

NBS SPECIFICATION

Client: Scoil Mhuire, Buncrana / Department of Education

Project: Science Classroom Refurbishment Works

Refurbishment of the existing Science Classroom and alterations to the Geography Classroom at 2nd floor level in the main school block

Architects: A.L Architects Ltd

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ISSUE	DATE	BY	CHECKED	COMMENTS
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C20 DEMOLITION/ALTERATIONS

- 05 SURVEY: Before starting work, carry out a survey and submit a report and method statement covering all relevant matters listed below and in Health and Safety Plan
- Condition and demolition methods of the structure(s).
 - Removal methods of any hazardous materials.
 - Type and location of adjoining or surrounding premises which may be adversely affected by the Works.
 - Identification and location of services.
- 25 LOCATION OF SERVICES: Locate and mark the positions of services affected by the work. Arrange with the appropriate authorities for the location and marking of the positions of mains services.
- 30 DISCONNECTION OF SERVICES: Before starting demolition arrange with the appropriate authorities for the disconnection of services and removal of fittings and equipment.
- 32 DISCONNECTION OF DRAINS: Locate and disconnect all disused drain connections. Seal within the site to approval.
- 35 DRAINS IN USE: Protect drains and fittings still in use and keep free of debris at all times. Make good any damage arising from demolition work and leave clean and in working order at completion.
- 40 BYPASS CONNECTIONS: Provide as necessary to maintain continuity of services to occupied areas of the same and adjoining properties. Give adequate notice to occupiers if shutdown is necessary.
- 45 SERVICES WHICH ARE TO REMAIN: Notify the CA and service authority or owner of any damage arising from the execution of the Works. Make all arrangements for repair to the satisfaction of the CA and service authority or owner. Bear any costs arising.
- 50 WORKMANSHIP GENERALLY:
- Demolish structure(s) in accordance with BS 6187 and Health and Safety Executive Guidance Notes GS29/1, 3 and 4.
 - Operatives must be appropriately skilled and experienced for the type of work and hold or be training to obtain relevant CITB Certificates of Competence.
 - Site staff responsible for supervision and control of the work are to be experienced in the assessment of the risks involved and in the methods of demolition to be used.
- 55 SITE HAZARDS:
- Prevent fire or explosion caused by gas or vapour.
 - Reduce dust by periodically spraying with water.
 - Take adequate precautions to protect site operatives and the general public from vibration, dangerous fumes and dust arising during the course of the Works.
- 65 STRUCTURE(S) TO BE RETAINED:
- Adequately protect parts of existing structure(s) which are to be kept in place.
 - Cut away and strip out the minimum necessary.
 - Prevent debris from overloading any part of the structure which is not to be demolished.
- 71 DANGEROUS OPENINGS: Illuminate and protect as necessary.
- 76 ASBESTOS BASED MATERIALS: Asbestos based materials are known to be present in the building. Refer to separate asbestos reports. The contractor is to include for removal by a

licenced contractor. In addition the contractor is to report immediately any further suspected asbestos based materials discovered. Avoid disturbing such materials and agree methods for safe removal.

- 85 COMPLETION: Clear away all debris and leave the site tidy on completion.
- 90 OWNERSHIP: Components and materials arising from the demolition work are to become the property of the Contractor except where otherwise provided. Remove from site as work proceeds.
- 95 RECYCLED MATERIALS: Materials arising from demolition work may be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification.

G20

G12 ISOLATED STRUCTURAL METAL MEMBERS

To be read with Preliminaries/General conditions.

Refer to Structural Engineers drawings, details, specification and schedules.

- 110 FABRICATION OF MEMBERS:
- Steel sections: To BS 4-1, BS EN 10055, BS EN 10056 or BS EN 10210, as appropriate.
 - Steel: To BS EN 10025, grade S275.
 - Surface condition: Free from heavy pitting and rust, burrs, sharp edges and flame cutting dross.
 - Cuts and holes: Form neatly and accurately.
Welding: Metal arc method to BS EN 1011-2.
 - Welded joints: Fully fused, with mechanical properties not less than those of the parent metal.
 - Site welding: Not allowed without permission.
- 210 STEEL BEAMS TO NEW OPENINGS /WALLS REMOVED
- Product reference: **Refer to Structural Engineers drawings**
 - Loading: To be determined kN/m.
 - Finish as delivered: Factory primed.
 - Other requirements: NA
- 215 STEEL COLUMNS/POSTS/TIES
- Product reference: **Refer to Structural Engineers drawings**
 - Loading: To be determined kN/m.
 - Finish as delivered: Factory primed.
 - Other requirements: NA
- 310 INSTALLATION
- Accuracy: Position members true to line and level. If necessary, use steel packs of sufficient area to allow full transfer of loads to bearing surfaces.
 - Fixing: Use washers under bolt heads and nuts.
 - Tapered washers: Provide under bolt heads and nuts bearing on sloping surfaces. Match taper to slope angle and align correctly.

G20 CARPENTRY/TIMBER FRAMING/FIRST FIXING

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/REQUIREMENTS

- 120 DRAWINGS, ETC. must show:
- Geometry of structure
 - Timber species, 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.

130 **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.

150 **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 'GRN'.
 - Structural timber members cut from large graded sections to be regraded to approval and marked accordingly.
- TYPE(S) OF TIMBER

210 **GRADED SOFTWOOD FOR CEILING JOISTS & STRUCTURAL USE GENERALLY**

- Strength graded to BS 4978 or BS EN 519 or other national equivalent and so marked. Strength class to BS EN 338: C14
- Preservative treatment: As section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C8
Type/desired service life: 40 years.
- Moisture content at time of erection: As clause 450.

270 **UNGRADED SOFTWOOD FOR INTERNAL NON STRUCTURAL USE, FRAMING, TIMBER STUDWORK, and BATTENS & FIXINGS GENERALLY:**

- Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
- Surface finish: Sawn generally, regularized for ceiling battens, first fix door frames and wall studs.
- Preservative treatment: As section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C8
Type/desired service life: 40 years.
- Moisture content at time of erection: As clause 450.

