechanical fixings for external beads/stops.
 - After coatings have been applied, remove coating material while still wet from surfaces of beads/stops which are to be exposed to view.
- (e) DISSIMILAR SOLID BACKGROUNDS FOR PLASTERING/RENDERING: Where coating is to be continued without break across joints between dissimilar solid backgrounds which are in the same plane and rigidly bonded or tied together, cover joints with a 150 mm wide strip of building paper to BS 1521 and overlay with 300 mm wide expanded stainless steel lathing. Orientate lathing in accordance with manufacturer's recommendations and fix securely at 300 mm staggered centres along both edges using stainless steel screws with spacers
- (f) MOVEMENT JOINTS:
- Form joints in coatings to coincide with movement joints in background using:
 - stop beads at internal angles and movement joint bead for other joints in external render
 - Ensure that joints extend through coating to background.
- (g) CONDUITS bedded in undercoat to be covered with 100 mm wide joint tape bedded in finishing coat mix, pressed flat and trowelled in. Do not lap ends of tape.
- (h) TAPING JOINTS: Fill and tape (scrim) the following joints between boards (except where coincident with a metal bead): all joints and angles Bed tape centrally over joints using same plaster as following coat. Do not lap ends. Press well in, trowel flat and smooth and allow to set but not dry out before applying coating.
- (i) SERVICE CHASES: Cover with galvanized steel mesh strip fixed securely at 300 mm staggered centres along both edges.

M20/5 PLASTERING

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- (a) APPLICATION GENERALLY:
 - Apply each coating firmly to achieve good adhesion and in one continuous operation between angles and joints. All coatings to be not less than the thickness specified, firmly bonded, of even and consistent appearance, free from rippling, hollows, ridges, cracks and crazing.
 - Finish surfaces to a true plane, to correct line and level, with all angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.
 - Prevent excessively rapid or localised drying out.
- (b) DUBBING OUT: If necessary to correct background inaccuracies, dub out in thicknesses of not more than 10 mm in same mix as first coat. Allow each coat to set sufficiently before the next is applied. Cross scratch surface of each dubbing out coat.
- (c) METAL MESH LATHING: Work undercoat well into interstices to obtain maximum key.
- (d) UNDERCOATS GENERALLY: Apply firmly, rule to an even surface and cross scratch each coat to provide a key for the next coat.
- (e) CEMENT GAUGED UNDERCOATS: Allow to dry out thoroughly, but not too rapidly, to ensure that drying shrinkage is substantially complete before applying next coat.
- (f) THIN COAT PLASTER: Before applying single coat plaster of less than 2 mm thickness, prepare surface by filling holes, scratches and voids with finishing plaster.
- (g) SMOOTH FINISH: Trowel or float to produce a tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks. Do not use water brush and avoid excessive trowelling and over polishing.
- (h) WOOD FLOAT FINISH: Finish with a dry wood float as soon as wet sheen has disappeared from surface to give an even overall texture.

M20/6 RENDERING

- (a) APPLICATION GENERALLY:
 - Apply each coating firmly to achieve good adhesion and in one continuous operation between angles and joints. All coatings to be not less than the thickness specified, firmly bonded, of even and consistent appearance, free from rippling, hollows and ridges.
 - Finish surfaces to a true plane, to correct line and level, with all angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.
 - Prevent excessively rapid or localised drying out.
- (b) ACCURACY of rendering to receive tiles fixed with adhesive. The variation in gap under a 1.8 m straight edge (with feet) placed anywhere on the surface to be not more than 3 mm.
- (c) DUBBING OUT:
 - If necessary to correct background inaccuracies dub out in thicknesses of not more than 13 mm in same mix as undercoat. Total thickness of dubbing must not exceed 25 mm unless approved otherwise. In areas where thickness of dubbing will exceed 20 mm, first apply an approved keying/ bonding treatment. Comb surface of each dubbing out coat. Allow each coat to set but not dry before the next is applied.

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- (d) **ANCHORED MESH REINFORCEMENT:** The first undercoat must be applied through and round the mesh to fully bond with the solid background.
- (e) **UNDERCOATS GENERALLY:**
 - Apply first undercoat or dubbing out coat by throwing from a trowel.
 - Allow to stiffen and comb to provide a key for the next coat. Comb to produce evenly spaced wavy horizontal lines, approximately 20 mm apart and 5 mm deep. Do not penetrate through the coat.
 - Brush down each undercoat to remove dust and loose particles and dampen to control suction before applying next coat.
- (f) **FINAL COAT - PLAIN FLOATED FINISH:** Finish with wood or other suitably faced float to give an even, open texture. Do not apply water while working up. Do not draw excessive laitance to surface (either by overworking or by use of steel trowel).
- (g) **DRYING:** Work in the shade and out of drying winds whenever possible.
 - Keep each undercoat and final coat damp for the first 3-4 days by covering with polyethylene sheet and/or spraying with water. Hang sheeting clear of the final coat where it is the final finish. Thereafter prevent from drying out too rapidly.
 - Allow each coat to dry out thoroughly to ensure that drying shrinkage is substantially complete before applying next coat.
- (h) **PROTECTION:** Adequately protect newly applied external coatings against frost and rain for the first 48 hours using polyethylene sheet hung clear of the face, or other approved method.

M50 RUBBER/PLASTICS/CORK/LINO/CARPET TILING/SHEETING

To be read with Preliminaries/General conditions.

M50/1 TYPE(S) OF COVERING

- (a) **LINOLEUM or RUBBER FLOORING:**
 - Location: all Classroom floors
 - Base: new concrete slab, Moisture not to exceed 3.5%
 - Flooring roll: homogeneous linoleum to EN 548 and EN670
 - Manufacturer and reference: the following or other equal and approved: (must have factory applied protective coating)
 - Forbo Marmoleum Real or Dual with topshield
 - Width: 2000 mm, Thickness: 2.5 mm
 - Colour/pattern: colour to be advised;
 - Adhesive: to manufacturer's recommendation
 - Seam welding: rubber only - hot welded with 4mm complimentary coloured rod
 - Before handover clean thoroughly with Neutral Detergent, rinse & dry.
 - Special requirements: seams to be unobtrusive and kept to a minimum as BELOW, to run the length of an area rather than across the line of main traffic, to be kept away from areas of heavy wear or narrow access.
- (b) **MATWELL FLOORING:**
 - Location: 4 Class Entrance doors
 - Base: new concrete slab
 - Manufacturer and reference: Forbo Flooring: Forbo Coral Brush Activ entrance matting, or equivalent approved

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- Width: to suit matwell ; Thickness: 10mm; Rolls 2m wide. Colour/pattern: to be selected by Employer's Representative.

M50/2 GENERALLY

(a) WORKMANSHIP GENERALLY:

- All bases must be rigid, dry, sound, smooth and free from grease, dirt and other contaminants before coverings are applied. Finished coverings must be accurately fitted, tightly jointed, securely bonded, smooth and free from air bubbles, rippling, adhesive marks and stains.

(b) SAMPLES: Before placing orders, submit for approval a representative sample of each type of covering. Ensure that delivered materials match samples.

(c) LAYOUT: Agree setting out of seams before ordering roll materials for lino sheeting

(d) MARKING: Ensure that materials are delivered to site in original packing, clearly marked with batch number.

(e) STORAGE: Store materials in a clean, warm, dry, well ventilated place. Keep in original packing until conditioning commences.

(f) COMMENCEMENT: Do not lay materials until building is weathertight, wet trades have finished their work, the building is well dried out, all paintwork is finished and dry, conflicting overhead work completed, and floor service outlets, duct covers and other fixtures around which the materials are to be cut have been fixed. Inform Architect not less than 48 hours before commencing laying.

(g) CONDITIONING: Before laying commences thoroughly condition materials by unpacking and separating in the spaces where they are to be laid. Maintain resilient flooring rolls in an upright position, unroll carpet and keep flat on a supporting surface. Minimum conditioning time and temperature to be as recommended by manufacturer. Extend conditioning period by a factor of 2 for materials stored or transported at a temperature of less than 10°C immediately prior to laying. Before, during and after laying, provide adequate ventilation and maintain temperature and humidity approximately at levels which will prevail after the building is occupied.

M50/3 PREPARING BASES

(a) SUITABILITY OF NEW BASES AND CONDITIONS: Laying of coverings will be taken as joint acceptance by the Main Contractor and domestic specialist of the suitability of the bases and conditions within any given area.

(b) SUITABILITY OF EXISTING BASES AND CONDITIONS:

- Before commencing work the specialist must confirm in writing (through the Main Contractor) to Architect that existing bases will, after the specified preparation, be suitable to receive the specified coverings.
- Laying of coverings will be taken as further acceptance of the suitability of the bases and also of the conditions within any given area.

(c) DAMPNESS: Where coverings are to be laid on new wet-laid bases:

- Ensure that drying aids have been turned off for not less than 4 days, then
- Test for moisture content using an accurately calibrated hygrometer in accordance with BS 5325, Annex A or BS 8203, Annex A.
- Take readings in all corners, along edges, and at various points over the area being tested.