311 **PLYWOOD FOR INTERNAL DUCTS & COLUMN LININGS**

- Manufactured to an approved national standard.
Thickness: 19mm
Appearance class to BS EN 635: III
Bond quality to BS EN 314: Part 2: Class 2
Finish: Sanded.
- Preservative treatment: As section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C8
Type and desired service life: 40 years.

WORKMANSHIP GENERALLY

401 **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.

402 **CROSS SECTION DIMENSIONS OF NONSTRUCTURAL SOFTWOOD TIMBER:**

- Dimensions on drawings are finished sizes.
- Maximum permitted deviations from finished sizes to be as stated in BS EN 1313:Part 1: Clause 6 for sawn sections

- 403 CROSS SECTION DIMENSIONS OF STRUCTURAL AND 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.
- 420 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.
- 430 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.
- 440 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, thicknesses, 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.
- 450 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% |
- 451 MOISTURE CONTENT: When instructed by CA, 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 CA with records of all tests.
- 510 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.
- 530 PAINTED FINISHES: Structural timber which is to be painted to be primed as specified before delivery to site.
- 540 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.
- 550 EXPOSED TIMBER: Prevent damage to and marking of surfaces and arris of planed structural timber which will be exposed to view in completed work.

JOINTING TIMBER

570 **JOINTING/FIXING GENERALLY:** Where not specified otherwise, select fixing and jointing methods and types, sizes and spacing's of fasteners in compliance with section Z20. Fasteners to comply with relevant British Standards.

580 **FRAMING ANCHORS:**

- Manufacturer and reference(s): Contractor's choice
- Material/finish: Galvanized Steel
- Fix anchors securely using not less than the number of nails recommended by the anchor manufacturer.
- Nails to be not less than 30 x 3.75 mm galvanized or sherardized square twist unless recommended otherwise.

ERECTION AND INSTALLATION

750 **MODIFICATIONS/REPAIRS:**

- Inform CA 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 CA, the nature and/or number of defects would result in an excessive amount of site repair.

760 **TEMPORARY BRACING:** Provide as necessary to maintain structural timber components in position and to ensure complete stability during construction.

770 **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.

775 **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.

850 **INSPECTION:** Give CA reasonable opportunity to inspect structural timberwork before covering up.

Revision Schedule and status			
Issue No./Rev.	Amendments	Date	Checked

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K10 PLASTERBOARD DRY LININGS/PARTITIONS/CEILINGS

15 WALL LINING ON TIMBER STUDS

- Background: Timber studs/frame/metal studs at 400mm centres.
- Lining: 12.5mm foil backed plasterboard or similar and equally approved performance.
- Fixing: As clause 610, using screws
- Acoustic sealant: As clause 115.
- Finishing: Taped seamless finish as clause 100
- Primer/sealer: Drywall Sealer.
- Accessories: NA
- Other requirements: NA

20 WALL LINING ON STAGGERED STUD ACOUSTIC PARTITION SYSTEM

Background: Staggered metal stud framing studs at 300mm centres.

- Lining: 12.5mm sound reducing (high density core) plasterboard. (2 layers)
- Fixing: As clause 610, using screws
- Acoustic sealant: As clause 115.
- Finishing: Taped seamless finish as clause 100/skim as M20/50
- Primer/sealer: Drywall Sealer.
- Accessories: As necessary
- Other requirements: Angle/edge beads as required. Staggered joints to each layer- 60minutes fire resistance
- Sound insulation 57 Db
- Other requirements: Where indicated 12.5mm moisture resistant board suitable as a base for ceramic tiling to be used in lieu of one layer of sound reducing (high density core) plasterboard.

30 METAL STUD - ON STAGGERED STUD ACOUSTIC PARTITION SYSTEM

- Manufacturer and reference: Contractors choice to CA approval
- Type: Zinc coated Mild steel -72mm I section
- At 300 mm centres.
- Insulation: 65mm acoustic partition rolls mineral wool
- Lining: 12.5mm sound reducing (high density core) plasterboard.(2 layers)
- Screw centres: 300mm-200mm@external corners.
- Accessories: As necessary
- Other requirements: Where indicated 12mm plywood to be screwed to one side for additional bracing to engineers detail.
- Sound insulation 57 dB

45 WALL LINING ON ADHESIVE

- Background: Existing plaster/render/masonry
- Lining: 12.5mm plasterboard
- Adhesive method: Dabs
- Other requirements: angle/edge beads as required

46 WALL LINING ON TIMER BATTONS

- Background: Existing plaster/render/masonry
 - Lining: Proprietary insulated plasterboard comprising a premium performance CFC/HCFC-free Zero Ozone Depletion Potential (ODP) and low Global Warming Potential (GWP) rigid thermoset phenol insulation core with 12.5 mm plasterboard bonded to its front surface and a low emissivity composite foil facing autohesively bonded on its reverse surface
 - Thickness (nominal): 102.5 mm.-unless otherwise indicated
 - Aged thermal conductivity/ λ -value of 0.020 W/m.
-
- Fixing :25x44mm mm treated timber battens backed with a strip of dpc
 - Screw centres :300mm
 - Reaction to fire class: Class 0 when tested with its plasterboard facing innermost, and its rigid phenol thermoset insulation core, as defined by BS 476-7: 1997 (Fire tests on building materials and structures. Method of test to determine the classification of the surface spread of flame of products) complete with a Class 0 rigid thermoset phenol insulation core to BS 476-6: 1989- Fire propagation index of performance (I) not exceeding 12 and sub index (i) not exceeding 6 when tested.
- Other requirements: NSAI Agrément Certificate angle/edge beads as required
- 50 SUSPENDED CEILING ON METAL FRAMING
- Manufacturer and reference: Contractors choice to CA approval
 - Structural soffit: Existing concrete ceiling
 - Suspension system: Metal framework -gauge0.9
 - Hangers: Steel angles 25x25mm with cleat
 - Primary Support: 15x 45mm
 - Ceiling Section: 80x26mm
 - Frame: Locate at 1200mm crs. suspended from hangers at 300mm centres.
 - Lining: 12.5mm foil backed plasterboard to Contractors choice and CA approval.
 - Fixing: As clause 80.
 - Acoustic sealant: As clause 115.
 - Finishing: Taped seamless finish as clause 100.
 - Primer/sealer: Drywall Sealer.
 - Accessories: Steel angles/ Ceiling Section / Connecting Clip/ Perimeter Channel
 - Other requirements: Metal beads to all internal angles.
- 60 CEILINGS: Fix boards to ceilings before walls and partitions. Fix boards with bound edges at right angles to supports and with ends staggered in adjacent rows.
- 65 DRY LINING GENERALLY:
- Handle and install boards and associated framework components in accordance with manufacturers recommendations.
 - Fixing, jointing and finishing materials and accessories, where not specified otherwise, to be as recommended by the board manufacturer.
 - Plasterboard: To BS 1230: Part 1 with exposed surface and edge profiles suitable to receive the specified finish.
 - Use operatives properly trained for dry lining work.
 - Cut boards neatly and accurately without damage to core or tearing of paper facing. Keep cut edges to a minimum. Do not use damaged boards.
 - Finish neatly giving flush, smooth, flat surfaces free from bowing and abrupt changes of level.
- 70 ADDITIONAL SUPPORTS: Provide or ensure provision of additional framing, accurately positioned and securely fixed:
- To give full support to board edges and lining perimeters.
 - To support fixtures, fittings and services.
 - To provide fixing points for heads of partitions running parallel with, but offset from main structural supports.
- 80 FIXING PLASTERBOARD TO TIMBER SUPPORTS:
- Fix securely to all supports working from the centre of each board using the specified method of fixing at the following maximum centres:
 - Nails: 150 mm centres.