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- (d) **SUBSTRATES:** The specification for trowelled finishes to receive thin floor coverings require:
- A uniform, smooth surface free from trowel marks and other blemishes, and suitable to receive the specified floor finish material.
 - Adequate protection from construction traffic.
 - Allowance for making good by application of a smoothing compound by and to the satisfaction of the flooring subcontractor in the event of the surface being unsuitable due to inadequate finishing or protection.
- (e) **SMOOTHING UNDERLAYMENT COMPOUND:** As recommended for the purpose by the manufacturer. Mix and lay in accordance with manufacturer's recommendations.

M50/4 LAYING COVERINGS

- (a) **COLOUR CONSISTENCY:** In any one area/room use only coverings from the same production batch to prevent banding or patchiness resulting from colour/flash variation.
- (b) **ADHESIVE FIXING GENERALLY:**
- Adhesive: to be low emissivity type, type to be as recommended by covering/underlay manufacturer as appropriate or, in the absence of such recommendation, type to be approved.
 - Use a primer where recommended by adhesive manufacturer. Allow to dry thoroughly before applying adhesive.
 - Spread adhesive evenly and lay covering, pressing down firmly and rolling laterally and transversely (if recommended) to ensure full contact and a good bond overall. Reroll (if recommended) within 30 minutes.
 - Remove all surplus adhesive from exposed faces of coverings as the work proceeds.
 - Trowel ridges and high spots caused by particles on the substrate will not be accepted.
- (c) **PATTERNS** to be accurately matched at seams.
- (d) **SEAMS** to be cut in to ensure a tight joint, without gaps.
- (e) **SEAM WELDING:** Do not commence welding of coverings until a minimum of 24 hours after laying or until adhesive has completely set. Form a neat, smooth, strongly bonded joint, flush with finished surface.
- (f) **DOORWAYS:** Make joint on centre line of door leaf unless specified otherwise.
- (g) **EDGINGS/COVER STRIPS:**
- Manufacturer and reference(s): Gradus Carpet / Linoleum Trims
 - Material/finish: PVC-u trim top, aluminium base
 - Fix securely (using matching fasteners where exposed to view) ensuring that edge of covering is firmly gripped.

M50/5 COMPLETION

- (a) **CLEANING GENERALLY:** Remove all scrap, dust and dirt. Carefully remove adhesive and other marks from coverings and adjacent surfaces, using approved cleaning agents and methods.
- (b) **PROTECTION:** Cover flooring with clean dust sheets, or other non staining

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suitable material to prevent damage from dirt and traffic prior to Practical Completion. Ensure any material with printed information on one face is laid with printed face uppermost.

- (c) WASTE: Retain spare covering material suitable for patching. On completion hand over to School pieces selected by Architect.

M60 PAINTING/CLEAR FINISHING

To be read with Preliminaries/General conditions.

PAINTING TO RENDERED BLOCKWORK EXTERNALLY

Obtain Employer's Representative's approval of appearance before proceeding with external painting.

EXTERNAL RENDER COATING SYSTEMS

Sandtex Trade Hydrobond, Use of any alternative equivalent systems must have written approval from Employer's Representative.

Location: colours as per elevations, to be selected by Employer's Representative.

1) Sandtex Trade Hydrobond

Product: Sandtex Trade Hydrobond

Manufacturer: Crown Paints Ireland Limited,

Contact:

Surface: External Render

Preparation All surfaces must be clean, suitably dry and free from anything that will interfere with the adhesion of the materials to be applied.

Note: Sandtex Trade Hydrobond must not be applied over surfaces treated with Bitumens.

Initial coat(s): Prime all surfaces to be painted with Sandtex Trade Hydrobond, thinned up to 20% by volume, with clean water.

Finishing coats: Apply two full bodied coats of Sandtex Trade Hydrobond.

GENERALLY

HANDLING AND STORAGE:

- Coating materials must be delivered in sealed and labelled containers until ready for use.
- Wherever possible materials must be from one manufacturing batch. Inform the CA if materials from more than one batch are to be used, store separately and allocate to distinct parts or areas of the work.
- Store materials in accordance with manufacturer's recommendations. Use in order of delivery and before expiry of any shelf life date.

COMPATIBILITY:

- Check that all materials to be used are recommended by their manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other.
- Where surfaces have been treated with preservatives or fire retardant, check with treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance.
- Inform the CA of any discrepancy in specification of coatings and obtain instructions before proceeding with application.

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ANCILLARY SURFACES: The descriptions of areas to be coated given in schedules, etc. are of necessity simplified. All ancillary exposed surfaces and features are to be coated to match similar or adjacent materials or areas except where a fair faced natural finish is required or items are completely pre-finished. In cases of doubt obtain instructions before proceeding.

PROTECTION:

- Adequately protect internal and external surfaces, fixtures and fittings which are not to be coated, by covering with dust sheets, masking or other suitable materials.
- Exhibit 'Wet paint' signs and provide barriers where necessary to protect other operatives and the general public, and to prevent damage to freshly applied coatings.

CONTROL SAMPLE(S): Prepare sample areas of the finished work, including preparation, in advance of the remainder as set out below. Obtain approval of appearance before proceeding.

INSPECTION OF WORK: Permit coating manufacturers to inspect the work in progress and take samples of their products from site if requested.

PREPARATION

PREPARATION GENERALLY:

- To BS 6150, Section 4.
- Materials used in preparation must be types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Prevent or control exposure of operatives to dust, vapour and fumes exceeding occupational exposure standards set in the current Health and Safety Executive (HSE) document EH40.
- Substrates must be sufficiently dry in depth to suit the coating to be applied.
- Remove efflorescence salts from surfaces. Repeat removal if efflorescence recurs.
- Clean off dirt, grease and oil from surfaces. If contamination of surfaces/substrates has occurred, obtain instructions before proceeding.
- Smooth surface irregularities. Fill joints, cracks, holes and other depressions with stoppers/fillers worked well in and finished off flush with surface. Abrade to a smooth finish.
- Apply water based stoppers/fillers before priming unless recommended otherwise by manufacturer. Patch prime water based stoppers/fillers when applied after priming.
- Patch marks to be re primed with Sto-HydroGrund.
- Remove dust and particles from dry abrasive preparation of surfaces.
- Remove residues from wet preparation of surfaces by rinsing with clean water, wiping and allowing to dry.
- Ensure that doors, opening windows, etc, are 'eased' as necessary before coating. Prime any resulting bare areas.

SUITABILITY OF SURFACES AND CONDITIONS: Application of coatings will be taken as joint acceptance by the Main Contractor and the Painting Contractor of the suitability of surfaces and conditions within any given area to receive the specified coatings.

FIXTURES: Before commencing work, remove the following fixtures and fittings, set aside and replace on completion:

UNCOATED PLASTER: Scrape off nibs, trowel marks and plaster splashes. Abrade lightly any over trowelled 'polished' areas.

TREATMENT OF ORGANIC GROWTHS:

- Remove all loose growths and infected coatings/decorations.
- Apply StoPrim Fungal biocidal solution to growth areas and surrounding surfaces.

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- Scrape or brush off all dead growth. Remove infected materials immediately to ensure that no other areas become infected.
- Biocides must be approved and registered by the Health and Safety Executive (HSE) and listed in the current 'Reference Book 500', Part B, as surface biocides.

APPLICATION

UNSUITABLE CONDITIONS:

- Take all necessary precautions including restrictions on working hours, providing temporary protection and allowing extra drying time, to ensure that coatings are not adversely affected by climatic conditions during and after application.
- Prevent or control exposure of operatives to solvent vapour levels exceeding occupational exposure standards set in the current Health and Safety Executive (HSE) document EH40.
- Unless it is specifically permitted by the coating manufacturer, do not apply coatings:
 - To surfaces affected by moisture, frost or airborne dust.
 - When the air or substrate temperature is below 5degC.
 - When the relative humidity is above 80%.
 - When heat is likely to cause blistering or wrinkling.

COATING GENERALLY:

- To BS 6150, Section 5.
- Do not use materials which show any bittiness or other defects when applied. Do not thin or intermix unless specified or recommended otherwise.
- Apply priming coats as soon as possible on the same day as preparation is completed. They must be of adequate thickness and suit surface porosity.
- Apply coatings by brush or roller unless otherwise specified or approved.
- Keep brushes and equipment in a clean condition. Dispose safely of cleaning and waste materials, do not pour into sanitary appliances or drains.
- Subsequent coats of the same pigmented material must be of a different tint to ensure that each coat provides complete coverage.
- Apply coatings to clean, dry surfaces in accordance with the manufacturer's recommended intervals between coats.
- Apply coatings evenly to give a smooth finish of uniform colour, free from brush marks, sags, runs and other defects. Cut in neatly and cleanly. Do not splash or mark adjacent surfaces.
- Adequately protect drying and completed work from damage.