- Drywall screws: 300 mm centres for partitions/wall linings (reduced to 200 mm at external angles where recommended by the board manufacturer) and 230 mm centres for ceilings.
- Position fixings not less than 10 mm from bound edges, 13 mm from cut/unbound edges and not less than 6 mm from the edge of the timber support.
 - Type and length of fixings as recommended in BS 8212, section 2.2.3, unless specified otherwise.
- 90 FINISHING: To walls and ceilings.
- Fill all joints and gaps and cover with continuous lengths of tape, fully bedded. When set, cover with joint finish, feathered out to give a flush, smooth, seamless surface.
 - Fill minor indents and, after joint, angle and spotting treatments have dried, seal surface to even out texture and suction using dual purpose primer and sealer.
- 100 TAPED SEAMLESS FINISH TO PLASTERBOARD:
- Lightly sand cut edges of boards to remove paper burrs. Apply PVAC sealer to exposed cut edges of boards and any other plaster surfaces to which tape are to be applied.
 - 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.
- 105 PLASTERBOARD GENERALLY: To BS 1230: Part 1, types 1 to 5 with exposed surface and edge profiles suitable to receive the specified finish.
- 115 ACOUSTIC SEALANT:
- Sealant: A type recommended by the board manufacturer.
 - 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.
- 120 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.
- 130 SERVICE PENETRATIONS: The dry lining contractor must liaise with the Main Contractor and 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.

K11 RIGID SHEET FLOORING/SHEATHING/DECKING/SARKING/ LININGS/CASINGS

To be read with Preliminaries/General conditions.

TYPE(S) OF FLOORING/SHEATHING/DECKING/SARKING/ LINING/CASINGS

- 515 PLYWOOD ROOF DECKING:
- Base: Timber joists
 - Additional supports as clause 930.
 - Decking: Plywood manufactured to the relevant standards and quality control procedures specified in BS 5268: Part 2, and so marked.
- Type: WBP

Nominal thickness/number of plies: 19mm

Edges: square

Lay with long edges running across supports. End joints to be central over joists and staggered.

- Fix decking to each support with 50x3.35 annular ringed shank nails spaced 25 mm from each long edge and at 150 mm maximum centres between. Fix around perimeter of roof area at 150 mm maximum centres.
- Expansion provision: Leave 10 mm clear expansion gap around perimeter of roof area and any upstands. Form intermediate expansion/movement joints as recommended by decking manufacturer.

WORKMANSHIP

910 INSTALLATION GENERALLY:

- In the absence of manufacturer's recommendations, store, prepare and fix boards in accordance with the recommendations of the relevant trade association.
- Keep boards dry and do not fix to timber supports having moisture content greater than 18%.
- Ensure that building is weathertight before fixing boards internally.
- Set out boards with joints accurately aligned, of constant width and parallel to perimeter edges.
- Methods of fixing, and fasteners to be as section Z20 unless specified otherwise.
- Protect boards/sheets from dirt, stains and damage until Practical Completion.

930 ADDITIONAL SUPPORTS:

- Where specified ensure that additional studs, noggings/ dwangs or battens are provided in accordance with board manufacturer's recommendations and as follows:
Tongue and groove jointed rigid board areas: To all unsupported perimeter edges.
Butt jointed rigid board areas: To all unsupported edges.
- All additional studs, noggings/dwangs or battens to be not less than 50 mm wide, of adequate thickness and have the same treatment, if any, as adjacent timber supports.

940 CONDITION all boards other than hardboard by storing on site, in conditions similar to those that will prevail after the building is occupied, for at least 48 hours before fixing. Ensure free circulation of air to all surfaces.

950 MOISTURE CONTENT: When instructed by CA, test boards/sheets with an approved electrical moisture meter used in accordance with manufacturer's recommendations. Provide CA with records of all tests.

960 FIXING GENERALLY:

- Securely fix boards/sheets to each support without distortion and true to line and level.
- Fixings to be sufficient distance from edge of board/sheet to prevent damage, evenly spaced in straight lines and, unless otherwise recommended by board manufacturer, in pairs across joints.
- Remove surplus adhesive as the work proceeds.

K13 RIGID SHEET FINE LININGS AND PANELLING

To be read with Preliminaries/ General conditions.

K40 DEMOUNTABLE SUSPENDED CEILINGS

10 SUSPENDED CEILINGS TO ROOMS – Home Economics

- Type: Mineral fibre- Laminated anti bacterial/bio contamination coating and sound absorption
- Manufacturer: Contractors choice to CA approval
- Structural soffits: Timber Frame/concrete/plaster/plasterboard ceilings

- Suspension system: Provide hangers, fixings, primary supports, main runners, cross members, perimeter trims, splines, noggings, clips, bracing, bridging etc., which are necessary to complete the installation.
Ceiling system: Exposed fine grid, tegular edged mineral fibre tiles
 - Protective finish to suspension systems: normal conditions to BS82900 part 1, section 8.2
 - Perimeter trims: 15 x 15mm shadow line edge trim
 - Materials: Mineral.
 - Surface: Laminated anti bacterial/bio contamination coating and sound absorption
 - Sizes: 600 x 600 x 17 mm
Fire reaction: EEA - Euro class A2-s1,d0
Sound absorption (alpha w): 0.60 (H)
Sound Attenuation Dnfw (dB): 36
Sound absorption European Classification: C
Light reflectance (%): 84.85
Humidity resistance (%): 95
Other requirements: Plasterboard perimeter margin using Axiom Transitions.BT3225A
Refer to drawings for rooms/locations.
- 30 **CONDITIONS**
- Installation of ceiling material: After building is weathertight, wet trades have finished and services are complete above ceiling level.
 - Temperature and humidity: Maintain at levels similar to those which will prevail after building is occupied.
- 40 **WORKMANSHIP GENERALLY**
- Fixing: Secure. In accordance with manufacturers' recommendations and BS 8290-3. Provide additional bracing and stiffening as necessary to give a stable ceiling system.
 - Setting out: Accurate. Provide level soffits free from undulations and lipping.
 - Lines and joints: Straight and parallel to walls.
 - Edge infill units size (minimum): Half standard width or length.
 - Grid: Position to suit infill unit sizes. Allow for permitted deviations from nominal sizes.
- 50 **WIRE HANGERS**
- General: Straighten before use.
 - Installation: Install vertical without bends or kinks. Do not allow hangers to press against fittings.
 - Fixing: Tie securely at top and bottom with tight bends to loops to prevent vertical movement.
- 55 **INSULATION**
- Fitting: Fit accurately and firmly with no gaps.
 - Insulation within individual infill units: Secure to prevent displacement when infill units are installed or subsequently lifted. Reseal cut dustproof sleeving.
 - Services: Do not cover electrical cables not sized accordingly. Cut around electrical fittings.
- 75 **ELECTRICAL CONTINUITY AND EARTH BONDING**
- Substantial conductive parts of the ceiling system: Electrically continuous and fully earth bonded to BS 7671.
 - Sequence: Complete earth bonding as soon as possible after completion of each independent area of suspension system.

	Revision Schedule and status		
Issue No./Rev.	Amendments	Date	Checked

L10 WINDOWS/ROOFLIGHTS/SCREENS/LOUVRES

To be read with Preliminaries/General conditions.

PRELIMINARY INFORMATION/REQUIREMENTS

- 110 EVIDENCE OF PERFORMANCE: Provide independently certified evidence that all specified variants of components comply with specified performance requirements.
- 120 SITE DIMENSIONS must be taken and recorded on shop drawings before starting to make windows/doors
- 130 PROTOTYPES: Prepare one of each of the following and arrange for inspection by the CA before starting repetitive fabrication:
- 140 CONTROL SAMPLES: After finalisation of all details, prepare one of each of the following, as part of the quantity required for the project, and obtain approval of appearance before proceeding with manufacture of the remaining quantity:
Door and window

COMPONENTS

- 510 TIMBER GLAZED SCREENS: INCLUDING THOSE INTEGRATED WITH ADJACENT TIMBER DOORS. REFER TO DOOR SCHEDULE AND DRAWINGS FOR LOCATIONS
- Materials generally: To BS EN 942.
Wood species: White Oak.
Class (es): J30
 - Joinery workmanship: As section Z10.
Adhesive: Contractor's choice to CA approval.
Moisture content of timber on delivery: 9% to 13%.
 - Accuracy: Permissible deviations:
Height and width: ± 2 mm.
Straightness of members measured in the plane of the screen or at right angles:
Up to 1200 mm long: 3 mm.
Up to 2400 mm long: 5 mm.
Difference in length of diagonals when frame length plus height is:
Up to 1800 mm: 3 mm.
Over 1800 mm up to 3000 mm: 5 mm.
Over 3000 mm: 10 mm.
 - Special features: Includes door as clause L20/410
 - Glazing details: All glazing to be 30 minute fire rated and safety glazing.
 - Finish as delivered: NA

INSTALLATION

- 710 PROTECTION OF COMPONENTS: Do not deliver to site components which cannot be put immediately into suitable clean, dry, floored and covered storage. Stack near vertical on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.
- 720 MOISTURE CONTENT OF TIMBER COMPONENTS: During delivery, storage, fixing and thereafter to Practical Completion maintain conditions of temperature and humidity to suit specified moisture content(s) of components. When instructed by CA, test components with an approved electrical moisture meter used in accordance with manufacturer's recommendations.
- 730 PRIMING/SEALING: Before fixing components ensure that surfaces of timber which will be inaccessible after installation are primed or sealed as specified.
- 740 CORROSION PROTECTION: Before fixing, apply two coats of bitumen solution to BS 6949 or an approved mastic impregnated tape, to surfaces of components which will come into contact with concrete/mortar

- 750 BUILDING IN will not be permitted except where specifically stated on the drawings
- 751 BUILDING IN: Components which are being built in must be braced and protected as necessary to prevent distortion and damage during erection of adjacent structure.
- 765 WINDOW INSTALLATION:
- Install windows into prepared openings, maintaining a maximum gap of 3 mm between the frame edge and the surrounding construction.
 - Install windows without twist or diagonal racking.
- 770 PREPARED OPENINGS: Ensure that dpcs are positioned correctly in relation to frames and are not displaced during fixing operations.
- 780 FIXING OF TIMBER FRAMES:
- As section Z20 using lugs.
 - When not predrilled or specified otherwise, position fixings not more than 150 mm from each end of jamb, adjacent to each hanging point of opening lights, and at maximum 450 mm centres.
- 790 FIRE RESISTING FRAMES: Completely fill gap between Back of frame and reveal with intumescent tape
- 800 BACKFILLING OF STEEL FRAME SECTIONS: After fixing, fill the back of steel frame sections with a waterproof cement fillet.
- 810 SEALANT JOINTS:
- Sealant manufacturer and reference: To CA approval
 - Colour: To match
 - Prepare joints and apply sealant as section Z22. Finish triangular fillets with a flat or slightly convex profile.
- 820 IRONMONGERY: Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Prevent damage to ironmongery and adjacent surfaces. At completion check, adjust and lubricate as necessary to ensure correct functioning.