COMPLETION: Ensure that opening lights and other moving parts move freely. Remove all masking tape and temporary coverings.

PAINTING GENERALLY

(a) PAINTING TO INTERIOR MILD STEEL RADIATORS, PIPES & EXPOSED STEEL (structural & non-structural), CONDUIT & TRUNKING

Manufacturer: Dulux Paints Ireland, Unit J, South City Business Park, Killinarden, Tallaght, Dublin 24, or Crown Paints Ireland Limited, Malahide Rd, Coolock, Dublin 17, or equal and approved.

Surface: Exposed Steel

Preparation: As below

Initial coat(s): One coat Dulux Metal Primer, & One coat Dulux Undercoat or

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One coat Crown Trade Universal Metal Primer & One coat Crown Trade Next Generation Undercoat
Finishing coats: One coat Dulux High Gloss or One coat Crown Trade Next Generation Gloss

(b) CLEAR FINISHING TO VARNISHED FITTINGS NOTE TIMBER FLOORS PRE-FINISH SO VARNISH NEEDED OVER LINE MARKINGS

Manufacturer: Dulux Paints Ireland
Surface: Timber
Preparation: As below
Initial coat(s): Two coats Dulux Trade Diamond Glaze
Finishing coats: One coat as initial coats

(c) PAINTING TO CEILINGS

Manufacturer: Manufacturer: Dulux Paints Ireland, or Crown Paints Ireland Limited, or equal approved
Surface: Concrete, Plaster
Preparation: As below
Initial coat(s): One coat Dulux Vinyl Matt Emulsion or Crown Trade Vinyl Matt Emulsion
Finishing coats: Two coat as initial coat

(d) PAINTING TO EXTERNAL TIMBER, HARDWOOD

Manufacturer: Dulux Paints Ireland, or equal approved.
Surface: Timber; Preparation: As below
Preparation: As below
Initial coat(s): One coat Dulux Exterior Gloss System Aluminium Wood Primer, and One coat Dulux Exterior Gloss System Undercoat
Finishing coats: One coat Dulux Exterior Gloss System High Gloss

(e) PAINTING TO INTERIOR WALLS TOILETS, CHANGING ROOMS, AND SERVERY AREAS

Manufacturer: Dulux Paints Ireland or Crown Paints Ireland Limited, or equal approved.
Surface: Concrete Block
Preparation: As below
Initial coat(s): One coat Dulux Eggshell or One coat Crown Trade Clean Extreme Scrubbable Matt
Finishing coats: Two coats Dulux Eggshell or Two coats Crown Trade Clean Extreme Scrubbable Matt

(f) INTERIOR WALLS NORMAL WEAR, FAIR- FACED BLOCKWORK

Manufacturer: Dulux Paints Ireland, Crown Paints Ireland Limited, or equal approved.
Surface: Concrete Block
Preparation: As below
Initial coat(s): One coat Dulux Eggshell or One coat Crown Trade Acrylic Eggshell

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Finishing coats: Two coats Dulux Eggshell or Two coats Crown Trade Acrylic Eggshell

(g) INTERNAL FACE OF EXTERNAL WALLS – AIR-TIGHT SEAL

Manufacturer: Dulux Paints Ireland, or equal approved
Surface: Concrete Block and concrete.
Preparation As below
Initial coat(s): One coat Dulux Dulux Trade Blockfiller Plus is a water-based material which is suitable for interior use on concrete surfaces. It is designed to fill surface imperfections in concrete block and poured concrete and upgrades the appearance of the substrate. It can act as a finish or a primer for subsequent Dulux Trade finishes. It is ideal where minimum downtime and a cost efficient system is required. Caution: This product is designed only for the purpose of filling voids and pores within the surface of the concrete. Topcoats applied over excessive build-up of the Dulux Trade Blockfiller Plus can cause delamination of the filler, resulting in peeling of the topcoat. Colour Range White only. Application Method Brush, roller or spray.
Application The preferred method of application is to apply a full, generous coat by airless spray followed immediately by tipping off with a medium pile roller. A typical recommendation for airless spray application is a minimum working pressure on paint of 140 kg/cm² (2000 lb/sq in) with a Spray Tip size of 19 thou and a fan of 12 inches. When applying by spray, work the Dulux Trade Blockfiller Plus into all pores and voids with the first pass, then finish with a full coat. Dulux Trade Blockfiller Plus may also be applied by brush, roller or conventional spray. If applying by brush, remove brush marks with a partially loaded roller while the filler is still wet. Do not apply if the surface temperature is below 10°C. Single coat at standard thickness: Touch Dry: 1 hour @ 20°C/50%RH. Drying Times Recoat: 4 hours. These figures will vary depending upon conditions. A guide to the practical coverage which can be achieved under normal conditions is up to 5m² per litre. The coverage figures quoted are a guide only and will vary depending upon the porosity of the surface. After use, remove as much paint as possible from equipment before cleaning with clean water. Do not use or store in extremes of temperature and protect from frost.
Finishing coats: Two coats Dulux Eggshell or Two coats Crown Trade Acrylic Eggshell

(h) SKIRTINGS, DOOR FRAMES & ARCHITRAVES, DOORS & DOOR SCREENS

Manufacturer: Dulux Paints Ireland or Crown Paints Ireland Limited, or equal approved.
Surface: Timber doors, frames, skirtings and linings
Preparation As below
Initial coat(s): One coat Dulux Wood Primer or One coat Crown Trade Wood Primer
Finishing coats: Two coats Dulux Satinwood or Two coats Crown Trade Satin

(i) SEALER TO BOILER ROOM & EXTERNAL STORE FLOORS

Manufacturer: Ruberoid
Surface: Power floated concrete slab, new concrete blockwork, in-situ stairs
Preparation As below
Coats: Two coats Ruberoid Concrete hardener/dust proofer

(j) PROTECTIVE COATING SYSTEMS TO STRUCTURAL STEELWORK

See Structural Engineer's Specification

GENERALLY

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- (a) COATING MATERIALS to be obtained from specified manufacturers below unless otherwise approved by Architect in writing. Inform the Architect of selected manufacturer before commencement of any coating work: Dulux Paints Ireland or Crown Paints Ireland Limited
- (b) HANDLING AND STORAGE:
 - Coating materials must be delivered in sealed containers, each clearly labelled with the brand name, type of material and manufacturer's batch number. No non-approved paint brand containers to be permitted on site.
 - Wherever possible materials must be from one manufacturing batch. Inform the Architect if materials from more than one batch are to be used, store separately and allocate to distinct parts or areas of the work.
 - Store materials in accordance with manufacturer's recommendations. Use in order of delivery and before expiry of any shelf life date.
- (c) COMPATIBILITY:
 - Check that all materials to be used are recommended by their manufacturers for the particular surface and conditions of exposure, and that they are compatible with each other.
 - Where surfaces have been treated with preservatives or fire retardants, check with treatment manufacturer that coating materials are compatible with the treatment and do not inhibit its performance.
 - Inform the Architect of any discrepancy in specification of coatings and obtain instructions before proceeding with application.
- (d) ANCILLARY SURFACES: The descriptions of areas to be coated given in schedules, etc. are of necessity simplified. All ancillary exposed surfaces and features are to be coated to match similar or adjacent materials or areas except where a fair faced natural finish is required or items are completely prefinished. In cases of doubt obtain instructions before proceeding.
- (e) SURFACES NOT TO BE COATED: radiator valves and stop valves
- (f) OFF SITE WORK:
 - All off site preparation and coating to be carried out under cover in a suitable environment with adequate lighting. Store all items, both before and after coating, in a clean, dry area protected from the weather and mechanical damage, properly stacked with spaces to permit air circulation and prevent sticking of surfaces.
- (g) PROTECTION:
 - Adequately protect internal and external surfaces, fixtures and fittings which are not to be coated, by covering with dust sheets, masking or other suitable materials.
 - Exhibit 'Wet paint' signs and provide barriers where necessary to protect other operatives and the general public, and to prevent damage to freshly applied coatings.
- (h) CONTROL SAMPLE(S): Prepare sample areas of the finished work, including preparation, in advance of the remainder as set out below. Obtain approval of appearance before proceeding. Type(s) of coating Nature of sample: one 3mx3m area in typical fairfaced blockwork
- (i) INSPECTION OF WORK: Permit coating manufacturers to inspect the work in progress and take samples of their products from site if requested.