L20 DOORS/SHUTTERS/HATCHES

To be read with Preliminaries/General conditions.

PRELIMINARY INFORMATION/REQUIREMENTS

- 110 EVIDENCE OF PERFORMANCE: Provide independently certified evidence that all specified variants of components comply with specified performance requirements.
- 115 FIRE RESISTING TIMBER DOOR/DOORSETS: Provide evidence, in the form of a product conformity certificate, test report or engineering assessment, that each fire door/doorset supplied will comply with the specified requirements for fire resistance if tested in accordance with BS 476: Part 22. Such certification must cover door and frame materials, glass and glazing materials and installation, essential and ancillary ironmongery, hinges and seals.
- 150 SITE DIMENSIONS must be taken and recorded on shop drawings before starting to make door openings.

COMPONENTS

- 413 INTERNAL FD30S FIRE RESISTING TIMBER DOORSETS:

- Type A single door/glazed
- Drawing reference(s): Refer to plans, elevation, sections & schedules
- Manufacturer and reference: Contractors choice to CA approval
- Door leaf:
 - Core: 44mm Solid
 - Facings: 1- 2mm High resisting impact sheeting Formica colorcore 2 laminate-(2mm High resisting impact sheeting as K13 131 where indicated on drawings)
 - Lippings: All 4 sides to be HW lipped.
 - Glazing details: Refer to drawings for details of location of safety glazing and 30minute fire rated glazing.
 - Finish as delivered: As above--(2mm High resisting impact sheeting as K13 131 where indicated on drawings)
- Frame and architraves:
 - Class (to BS EN 942): J2 grade (clear grade) softwood.
 - Finish as delivered: Spray painted.
- Moisture content on delivery: 9 to 13%
- Ironmongery: Refer to ironmongery schedule
- Perimeter seals: 30 minute smoke seal/Intumescent strips including to meeting stiles.
- Other requirements: 100mm Architraves to be mitred.
 - Identification plates to be fitted in accordance with BS8214
- Fixing: Frame fixings with colour matching caps supplied by doorset manufacturer.

INSTALLATION

- 710 PROTECTION OF COMPONENTS: Do not deliver to site components which cannot be put immediately into suitable dry, floored and covered storage. Stack on bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc
- 720 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 CA, test components with approved electrical moisture meter used in accordance with manufacturer's recommendations.
- 730 PRIMING/SEALING: Before fixing components ensure that surfaces of timber which will be inaccessible after installation are primed or sealed as specified.
- 740 CORROSION PROTECTION: Before fixing, apply two coats of bitumen solution to BS 6949 or an approved mastic impregnated tape, to surfaces of aluminum components which will come into contact with concrete, mortar or plasters.
- 750 DOORSETS: Do not fix until rooms are weathertight and the work of wet trades is finished and dried out.
- 761 BUILDING IN: Components which are being built in must be braced and protected as necessary to prevent distortion and damage during erection of adjacent structure.
- 770 BUILDING IN TIMBER FRAMES: Fix dpcs with galvanized clout nails to backs of frames which are to be built into external openings.
- 780 PREPARED OPENINGS: Ensure that dpcs are positioned correctly in relation to frames and prevent displacement during fixing operations.
- 790 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.
- 800 LOOSE THRESHOLDS: Fix 150 mm from each end and at 600 mm maximum centres.

- 809 FIRE RESISTING DOORS/DOORSETS must be installed by a firm currently listed in the Register of Accredited Installers, in accordance with instructions supplied with the product conformity certificate, test report or engineering assessment.
- 820 SEALANT JOINTS:
- Sealant manufacturer and reference: As recommended by manufacturer.
 - Colour: To match frame.
 - Prepare joints and apply sealant as section Z22.
 - Finish triangular fillets with a flat or slightly convex profile.
- 830 FIXING IRONMONGERY GENERALLY:
- Assemble and fix carefully and accurately using fasteners supplied by the ironmongery manufacturer, with matching finish and equivalent corrosion resistance.
 - Holes for components to be no larger than the minimum required for satisfactory fit/operation.
 - Protect ironmongery and adjacent surfaces as necessary to prevent damage.
 - At completion, check, adjust and lubricate as necessary to ensure correct functioning of all moving parts.
- 840 FIXING IRONMONGERY TO FIRE RESISTING DOOR ASSEMBLIES:
- Fix all items in accordance with door leaf manufacturer's recommendations.
 - Ensure that, when fixed, ironmongery does not compromise the integrity of the assembly as established by testing/ assessment.
 - Cut holes for through fixings and components accurately. Clearances must not be greater than 8 mm unless protected by intumescent paste or similar.
 - Coat lock/latch cases for FD60 doors with intumescent paint or paste before fitting.
- 850 LOCATION OF HINGES:
- Where not specified otherwise, position hinges with centre lines 250 mm from top and bottom of door leaf.
 - Position third hinge with centre line 250mm below centre line of top hinge.
 - Position hinges for fire resisting doors in accordance with door leaf manufacturer's recommendations.
- 860 EMERGENCY EXIT DEVICES: Unless specified otherwise, install panic bolts/latches in accordance with BS EN 1125.

L40 GENERAL GLAZING

To be read with Preliminaries/General conditions.

GENERAL REQUIREMENTS

- 111 PREGLAZING of components will be permitted, but:
- Precautions to be taken to prevent displacement of glazing or compound during delivery and installation. Submit details to the CA.
 - Components with any displaced glazing or compound or with defective seals to be reglazed in situ.
- 150 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 within ± 2 mm of specified dimensions.
 - 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.

- 151 PREPARATION: Ensure that preparation by others of surrounds, rebates, grooves and beads is complete. Clean surfaces before installing glazing.
- 152 PREPARATION: Clean surrounds, rebates, grooves and beads, and prepare as specified before installing glazing.
- 155 GLASS GENERALLY:
- To BS 952 and the relevant part(s) of:
BS EN 572 for basic soda lime silicate glass.
 - Panes/sheets to be clean and free from obvious scratches, bubbles, cracks, rippling, dimples and other defects.
 - Edges generally undamaged. Shells and chips not more than 2 mm deep and extending not more than 5 mm across the surface are acceptable if ground out.
- 160 LINEAR PATTERNED/WIRED GLASS to be aligned vertically/horizontally as appropriate and pattern matched across adjacent panes in close proximity.
- 180 BEAD FIXING WITH PINS: Space pins evenly at not more than 150 mm centres, and within 50 mm of each corner. Punch pins just below the timber surface.
- 181 BEAD FIXING WITH SCREWS: Space screws evenly at not more than 225 mm centres, and within 75 mm of each corner.
- 190 GLASS TO GLASS JOINTING:
- Sealant: Clear silicone to BS 5889, Type A or B as recommended for the purpose by the manufacturer.
 - Joints to be of consistent width suitable to receive sealant.
 - Completely fill joints with sealant, leaving no gaps or bubbles. Remove surplus sealant to leave a clean, neatly finished weathertight joint.

TYPES OF GLAZING

- 505 FIRE RESISTANT TAPE/STRIP GLAZING
- Drawing reference: Refer to plans, elevation, sections & schedules
 - Fire resistance rating: 30 min integrity(60 min integrity where indicated)
 - Pane material: 6 mm wired glass
 - Frame/Surround material: Hard wood as clause L10/40
 - Bead material: Hardwood with chamfer
 - Bead fixing: 38mm screws at 200c/c
 - Glazing system:
 - Tape/Strip: Intumescent strip to CA approval
 - Pointing sealant: to CA approval
 - Installation to be carried out by a BM TRADA Certification or FIRAS registered installer in accordance with glazing manufacturer's recommendations.
- 520 FIRE RATING:
- Submit proposed construction details of fire resisting glazing to a UKAS/NAMAS accredited laboratory or other approved authority for assessment of its capability of achieving the specified fire rating.
 - If required, prepare specimen of the construction in accordance with BS 476-20, appendix A3, and submit for testing to BS 476-22.
 - Submit all assessment or test results and reports to CA immediately they are available, and before installing glazing.

M10 CEMENT BASED LEVELLING/WEARING SCREEDS

To be read with Preliminaries/General conditions.

- 115 CEMENT: SAND LEVELLING SCREEDS TO GROUND FLOOR OF PROPOSED BUILDING EXTENSIONS & TO PATCH REPAIR FLOOR OF EXISTING BUILDING
- Base: In situ concrete slab/insulation board.
 - Screed construction: Floating as clause 290.
 - Thickness (minimum): 100mm.
 - Reinforcement for crack control: As clause 392.
 - Mix:
 - Cement: Select from:
 - Portland to BS 12, class 42.5 or Portland blast furnace to BS 146, class 42.5.
 - Sand: To BS 882.
 - Grading limit: To BS 8204-1, table 1.
 - Proportions (cement: sand): 1:3 – 4.5.
 - Admixture: Water reducing to BS 5075-1.
 - Other requirements: Movement Joints as clause 440 and
 - Pipe ducts as section P31.
 - Reduced screed depth to 50mm to mat wells.
 - Finish:
 - Method: As clause 540.
 - To receive: Refer to Section M40 for various floor finishes.
 - Flatness/Surface regularity: Sudden irregularities are not permitted. Maximum permissible deviation when measured as clause 355: 5 mm.
 - In situ crushing resistance: Test to BS 8204-1, annex C.
 - Mass of test weight: 4kg.
 - Depth of indentation (maximum): 4mm.
- 160 PROPRIETARY SELF SMOOTHING LEVELLING SCREED TO EXISTING FLOORS
- Location: all areas as required
 - Type: Cement based /fibre reinforced /self-levelling compound
 - Base: Existing screed/damaged screed/uneven sheeting
 - Screed construction: Bonded as clause 260.
 - Thickness (minimum): 3mm.
 - Thickness (maximum): 10mm.
 - Manufacturer: Contractors choice to CA approval.
 - Product reference: Contractors choice to CA approval.
 - Other requirements: Primer as required
 - Finish to receive: Linoleum floor sheet
 - Flatness/Surface regularity: Sudden irregularities are not permitted. Maximum permissible deviation when measured as clause 355: 5mm and also 2mm under a 1m straight edge.
 - In situ crushing resistance: Test to BS 8204-1, annex C.
 - Depth of indentation (maximum): 4mm.

GENERALLY/PREPARATION

- 210 SUITABILITY OF BASES
- General:
 - Suitable for specified levels and flatness/regularity of finished surfaces. Consider permissible minimum and maximum thicknesses of screeds.
 - Sound and free from significant cracks and gaps.
 - Cleanliness: Remove plaster, debris and dirt.
 - Moisture content: New concrete slabs to receive fully or partially bonded construction must be dried out by exposure to the air for not less than six weeks.

- 215 SURFACE HARDNESS OF BASES TO RECEIVE POLYMER MODIFIED WEARING SCREEDS
- General: Bases must restrain stresses that occur during setting and hardening of wearing screeds.
 - Test for surface hardness: To BS 1881-202 using a rebound hammer with compliance values selected from the following:

Screed thickness	Rebound hammer value
15 mm or less	Greater than 25
Greater than 15 mm	Greater than 30
 - Report: Submit:
 - Details of areas where base hardness values do not comply with these values.
 - Proposals for repair or cutting out and replacement.
- 220 PROPRIETARY LEVELLING/WEARING SCREEDS
- General: Materials, mix proportions, mixing methods, minimum/maximum thicknesses and workmanship must be in accordance with recommendations of screed manufacturer.
- 260 FULLY BONDED CONSTRUCTION
- Removing mortar matrix: Shortly before laying screed, expose coarse aggregate over entire area of hardened base.
 - Texture of surface: Suitable to accept screed and achieve a full bond over complete area.
 - Bonding coat: As recommended by screed manufacturer
- 270 PARTIALLY BONDED CONSTRUCTION
- Base surface: Brushed finish with no surface laitance.
 - Texture of surface: Suitable to accept screed and achieve a bond over complete area.
 - Bonding coat: As recommended by screed manufacturer
- 290 FLOATING CONSTRUCTION
- Insulation:
 - Type: 100mm High-density insulation board with-foil face and phenolic insulation core
 - Installation: Lay with tight butt joints. Continue up at perimeter abutments for full depth of screed.
 - Separating layer:
 - Type: Radon membrane as clause J40/140
 - Installation: Lay over insulation and turn up at perimeter abutments. Lap 100 mm at joints.