M60/2 PREPARATION

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- (a) PREPARATION GENERALLY: To BS 6150, Section 4
- Materials used in preparation must be types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
 - Prevent or control exposure of operatives to dust, vapour and fumes exceeding occupational exposure standards set in the current Health and Safety Executive (HSE) document EH40.
 - Substrates must be sufficiently dry in depth to suit the coating to be applied.
 - Remove efflorescence salts from surfaces. Repeat removal if efflorescence recurs.
 - Clean off dirt, grease and oil from surfaces. If contamination of surfaces/substrates has occurred, obtain instructions before proceeding.
 - Smooth surface irregularities. Fill joints, cracks, holes and other depressions with stoppers/fillers worked well in and finished off flush with surface. Abrade to a smooth finish.
 - Apply oil based stoppers/fillers after priming. Apply water based stoppers/fillers before priming unless recommended otherwise by manufacturer. Patch prime water based stoppers/fillers when applied after priming.
 - Remove dust and particles from dry abrasive preparation of surfaces. Remove residues from wet preparation of surfaces by rinsing with clean water, wiping and allowing to dry.
 - Ensure that doors, opening windows, etc, are 'eased' as necessary before coating. Prime any resulting bare areas.
- (b) SUITABILITY OF SURFACES AND CONDITIONS: Application of coatings will be taken as joint acceptance by the Main Contractor and the Painting Contractor of the suitability of surfaces and conditions within any given area to receive the specified coatings.
- (c) DOORS AND WINDOWS: Ensure that doors and opening windows, etc., are 'eased' as necessary before coating. Prime any resulting bare areas.
- (d) IRONMONGERY: Remove from surfaces to be coated and refix on completion. Do not remove hinges unless instructed to do so.
- (e) PREPRIMED TIMBER: Abrade chalking, powdery and other defective primer back to bare timber, remove dust and reprime resulting bare areas.
- (f) UNCOATED TIMBER: Abrade to a smooth, even finish with arrises and moulding edges lightly rounded or eased. Ensure that heads of fasteners are countersunk sufficiently to hold stoppers/fillers. Apply two coats of knotting to resinous areas and knots and allow to dry.
- (g) PREPRIMED STEEL: Abrade defective primer, corrosion and loose scale back to bare metal, remove dust and re-prime resulting bare areas.
- (h) UNCOATED STEEL - BLAST CLEANING:
- Remove oil and grease. Blast clean in dry atmospheric conditions using abrasive of suitable type and size, free from fines, moisture and oil. Continue blasting until surface complies with BS 7079: Part A1, preparation grade Sa21/2 Prime surface as soon as possible after blast cleaning and in any case within four hours.
- (i) UNCOATED CONCRETE: Remove release agents with detergent/emulsion solutions. Ensure that major surface defects are repaired.
- (j) UNCOATED MASONRY/RENDERING: Remove loose and flaking material with a stiff brush.
- (k) UNCOATED PLASTER: Scrape off nibs, trowel marks and plaster splashes.

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Abrade lightly any over-troweled 'polished' areas.

- (l) UNCOATED PLASTERBOARD: Fill depressions around fixings.

M60/3 APPLICATION

- (a) UNSUITABLE CONDITIONS:

- Take all necessary precautions including restrictions on working hours, providing temporary protection and allowing extra drying time, to ensure that coatings are not adversely affected by climatic conditions during and after application. Prevent or control exposure of operatives to solvent vapour levels exceeding Occupational Exposure Levels (OEL's) as set in the 2007 Approved Code of Practice (ACOP) for the Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001 (S.I 619 of 2001)
- Unless it is specifically permitted by the coating manufacturer, do not apply coatings:
 - To surfaces affected by moisture, frost or airborne dust.
 - When the air or substrate temperature is below 5 °C.
 - When the relative humidity is above 80%.
 - When heat is likely to cause blistering or wrinkling.

- (b) COATING GENERALLY: To BS 6150, Sections

- Do not use materials which show any bittiness or other defects when applied. Do not thin or intermix unless specified or recommended otherwise.
- Apply priming coats as soon as possible on the same day as preparation is completed. They must be of adequate thickness and suit surface porosity.
- Apply coatings by brush or roller unless otherwise specified or approved.
- Keep brushes and equipment in a clean condition. Dispose safely of cleaning and waste materials, do not pour into sanitary appliances or drains. Subsequent coats of the same pigmented material must be of a different tint to ensure that each coat provides complete coverage. Apply coatings to clean, dry surfaces in accordance with the manufacturer's recommended intervals between coats.
- Apply coatings evenly to give a smooth finish of uniform colour, free from brush marks, sags, runs and other defects. Cut in neatly and cleanly. Do not splash or mark adjacent surfaces.
- Adequately protect drying and completed work from damage.

- (c) PRIMING JOINERY: Before priming preservative treated timber ensure that any cut surfaces have been retreated and that all preservatives are completely dry. Liberally coat all end grain, allow to soak in and then recoat.

- (d) CONCEALED JOINERY SURFACES: Where one or more additional coats are specified to be applied in the factory, they must be applied to all surfaces, including those which will be concealed when components are fixed in place.

- (e) EXTERNAL DOORS: Prime and coat bottom edges before hanging.

- (f) BEAD GLAZING: Joinery which is to be painted must have the primer and one undercoat applied to rebates and beads before glazing.

- (g) GLAZING: Protect etched, sand blasted and ground glass from contamination by oily constituents of coating materials by treating or marking edges before coating and cleaning surfaces after coating.

- (h) COMPLETION: Ensure that opening lights and other moving parts move freely. Remove all masking tape and temporary coverings.

N15 SIGNS/NOTICES

To be read with Preliminaries/General Conditions.

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N15/1 GENERALLY

(a) GENERAL REQUIREMENTS:

- External / internal signage as required by Building Regulation and DoES
- Selected range, manufacturer and/or supplier to Architect's approval

(b) SAMPLES: Provide a sample board for approval, containing selected signs and showing methods of fixing. Keep on site in an approved location for the duration of the contract.

N15/2 FIXING SIGNS

(a) FIXING GENERALLY:

- Fix signs securely, plumb and level, using fixing methods recommended by manufacturer, unless specified otherwise.
- Use fasteners/adhesives in accordance with section Z20, unless specified otherwise.
- Use fasteners of sufficient strength to support all live and dead loads.
- For external signs use fasteners manufactured from corrosion resistant material or with a corrosion resistant finish. Isolate dissimilar metals to avoid electrolytic corrosion.
- Fixings showing on the surface of the sign must not detract from the message being displayed.

(b) SIGNS FOR THE VISUALLY HANDICAPPED: Ensure that fasteners for tactile signs have no sharp edges or protrusions that would cause confusion or injury to users.

P10 SUNDRY INSULATION/PROOFING WORK/FIRE STOPS

To be read with Preliminaries/General conditions.

(a) UNDERFLOOR INSULATION

- Material: Kingspan Thermafloor TF70 zero ODP; Xtratherm XT/UF or equal and approved.
- Reference: Kingspan Insulation Limited, or Xtratherm.
- Thickness: minimum of 50mm subject to maximum elemental U-Value of 0.21W/m²degC
- Standards: CFC/HCFC-free rigid urethane core with low emissivity composite foil facings on both sides manufactured to BS EN ISO 9002: 1994/I.S. EN ISO 9001: 2000
- Installation: As structural specification and in accordance with manufacturer's instructions.

(b) ROOF RAIN-NOISE ACOUSTIC INSULATION (THROUGHOUT)

- Description: Rocksilks Flexible Slab BY Knauf Insulation Ltd., PO Box 10, Stafford Road, St Helens, Merseyside, WA10 3NS
- Customer Service (Sales) Tel: 0844 800 0135 Technical Advisory Centre Tel: 01744 766666
- Literature Tel: 08700 668660 www.knaufinsulation.co.uk
- A multi-purpose thermal and acoustic insulation slab specifically designed for installation by friction fitting. Application: For general thermal and acoustic insulation. For use in applications such as internal partitions, and between timber and metal studs, rafters and floor joists. Friction fits between purlins.

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- Provides excellent thermal and acoustic performance.
 - Standards: Rocksilk Flexible Slab is made from non-combustible, inorganic rock wool, defined as mineral wool in BS 3533: 1981, manufactured in accordance with BSI Quality Assurance Standard BS EN ISO 9001: 2000.
 - Thermal Conductivity: Rocksilk Flexible Slab has a thermal conductivity of 0.035 or 0.037 W/mK.
 - Fire: Rocksilk Flexible Slab is classified as Euroclass A1 to BS EN ISO 13501-1.
 - Thickness 140mm
 - Thermal Conductivity 0.035 W/mK
 - Thermal Resistance 4.00 m²K/W
 - Slab size 1200 x 600mm
 - Slabs per pack 3
 - Area per pack 2.16 (m²)
 - Fixing: 1200X600X140mm thick Rocksilk Flexible Slabs fixed to entire underside of Kingzip roof cladding.
 - The recommended fixing is the Hilti X-IE 6-140 with the 6.8/11M yellow or red cartridge.
 - Fixings should be provided at 4 no per sheet of insulation (1200mm x 600mm) or at a rate of 5 fixings per sq metre.
- (c) FIRE STOPPING: Ensure that any imperfections of fit between building elements that are required to have fire resistance and/or resist the passage of smoke, are completely sealed. Where not specified otherwise, tightly pack gaps with mineral wool.

P20 UNFRAMED ISOLATED TRIMS/SKIRTINGS/SUNDRY ITEMS

To be read with Preliminaries/General conditions.