BATCHING/MIXING

- 310 BATCHING WITH DENSE AGGREGATES
- Mix proportions: Specified by weight.
 - Batching: Select from:
 - Batch by weight.
 - Batch by volume: Permitted on the basis of previously established weight: volume relationships of the particular materials. Use accurate gauge boxes. Allow for bulking of damp sand.
- 311 BATCHING WITH LIGHTWEIGHT AGGREGATES
- Mix proportions: Specified by volume.
 - Batching: Use accurate gauge boxes.
- 330 MIXING
- Admixtures: Do not use admixtures containing calcium chloride.

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

340 ADVERSE WEATHER

- Screeds surface temperature: Maintain above 5°C for not less than four days after laying.
- Hot weather: Prevent premature setting or drying out.

LAYING

345 LEVEL OF SCREED SURFACES

- Permissible deviation: ± 10 mm from datum (allowing for thickness of coverings).

355 FLATNESS/SURFACE REGULARITY OF FLOOR SCREEDS

- Sudden irregularities: Not permitted.
- Deviation of surface: Measure from underside of a 3 m straightedge with feet, placed anywhere on surface using a slip gauge to BS 8204-1 or -2 (or equivalent).

375 COMPACTION OF SCREEDS

- General: Compact thoroughly over entire area.
- Screeds over 50 mm thick: Lay in two layers of approximately equal thickness. Roughen surface of compacted lower layer then immediately lay upper layer.

405 JOINTS IN LEVELLING SCREEDS GENERALLY

- Laying screeds: Lay continuously using 'wet screeds' between strips or bays. Minimise defined joints.
- Day work joints: Form with vertical edge.

FINISHING/CURING

510 FINISHING GENERALLY

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

540 TROWELLED FINISH TO LEVELLING SCREEDS

- Floating: To an even texture with no ridges or steps.
- Trowelling: To a uniform, smooth but not polished surface, free from trowel marks and other blemishes, and suitable to receive specified flooring material.

650 CURING

- General: Prevent premature drying. Immediately after laying, protect surface from wind, draughts and strong sunlight. As soon as screed has set sufficiently, closely cover with polyethylene sheeting.
- Curing period: Keep polyethylene sheeting in position for not less than **period recommended by screed manufacturer**.
- Drying after curing: Allow screeds to dry gradually. Do not subject screeds to artificial drying conditions that will cause cracking or other shrinkage related problems.

M20 PLASTERED/RENDERED/ROUGHCAST COATINGS

- 42 CEMENT PLASTER: TO NEW BLOCKWORK AND MAKING GOOD GENERALLY
- Background: Solid masonry
Preparation: As clause 71
 - Undercoat(s):
Proprietary reference: Thistle - Hardwall
Thickness (excluding dubbing out): 11mm.
 - Final coat: Thistle – Multi-Finish
Thickness: 2mm.
Finish: Smooth
- 45 CEMENT RENOVATING PLASTER/SKIM:-MAKING GOOD FOLLOWING REMOVAL OF TILES
- Background: solid masonry
Preparation: To BS5492
Thickness: 3-5 mm.
Finish: Smooth
- 50 BOARD FINISH PLASTER
- Background: joists @400C/C
 - Plasterboard backing: 12.5mm Plasterboard
 - Skim coat(s): Board finish plaster to BS 1191: Part 1, Class B.
Proprietary reference: Gypsum
Thickness: 5mm applied in 2 coats.
Finish: Smooth.
- 60 WATERPROOF AND BREATHABLE RENDER: GENERAL AREAS AS SCHEDULE
- Background(s): Solid masonry
 - Proprietary reference WATERPROOF AND BREATHABLE RENDER or similar approved
Application: Trowel applied –refer to manufacturer instructions
Thickness (excluding dubbing out):25mm.
Finish: to match existing surrounding
- 61 CEMENT: All cements must comply with the appropriate British Standard and be licensed under the BSI Kitemark scheme for cement. Where Portland cement, Portland blast furnace cement, Portland pulverised-fuel ash cement or Sulfate-resisting Portland cement is specified use class 42.5 or 52.5 material.
- 63 MIXING:
- Measure materials accurately by volume using gauge boxes. Proportions of specified mixes are for damp sand. Adjust proportions if sand is dry.
 - Do not allow contamination of one type of material with another, or by any set material.
 - Do not use admixtures unless specified or approved.
 - Mix materials thoroughly.
- 67 ADVERSE WEATHER
- Take precautions to prevent damage to internal work when air temperature is below 3°C.
 - Do not carry out external work when air temperature is below 3°C and falling or below 1°C and rising.
 - 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.
- 71 BACKGROUNDS GENERALLY: Ensure that backgrounds are secure, free from contamination and loose areas, reasonably dry and in a suitable condition to receive specified coatings.