P20/1 TRIMS

- (a) WINDOW BOARDS/SILLS:
- Drawing Reference:
 - Type: Ex 240x25mm Medite Ecologique MDF (Zero Formaldehyde) Window-Board with ex 60x25mm softwood cover trim
 - Profile Rectangular square edge to architects approval, see *-**-A-06(7)
 - Thickness: 25mm; Moisture resistant grade to BS 1 142.
 - Finish: Prepared primed & painted as M60; Fixing: On treated softwood Shims/timber packers
- (b) SOFTWOOD SKIRTINGS GENERALLY
- Drawing Reference:
 - Type: Ex 110X19mm Softwood skirting; Profile: to architects approval
 - Thickness: 19mm; Moisture resistant grade to BS 1 142.
 - Finish: Prepared primed & painted as M60; Fixing: countersink, screw or rivet and pellet.
- (c) INSTALLATION GENERALLY:
- Joinery workmanship to be as section Z10 unless specified otherwise.
 - Methods of fixing and fastenings to be as section Z20 unless specified otherwise.
 - Straight runs to be formed in single lengths wherever possible. Location and method of forming running joints to be approved by the Architect where not detailed.
 - All joints at angles to be mitred unless specified otherwise.

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- Moisture content of timber and wood based boards to be maintained during storage and installation within the range specified for the component.
- Note: the use of ordinary MDF WILL NOT be permitted in any circumstances except Medite Ecologique MDF (Zero Formaldehyde). Window boards and reveals, Sliding doors to classroom stores, and fitted kitchen units all with zero content formaldehyde Medite Ecologique).

P21 IRONMONGERY

To be read with Preliminaries/General conditions.

See also Ironmongery Schedule.

P31 HOLES/CHASES/COVERS/SUPPORTS FOR SERVICES

To be read with Preliminaries/General conditions.

See also M&E Builder's Work drawings and schedules.

P31/1 GENERALLY

- (a) CO-ORDINATION: Liaise with, Electrical and Mechanical specialists to establish locations and dimensions of all holes and chases required for services. Submit details to Architect for checking before proceeding.
- (b) HOLES AND CHASES IN IN-SITU CONCRETE to be cast in. Do not cut hardened concrete or drill holes larger than 10 mm diameter without permission.
- (c) HOLES AND CHASES IN PRECAST CONCRETE: Do not cut or drill precast concrete without permission.
- (d) HOLES IN STRUCTURAL STEELWORK: Do not cut or drill structural steelwork without permission.
- (e) HOLES, RECESSES AND CHASES IN MASONRY
 - Holes, recesses and chases to be in locations which will least affect the strength, stability and sound resistance of the construction, and to be of the smallest practicable size.
 - Holes must not exceed 300 mm square.
 - Do not cut chases in walls of hollow or cellular blocks without approval.
 - In walls of other materials:
 - Vertical chases must be not deeper than one third of the single leaf thickness.
 - Horizontal or raking chases must be not longer than 1 m and not deeper than one sixth of the single leaf thickness.
 - Do not set chases or recesses back to back; offset by a clear distance not less than the wall thickness. Where sockets, etc. are shown on drawings as nominally back to back, obtain instructions.
 - Do not cut until mortar is fully set. Cut carefully and neatly, avoiding spalling, cracking or other damage to surrounding structure. Do not cut chases with mechanical or hand impact tools.
- (f) PREFORMED HOLES IN MASONRY: Submit proposals to CA for bridging over holes for ducts, pipes, etc., which exceed one block in width.
- (g) PIPE DUCTS FOR services in screeds.: Location and size: Refer to Services Engineers drawings; Material: Upvc.

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- (h) PIPE SLEEVES Material: Upvc
 - Sleeves to extend through full thickness of wall/floor and be accurately positioned to give a minimum clearance around service of 20 mm or diameter of service, whichever is the least. Sleeves, whether built in or installed in preformed holes, to be bedded solid. Seal annular space between service and sleeve with mineral wool and finished with sealant. Where exposed to view, finish bedding and sealing neatly to approval.
- (i) PENETRATIONS THROUGH MULTI PURPOSE BUILDING CAVITY FIRE CURTAIN To be sealed in accordance with cavity fire curtain manufacturer's instructions.
- (j) SEALING AROUND SERVICES: Seal around services where they pass through non fire rated partitions with mineral wool and finish with silicone sealant. Completely fill the space, leaving no gaps and finish neatly.
- (k) FIRE RESISTING BARRIERS FOR SERVICES PENETRATIONS IN FIRE WALLS.
 - Manufacturer and reference: Fire Stop Compound to be installed in accordance with the manufacturers instructions.

P32 WINDOW BLINDS

To be read with Preliminaries/General conditions.

DIMENSIONS PROVIDED ON DRAWINGS ARE INDICATIVE, ALL DIMENSIONS SHOULD BE TAKEN ON SITE AND AGREED WITH THE MAIN BUILDING CONTRACTOR PRIOR TO MANUFACTURER.

(a) HORIZONTAL SUNSCREEN ROLLER SHADES

Manufacturer & Reference: 'Helioscreen' by Blinds of Ireland Ltd or Mechoshade by Rogers Blinds, or equivalent approved.

Quantity & Sizes: as per drawing no. CE-001-A-520.

LIGHT COLOURED DENSE BASKET WEAVE SUNSCREEN MATERIAL. THE BLINDS MUST PERFORM SUCH THAT THEY ELIMINATE GLARE TO THE TEACHING WALLS AND BOARDS AND ASSOCIATED DATA PROJECTION SCREEN AND WHITE INTERACTIVE BOARDS, REDUCE HEAT TRANSFER TO THE ROOM AND STILL PERMIT LIGHT TRANSMISSION TO THE INTERNAL SPACE. THE DAYLIGHT TRANSMISSION, SOLAR ABSORPTION, OPENNESS FACTOR AND SHADING CO EFFICIENCY MUST ALL BE TAKEN INTO ACCOUNT WHEN SELECTING THE APPROPRIATE SUNSCREEN SHADE CLOTH FOR THE TEACHING SPACES. CONSIDERATION SHOULD BE GIVEN TO LIGHT TRANSMISSION VALUES IN THE 9 TO 12% RANGE, SOLAR ABSORPTION IN THE 17 TO 20% RANGE , OPENNESS FACTOR IN THE 3 TO 5% RANGE AND OPTIMUM SHADING CO EFFICIENCY SO AS TO ACHIEVE THE ABOVE REQUIREMENTS AND ENSURE THE BLINDS ARE FIT FOR PURPOSE AS OUTLINED, NOTE THESE ARE GUIDANCE VALUES AND SHOULD NOT BE TAKEN AS ABSOLUTE SELECTION CRITERIA, EACH CASE MUST BE ACCESSED ON ITS OWN CIRCUMSTANCES. FULL SIZE MOCKS UPS SHOULD BE CONSIDERED PRIOR TO FINAL SELECTION OF THE BLIND MATERIAL.

(b) HORIZONTAL ROLLER BLINDS

Manufacturer & Reference: 'Hunter Douglas Luxaflex' roller blinds

Quantity & Sizes: as per drawings

Type: Gardian Blind Fabric internal blinds

Rollers to be heavy duty contract grade steel tube spring-less rollers with sidewinder endless ball chain control units appropriately sized for each opening, to comply with safety requirements of EN 13120.

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Colours: to be selected.

Fire Rating: Material used in the manufacture of blinds should meet the designation of 'flameproof' when assessed in accordance with BS 3120: 1959. A test certificate as in Appendix C of "Fire safety of furnishings and fittings in places of assembly" should be supplied for each item.

(c) VERTICAL PRIVACY BLINDS TO STAFF ROOM

127MM VERTICAL LOUVRED BLINDS, COMPLETE WITH SELF-ALIGNING SLIPPING CLUTCH TILTER, AND STABILISING WEIGHTS AND CHAINS, WITH SELECTED FABRIC THAT MEETS THE DESIGNATION OF "FLAMEPROOF" WHEN ASSESSED IN ACCORDANCE WITH BS 3120:1959.

(d) ROLLER BLINDS TO ROOF WINDOWS

ELECTRICALLY OPERATED LUXAFLEX DUETTE SKYLIGHT SHADES 100% POLYESTER WITH 25MM WIDE DOUBLE-WALLED HONEYCOMBED CELL STRUCTURE . SHADE FABRIC TO BE FULLTONE/ BLACKOUT TYPE - COLOUR TO BE CONFIRMED BY THE ARCHITECT. POWER COATED ALUMINIUM RAIL AND PROFILE SYSTEM - COLOUR TO MATCH SHADE FABRIC. SHADES TO BE ELECTRICALLY OPERATED USING THE 24V RAIL-BUILT-IN MOTOR ACTIVATED VIA REMOTE SWITCHING.

MANUFACTURE AND INSTALLATION OF ALL BLINDS SHALL COMPLY WITH THE REQUIREMENTS OF THE IRISH STANDARDS I.S.EN 13120 INTERNAL BLINDS - PERFORMANCE INCLUDING SAFETY REQUIREMENTS. MATERIALS USED IN THE MANUFACTURE SHOULD MEET THE DESIGNATION OF 'FLAMEPROOF' WHEN ASSESSED IN ACCORDANCE WITH BS 3120: 1959. A TEST CERTIFICATE AS IN APPENDIX C OF "FIRE SAFETY OF FURNISHINGS AND FITTINGS IN PLACES OF ASSEMBLY" SHOULD BE SUPPLIED FOR EACH ITEM SPECIFIED.

Q10 STONE/CONCRETE/BRICK KERBS/EDGINGS/CHANNELS

To be read with Preliminaries/General conditions.

Q10/1 TYPE(S) OF KERB/EDGING/CHANNEL

(a) PRECAST CONCRETE KERB

- Other requirements: Comply with requirements of Local Authority Roads Department.

(b) DRAINAGE CHANNEL SYSTEM:

- Refer to Structural Engineer's Specification

Q10/2 LAYING

(a) LAYING GENERALLY:

- Where necessary cut units neatly and accurately with a masonry saw and without spelling to give neat junctions. Bed units in mortar, true to line and level along top and front faces, on accurately cast foundations and secure with a continuous haunching of concrete. Allow bedding to set before placing haunching.
- Keep exposed faces of units clean and free from concrete and mortar droppings.

(b) ADVERSE WEATHER: Do not cast foundations, lay units or place haunching if the temperature is below 3 °C on a falling thermometer or 1 °C on a rising thermometer. Adequately protect foundations, bedding and haunching against frost and rapid drying by sun and wind.

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- (c) CONCRETE FOR FOUNDATIONS AND HAUNCHING: As structural specification.
- (d) MORTAR BEDDING: As structural specification and section Z21.
- (e) CHANNELS: Set out to an even gradient to ensure no ponding or backfall. Lowest points of channels to be 6 mm above drainage outlets.
- (f) RADIUS KERBS/CHANNELS to be used for all radii of 12 m or less.
- (g) ANGLE KERBS to be used for both internal and external 90 degrees changes of direction; cutting of mitres will not be permitted.
- (h) ACCURACY: Max deviations: Level: ± 6 mm; Horizontal & vertical alignment: 3 mm in 3 m.
- (i) TOOLED MORTAR JOINTS: Butter ends of units with bedding mortar as laying proceeds to completely fill joints to a thickness of 6 mm. Tool to a neat flush profile.
- (j) MOVEMENT JOINTS IN PRECAST CONCRETE KERBS adjacent to concrete slabs:
 - Lay with expansion joints to coincide with those in slabs.
 - Lay with normal close fitting vertical joints to coincide with slab contraction joints.
- (k) BASKETBALL/HANDBALL COURT MARKINGS
 - References: Markings (layout and width of lines) to be done according to requirements of International Basketball/Handball Federation.
 - Paint: approved chlorinated rubber road line paint to BS6044 type A, spray application. Applied in two layers according to manufacturer's specification. Colour: White
 - Surfaces to receive markings must be clean and dry. Remove all loose material and apply paint uniformly with no streaks or ragged edges. Use thinners in accordance with paint manufacturer's instructions.

R10 RAINWATER PIPEWORK/GUTTERS

To be read with Preliminaries/General conditions.

R10/1 TYPE(S) OF PIPEWORK/GUTTER

- (a) ALUMINIUM PIPEWORK FOR EXTERNAL USE:
 - Pipes, fittings and accessories: To BS 2997 and BS1474
 - Manufacturer and reference: JWD Rainwater Systems Ltd, Illauncaum, Co Kerry, Ireland
Tel 066-7139982; Fax 066-7139597
 - Type/Grade: JWD Regency Cast / Extruded Heavy Duty grade aluminium to BS2997
 - Profile: Round 152mm diameter; 2mm wall thickness.
 - Fixing: plugged & screwed through lugged collars and pipe brackets at 1.5m max centres
 - Finish/Colour: Syntha Pulvin or Interpons 600/610 paint finish to Employer's Representative selected colour. See Section Z31.

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R10/2 INSTALLATION

- (a) BEFORE COMMENCING WORK specified in this section, ensure that:
- Below ground drainage is ready to receive rainwater or that the discharge can be dispersed by approved means to prevent damage or disfigurement of the building fabric.
 - Any specified painting of surfaces which will be concealed or inaccessible is completed.
- (b) INSTALLATION GENERALLY:
- Install pipework/gutters to ensure the complete discharge of rainwater from the building without leaking.
 - Obtain all components for each type of pipework/guttering from the same manufacturer unless specified otherwise.
 - Provide access fittings and redding eyes as necessary in convenient locations to permit adequate cleaning and testing of pipework.
 - Avoid contact between dissimilar metals and other materials which would result in electrolytic corrosion.
 - Do not bend plastics or galvanized steel pipes.
 - Adequately protect pipework/gutters from damage and distortion during construction. Fit purpose made temporary caps to prevent ingress of debris. Fit all access covers, cleaning eyes and blanking plates as the work proceeds.
 - Where not specified otherwise use plated, sherardized, galvanized or nonferrous fastenings, suitable for the purpose and background, and compatible with the material being fixed.
- (c) BUILDER'S WORK: Comply with restrictions on the cutting of holes, chases, notches, etc. and methods of attachment to the building fabric as specified.
- (d) RAINWATER OUTLETS: Ensure that:
- Outlets are securely fixed before connecting pipework and Junctions between outlets and pipework can accommodate all movement in the structure and pipework.
 - Outlets on cold roof constructions are fitted with a luting flange and clamping collar to accept membrane and insulation layers.
 - Outlets on warm roof constructions are fitted with a double luting flange and clamping collar to accept membrane and insulation layers.
 - Outlets with double luting flanges are fitted with under deck clamps.
 - Outlets on inverted roof constructions are fitted with a luting flange and clamping collar to accept membrane.
 - Outlets on inverted roof constructions with granular toppings are installed with gravel guards and domed gratings.
- (e) FIXING PIPEWORK:
- Fix securely at specified centres plumb and/or true to line. Make changes in direction of pipe runs only where shown on drawings unless otherwise approved. Note splayed offset connection to gutter detail.
 - Fix branches and low gradient sections with uniform and adequate falls to drain efficiently.
 - Fix externally socketed pipes/fittings with sockets facing upstream.
 - Provide additional supports as necessary to support junctions and changes in direction.
 - Fix every length of pipe at or close below the socket collar or coupling.
 - Provide a load bearing support for vertical pipes at not less than every storey level. Tighten fixings as the work proceeds so that every storey is self supporting and undue weight is not imposed on fixings at the base of the pipe.
 - Isolate from structure where passing through walls or floors and sleeve pipes as specified.

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- Provide for thermal and building movement when fixing and jointing, and ensure that clearances are not reduced as fixing proceeds.
 - Fix expansion joint pipe sockets rigidly to the building and elsewhere use fixings that allow the pipe to slide.
- (f) JOINTING PIPEWORK/GUTTERS:
- Joint using materials, fittings and techniques which will make effective and durable connections.
 - Joint differing pipework/gutter systems with adaptors recommended by manufacturer(s).
 - Cut ends of pipes to be clean and square with burrs and swarf removed. Chamfer pipe ends before inserting into ring seal sockets.
 - Ensure that jointing or mating surfaces are clean, and where necessary lubricated, immediately before assembly.
 - Form junctions using fittings intended for the purpose ensuring that jointing material does not project into bore of pipes, fittings and appliances.
 - Remove surplus flux/solvent/cement/sealant from joints.
- (g) COATED PIPEWORK/GUTTERS: Make good to coatings after cutting and any other damage or recoat, as recommended by the manufacturer.
- (h) PIPEWORK WITH UNSEALED JOINTS: Ensure that pipes are firmly secured to prevent rattling at joints and fixings.
- (i) ELECTRICAL CONTINUITY: Use clips or suitable standard couplings supplied for the purpose by pipework manufacturer to ensure electrical continuity at all joints in metal pipes with flexible couplings and which are to be earth bonded.
- (j) ACCESS FOR TESTING AND MAINTENANCE:
- Install pipework and gutters with adequate clearance to permit testing, cleaning and maintenance.
 - Position access fittings and rodding eyes so that they are not obstructed by other pipework, framing, etc.
- (k) TESTING GENERALLY:
- Inform Architect sufficiently in advance to give him a reasonable opportunity to observe tests.
 - Check that all sections of installation are free from obstruction and debris before testing.
 - Provide clean water, assistance and apparatus for testing as required.
 - Carry out tests as specified. After testing, locate and remedy all defects without delay and retest as instructed.
 - Keep a record of all tests and provide a copy of each to the Architect.
- (l) IMMEDIATELY BEFORE HANDOVER:
- Remove construction rubbish and debris from all roofs and gutters. Where possible, sweep and remove fine dust which may enter rainwater systems. Do not sweep or flush dust or debris into the rainwater system. Remove swarf, debris and temporary caps from the entire rainwater installation.
 - Ensure that all access covers, rodding eyes, outlet gratings, etc. are secured complete with all fixings.

Z10 PURPOSE MADE JOINERY

To be read with Preliminaries/General conditions.

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(a) GENERAL:

The use of ordinary MDF (except zero content formaldehyde Medite Ecologique) or melamine faced chipboard will NOT be permitted for purpose made joinery.

(b) FABRICATION GENERALLY:

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

(c) CROSS SECTION DIMENSIONS OF TIMBER:

- Dimensions on drawings are finished sizes.
- Maximum permitted deviations from finished sizes for softwood sections to be as stated in BS EN 1313:Part 1: Clause 6 for sawn sections Clause NA. 2 for further processed sections.
- Maximum permitted deviations from finished sizes for hardwood sections to be as stated in BS 5450: Clause 6.1 for sawn sections Clause 8.3 for further processed sections.

(d) PRESERVATIVE TREATED TIMBER:

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

(e) MOISTURE CONTENT of timber and wood based boards to be maintained within the range specified for the component during manufacture and storage.

(f) LAMINATED PLASTICS VENEERS:

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

(g) WOOD VENEERS:

- Condition core material and veneers before bonding. When not otherwise specified, apply to the reverse side of flat boards a balancing veneer with the same moisture and temperature movement characteristics as the facing veneer

- Set out veneers so that features and pattern are aligned and in regular, uniform symmetry unless specified otherwise. Apply veneers with edges tight butted and flush, with no gaps or other open defects. Bond in presses whenever possible.
- Finished components to be free from defects, including bow, twist, scratches, chipping, pimpling, depressions, glue spill and staining.
- Sand to a fine, smooth finish free from sanding marks.

(h) **FINISHING AND PROTECTING:**

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

Z12 PRESERVATIVE/FIRE RETARDANT TREATMENT

To be read with Preliminaries/General conditions.

(a) **GENERALLY:**

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

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

(c) **CCA PRESERVATIVE TREATMENT:**

- Based on oxides of copper, chromium and arsenic.
- Moisture content of timber at time of treatment to be not more than 28%. Allow timber to dry for at least 14 days before use.
- Application: High pressure.
- Preservative solution manufacturer and reference: to be confirmed

(d) **ORGANIC SOLVENT PRESERVATIVE TREATMENT:**

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

Z20 FIXINGS/ADHESIVES

To be read with Preliminaries/General conditions.

(a) **FIXING GENERALLY:**

- Use fixing and jointing methods and types, sizes, quantities and spacings of fasteners which are suitable having regard to:
 - Nature of and compatibility with product/material being fixed and fixed to,

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- Recommendations of manufacturers of fasteners and manufacturers of components, products or materials being fixed and fixed to,
 - Materials and loads to be supported, and Conditions expected in use,
 - Appearance, this being subject to approval.
- (b) FASTENERS for materials and components forming part of external construction to be of corrosion resistant material or have a corrosion resistant finish.
- (c) FASTENERS for materials and components:
- Forming part of external construction but not directly exposed to the weather to be of corrosion resistant material or have a corrosion resistant finish.
 - Directly exposed to the weather to be of corrosion resistant material.
- (d) FIXING THROUGH FINISHES: Ensure that fasteners and plugs (if used) have ample penetration into the backing.
- (e) PACKINGS:
- Provide suitable, tight packings at fixing points to take up tolerances and prevent distortion.
 - Use noncompressible, rotproof, noncorrodible materials positioned adjacent to fixing points.
 - Ensure that packings do not intrude into zones that are to be filled with sealant.
- (f) CRAMP FIXING:
- When not specified otherwise position cramps not more than 150 mm from each end of frame sections and at 600 mm maximum centres. Secure cramps to frames with matching screws as masonry work proceeds, and fully bed in mortar.
- (g) NAILING: To BS 1202.
- In joints, use not less than two nails and opposed skew nailing unless specified otherwise.
 - Drive nails fully in without splitting or crushing the material being fixed.
 - Punch nail heads below surfaces that will be visible in the completed work.
- (h) MASONRY NAILS: Do not use without approval.
- (i) PLUGS: Proprietary types selected to suit the background, loads to be supported and conditions expected in use. Locate plugs accurately in correctly sized holes in accordance with manufacturer's recommendations.
- (j) SCREW FIXING:
- Screws: To BS 1210.
 - All screws to have clearance holes. Screws of 8 gauge or more and all screws into hardwood to have pilot holes about half the diameter of the shank. Before using brass, aluminium or other soft metal wood screws precut the thread with a matching steel wood screw.
 - Do not hammer screws unless specifically designed to be hammered. Drive countersunk heads flush with timber surface, or not less than 2 mm below it if they are to be stopped.
 - Washers and screw cups, where specified, to be of the same material as the screw.
- (k) PELLETING: Countersink screw heads 6 mm below timber surface and glue in grain-matched pellets not less than 6 mm thick, cut from matching timber. Pellets to occupy the whole depth of the holes and be finished off flush with surface.
- (l) PLUGGING: Countersunk screw heads 6 mm below timber surface and glue in

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plugs. Plugs to occupy the whole depth of the holes and project from the surface.

(m) POWDER ACTUATED FIXING SYSTEMS:

- Do not use without approval.
- Tools to be to BS 4078:Part 2 and Kitemark certified, and used in accordance with BS 4078:Part 1. Operatives to be trained and certified as competent by tool manufacturer.
- Fasteners, accessories and consumables to be types recommended by the tool manufacturer.
- Ensure that operatives take full precautions against injury to themselves and others.
- Remove all unspent cartridges from the site when no longer required.
- Apply zinc rich primer to heads of fasteners used externally, in external walls or in other locations subject to dampness.
- Use top hat section plastics washers to isolate cartridge fired nails from stainless steel components fixed externally, in external walls or in other locations subject to dampness.

(n) ADHESIVES:

- Adhesive types: As specified in the relevant section.
- Low Emissivity and formaldehyde free types to be used throughout.
- Surfaces to receive adhesive to be sound, unfrozen, free from dust, grease and any other contamination likely to affect bond. Where necessary, clean surfaces using methods and materials recommended by adhesive manufacturer.
- Adjust surface regularity and texture as necessary to suit bonding and gap filling characteristics of adhesive.
- Ensure that operatives observe manufacturer's and statutory requirements for storage and safe usage of adhesives.
- Do not use adhesives in unsuitable environmental conditions or beyond the storage period recommended by the manufacturer.
- Apply adhesives using recommended spreaders/applicators to ensure correct coverage. Bring surfaces together within recommended time period and apply pressure evenly over full area of contact to ensure full bonding. Remove surplus adhesive using methods and materials recommended by adhesive manufacturer and without damaging surfaces.

Z21 MORTARS

To be read with Preliminaries/General conditions.

Z21/1 GENERAL REQUIREMENTS

- (a) Refer also to Structural Specification for block-work, mortar, wall-ties and ancillary items.
- (b) MIX PROPORTIONS FOR CEMENT GAUGED MORTARS
- Refer to Structural Specification for mortar groups & mix proportion tables
 - MORTAR shall be to BS 4721, as per Structural Engineer's specification
- (c) TESTING - CEMENT CONTENT OF MORTAR: When instructed by Architect, test mortar before use, to determine cement content. Carry out tests using the BREMORTEST method described in Building Research Establishment Information Paper 8/89, or other equivalent.

Z21/2 MATERIALS

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- Avoid intermixing and contamination between stored materials and other building materials, debris or other deleterious matter.
- (a) MAKING CEMENT GAUGED MORTAR:
 - Keep plant and banker boards clean at all times.
 - Measure materials accurately by volume using clean gauge boxes or clean, undamaged buckets. Proportions of mixes are for dry sand; allow for bulking if sand is damp.
- (b) *Mix ingredients thoroughly* SAND FOR CEMENT GAUGED MORTARS: To BS 1200 unless specified otherwise.
 - Sand for facework mortar to be from one source, different loads to be mixed if necessary to ensure consistency of colour and texture. When a range is specified (e.g. 1:1:5-6) use lower proportion of sand for Grade G sands and higher proportion for Grade S.
- (c) READY-MIXED LIME:SAND FOR CEMENT GAUGED MORTARS:
 - Unless specified otherwise, use ready-mixed lime:sand to BS 4721.
 - Coloured mortar, where required, to be made using a proprietary coloured ready-mixed lime:sand, colour to approval where not specified.
- (d) CEMENT FOR MORTAR: When not specified otherwise, to be Portland cement or Portland blastfurnace cement, to class 42.5 or 52.5, manufactured and supplied under the BSI Kitemark scheme for cement. All cements must comply with the appropriate BS or IS standard.
- (e) RETARDED READY-MIXED CEMENT GAUGED MORTARS may only be used if to BS 4721 and with prior approval of Architect.
- (f) ADMIXTURES: Do not use in mortar unless specified or approved. Do not use calcium chloride or any admixtures containing calcium chloride. Admixtures, if specified, to BS 4887.
- (g) SITE STORAGE OF CEMENT GAUGED MORTAR MATERIALS:
 - Store different sands and aggregates in different stockpiles on hard clean bases that allow free drainage. Store factory produced premixed lime:sand for mortars and ready-to-use retarded mortars in covered containers to prevent excessive drying out or wetting.
 - Store bags of cement and hydrated lime in dry conditions, raised off the ground and not touching damp surfaces. Do not use cement or hydrated lime affected by damp.
 - to a consistence suitable for the work and free from lumps. Mix mortars containing air entraining admixtures by machine, but do not overmix.
 - Do not mix mortar when the air temperature is at or below 3 °C and falling or below 1 °C and rising.
 - Use mortar within about two hours of mixing at normal temperatures. Use retarded mortar within the time and site temperatures recommended by the manufacturer. Mortar may be retempered to restore workability, but only within these time limits.

Z22 SEALANTS

To be read with Preliminaries/General conditions.

- (a) SEALANT TYPES: As specified in the relevant section.

(b) SUITABILITY OF JOINTS:

- Before commencing, check that:
 - Joint dimensions are within limits specified for the sealant.
 - Sealant material and its application method are chemically compatible with adjacent materials, substrate etc.
 - Surfaces are smooth and undamaged.
 - Preparatory work which must be done before assembly of the joint has been carried out.
- Inform Architect if joints are not suitable to receive sealant and submit proposals for rectification.

(c) PREPARING JOINTS:

- Clean surfaces to which sealant must adhere using methods and materials recommended by sealant manufacturer.
- Remove all temporary coatings, tapes, loosely adhering material, dust, oil, grease and other contaminants which may affect bond.
- Keep joints clean and protect from damage until sealant is applied.
- Backing strip, bond breaker, primer: Types recommended for the purpose by sealant manufacturer.
- Insert backing strips and/or bond breaker tape into joint leaving no gaps.
- Cover adjacent surfaces with masking tape to prevent staining and protect surfaces which would be difficult to clean if smeared with primer or sealant.

(d) APPLYING SEALANTS:

- Ensure that operatives observe manufacturer's and statutory requirements for storage and safe usage of sealants.
- Use equipment and methods recommended by sealant manufacturer and apply within the recommended application life of primer and sealant, and the recommended air and substrate temperature ranges.
- Do not apply to damp surfaces (unless recommended otherwise), to surfaces affected by ice or snow or during inclement weather. Do not heat joints to dry them or raise the temperature.
- Fill joints completely, leaving no gaps, excluding all air and ensuring firm adhesion of sealant to required joint surfaces. Tool the sealant to a neat, slightly concave profile unless specified otherwise. Protect until cured.

Z31 POWDER COATINGS

To be read with Preliminaries/General conditions.

(a) POWDER COATING:

- This is invoked by reference in other sections. Details of powder coatings to components are given in H43, L10, and R10.
- Powder Coating Materials: Obtain from one only of the following manufacturers: Syntha Pulvin, Interpon or equal and approved. Submit details of selected manufacturer to the Architect at an early date.

(b) WORKING PROCEDURES: Unless specified otherwise, comply with all relevant requirements and recommendations of:

- BS 6496 for aluminium alloy backgrounds; BS 6497 for galvanized steel backgrounds.
- British Coatings Federation: Code of safe practice - Application of powder coatings by electrostatic spraying.
- Powder coating manufacturer's guarantee.

(c) APPLICATOR REQUIREMENTS:

- Powder coating applicators must be approved by the powder coating manufacturer and be currently certified to BS EN ISO 9002. Submit details of the

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selected applicator(s) together with proof of approval and certification to the Architect on request.

- Use only one application plant unless otherwise approved.
- The applicator must comply with all quality procedures, guarantee conditions, standards and tests required by the powder coating manufacturer.
- The applicator must issue a certificate to the Architect before delivery of work to site, confirming that coatings are in accordance with this specification.

(d) CONTROL SAMPLES: Prior to ordering materials for the works, obtain approval for:

- Powder coated samples of the various grades and forms of background metal to be used, showing any colour, texture and gloss variation. Agree with the Architect the quantity of samples to be provided.
- Fabrication samples showing joint assembly, how powder coating is affected and how any cut metal edges are protected.

(e) INDEPENDENT INSPECTION ON SITE:

- In the event of any unresolved deficiency in coating specification compliance following inspection at plant, the relevant contractors/supplier(s) must commission an Independent Inspection Authority, approved by the Architect, to carry out a site acceptance inspection.
- Acceptance inspection will be carried out in accordance with BS 6001-2 with a limiting quality of 5% where the probability of acceptance is 10%. Each component of a fabricated unit will be assessed as an individual part for sampling procedures.
- Components failing inspection will be assessed by the Architect for removal and reprocessing/replacement.

(f) COMPONENT DESIGN:

- Ensure that components to be powder coated comply with relevant recommendations of BS 4479-1, -3 and -4, are of suitable size to fit plant capacity and of suitable thickness to withstand oven curing.
- Ensure that deflection under design load or thermal movement of background metal of components will not be detrimental to powder coatings.

(g) PRE-TREATMENT:

- All components to be powder coated are to be free from corrosion and damage,
- and suitable for and compatible with the pretreatment and powder coating process.
- Clean, conversion coat, condition, rinse in demineralised water, drain and dry all components in accordance with the powder coating manufacturer's requirements and the pretreatment supplier's recommendations.

(h) EXTENT OF POWDER COATINGS:

- Apply powder coatings to all visible surfaces, and all concealed surfaces requiring protection, of all components.
- All coated surfaces will be deemed 'significant surfaces' for relevant BS 6496/BS 6497 performance requirements.

(i) APPLICATION OF POWDER COATINGS:

- Surfaces to receive powder coatings must be free from dust or powder deposits.
- Application of powder coatings to all components must be completed within 48 hours of pretreatment.
- Jig points must not be visible on coated components.
- Curing must be controlled to attain metal temperatures and hold periods recommended by the powder coating manufacturer.

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- Stripping and recoating of components will only be acceptable by prior agreement of the powder coating manufacturer. Stripping, pretreatment and powder coating are to be in accordance with manufacturer's requirements and must be carried out at the applicator's plant.
 - Overcoating of components will not be acceptable.
- (j) PERFORMANCE AND APPEARANCE OF POWDER COATINGS: To BS 6496/BS 6497.
- (k) ALUMINIUM ALLOY FABRICATIONS:
- Units may be assembled:
 - Before powder coating
 - From components powder coated after cutting to size
 - From components powder coated before cutting to size, subject to approval of the Architect and the powder coating manufacturer.
 - Fabrication resulting in exposure of uncoated background metal will not be acceptable.
 - Assembly sealants must be compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.
- (l) STEEL FABRICATIONS:
- Wherever practical, units must be assembled before powder coating.
 - Fabrication resulting in exposure of uncoated background metal will not be acceptable.
 - Assembly sealants must be compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.
- (m) FIXINGS: All exposed metal fixings must be powder coated together with components, or coated with matching repair paint system applied in accordance with the powder coating manufacturer's recommendations.
- (n) FABRICATION DAMAGE REPAIR/REPLACEMENT:
- Check all components before delivery to site for damage to powder coating. Report findings and proposed method of repair or replacement to the Architect. Obtain approval before commencing remedial work.
 - Repair components with minor damage as soon as possible by cleaning, abrading and coating with matching repair paint system applied in accordance with the powder coating manufacturer's recommendations.
 - Replace components with major damage considered unacceptable for repair.
- (o) PROTECTION:
- All powder coated surfaces of components vulnerable to damage during handling, installation, or by subsequent site operations, are to be fully protected during the course of these works.
 - Protective coverings are to be resistant to all weather conditions, removable from areas inaccessible after installation, and partially removable and replaceable for access to fixing points during installation or subsequent site operations.
 - Any protective tapes used in direct contact with powder coatings must be low tack, self adhesive, light in colour and approved by the tape manufacturer. Apply and remove in accordance with the tape and powder coating manufacturers' recommendations. Do not use solvents to remove adhesive residues unless approved by the powder coating manufacturer.
 - Carry out monthly inspections of protective coverings and promptly repair any deterioration or deficiency.
 - Remove protective coverings only when instructed by the Architect.
- (p) SITE DAMAGE REPAIR/REPLACEMENT:
- Any damage to powder coatings caused during handling and installation, or by

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- subsequent site operations, is to be rectified immediately. Obtain approval before commencing extensive repairs or replacements.
 - Repair components with minor damage by cleaning, abrading and coating with matching repair paint system applied in accordance with the powder coating manufacturer's recommendations.
 - Replace components with major damage considered unacceptable for repair.
- (q) MAINTENANCE: After removal of protective coverings, clean and maintain all powder coated surfaces at regular intervals until Practical Completion. All maintenance is to be in accordance with procedures detailed in the powder coating manufacturer and applicator guarantee