- 74 **REPAIRING EXISTING DAMP AFFECTED PLASTER:**
- Remove plaster on walls affected by rising damp up to a height of 300 mm above the highest point reached by the damp or 1 m above the dpc, whichever is higher.
 - Rake out perished and salt contaminated mortar joints and cut out and renew any heavily salt contaminated bricks or blocks in the background.
 - Advise CA if any built-in timbers, structural deficiencies or additional sources of damp are revealed.
 - Provide the maximum ventilation possible and leave walls to dry for as long as possible before applying new plaster.
 - Thoroughly dry brush background to remove dust, loose material and efflorescence.
- 76 **REPAIRING EXISTING PLASTER:**
- Remove plaster that is loose, soft, friable, badly cracked or affected by efflorescence. Gently tap all remaining intact surfaces and remove hollow sounding areas of plaster. Remove stained plaster to 300 mm beyond last point of visible staining.
 - Cut back to straight horizontal and vertical edges.
 - Advise CA if any built-in timbers, structural deficiencies or sources of damp are revealed.
 - Thoroughly dry brush the background and edges to remove dust, loose material and efflorescence.
- 78 **REPAIRING EXISTING RENDER:**
- Cut out all loose, hollow, soft, friable, badly cracked or otherwise damaged areas to form rectangular patches with straight horizontal and vertical edges, square cut or slightly undercut.
 - Cut back to imitation joint lines where they occur.
 - Cut out cracks other than hairline cracks to a width of not less than 75 mm.
 - Wash and brush exposed backgrounds and edges to remove dust and loose material.
- 80 **PLASTERBOARD BACKINGS:**
- Plasterboard: To BS 1230:Part 1.
 - Fixings: Galvanized plasterboard nails of length not less than 3 times the thickness of board being fixed.
 - Ensure that noggings, bearers, etc. to support fixtures, fittings and services are accurately and securely fixed.
 - Ensure that perimeter and unbound or cut edges of boards are supported by additional noggings in accordance with board manufacturer's recommendations.
 - Stagger end joints between rows. Gap between boards to be not more than 3 mm. Do not use damaged boards.
 - Fill and tape (scrim) all joints and angles between boards (except where coincident with a metal bead) using tape recommended by board manufacturer.
- 82 **BEADS/STOPS:** Provide appropriate corrosion resistant beads/stops at all external angles and stop ends unless specified otherwise. Use stainless steel beads/stops with mechanical fixings for external render.
- 87 **APPLICATION GENERALLY:**
- All coatings to be firmly bonded, of even and consistent appearance, free from rippling, hollows, ridges, cracks and crazing.
 - Finish surfaces to a true plane 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.
- 89 **DUBBING OUT:** If necessary to correct background inaccuracies, dub out in thicknesses of not more than 13 mm in same mix as first coat. Allow each coat to set before the next is applied. Scratch the surface of each coat.
- 91 **KEYING OF RENDER:** Allow each undercoat to stiffen. Comb to produce wavy horizontal lines, approximately 20 mm apart and 5 mm deep. Do not penetrate through the coat.

93 DRYING OF RENDER:

- Keep each undercoat and final coat damp for the first 3-4 days by covering with polyethylene sheet and/or spraying with water.
- Allow each coat to dry out thoroughly to ensure shrinkage is complete before applying next coat.

99 FINAL COAT OF RENDER - PLAIN FLOATED FINISH: Finish with wood float to an even, open texture. Do not apply water while working up or draw excessive laitance to surface (either by overworking or by use of steel trowel).

M40 CERAMIC TILING

To be read with Preliminaries/General conditions.

TYPE(S) OF TILING-CERAMIC

111 INTERNAL WALL TILING TO PROPOSED HOME ECONOMIC CLASSROOM OVER WORKTOP

- Drawing reference(s): Refer to floor plans /finishes and measure all walls. -
- Ceramic Tiles: Smooth white 100 x 100mm above worktop areas to kitchen
- Background/Base: Various – New plaster / New plasterboard / previously painted plaster / Terrazzo.
Preparation: As required by location and as clause 210, 310, 330, 360, 380, 390, and 460.
Refer also to section M20 and to room schedule. As required by manufacturer.
- Bedding: Adhesive as per 670.
Adhesive: Contractor's choice appropriate to location and to CA approval.
- Joint width: 2mm.
- Grout: Contractor's choice and as clause 875.
- Movement joints: Movement joints should be located at internal vertical corners and at 3m to 4.5m centres, horizontally and vertically.
- Accessories Edge trim & corner beading to match tile.

GENERALLY

210 SUITABILITY OF BACKGROUNDS/BASES: Before starting work ensure that backgrounds/bases:

- Are such as to permit specified flatness/regularity of finished surfaces, bearing in mind the permissible minimum and maximum thicknesses of the bedding material.
- Have been allowed to dry out by exposure to the air for not less than the following:
Concrete slabs: 6 weeks.
Concrete walls: 6 weeks.
Brick/block walls: 6 weeks.
Cement: sand screeds: 3 weeks.
Rendering: 2 weeks.
Gypsum plaster: 4 weeks.

215 FALLS IN THE BASE: Before starting work, check that where required, falls have been provided in the base. Inform the CA if the falls are inadequate. Do not attempt to provide falls by increasing or decreasing the specified thickness of the bedding material.

250 SAMPLES: Before placing orders submit representative sample(s) of all **tile types**
Ensure that delivered materials match sample(s).

260 CONTROL SAMPLE(S): Complete sample area(s), being part of the finished work in approved location(s) and obtain approval of appearance before proceeding:

PREPARATION

- 370 NEW IN SITU CONCRETE: Scrub with water containing detergent to ensure complete removal of mould, oil, surface retarders and other materials incompatible with the bedding. Rinse with clean water and allow to dry unless specified otherwise
- e.
- 380 NEW PLASTER: Ensure plaster is dry, solidly bedded, and free from dust and friable matter. Apply plaster primer if recommended by the adhesive manufacturer and allow to dry before tiling.
- 390 PLASTERBOARD BACKGROUNDS: Ensure that sheets are dry, securely fixed and rigid with no protruding fixings and the face intended to receive the decorative finish is exposed.
- 410 HACKING FOR KEY: Roughen specified backgrounds thoroughly and evenly by removing the entire surface to a depth of 3 mm by pneumatic scabbling, bush hammering or abrasive blasting. Remove all dust and debris and wash clean before commencing tiling.
- 420 RAKING OUT FOR KEY: Rake out soft joints in existing brickwork to a depth of not less than 13 mm. Brush out joints to remove dust.
- 430 SPATTERDASH/STIPPLE KEYING MIX:
- Alternative mixes:
Spatterdash: 1-1½ parts Portland cement to BS 12, class 42.5 to 2 parts clean sharp sand. Mix to a thick slurry and keep well stirred.
Stipple: As for spatterdash plus SBR bonding agent, BBA certified to proportions recommended by manufacturer.
 - Apply spatterdash by throwing and stipple by brushing vigorously onto previously dampened background to a thickness of 3-5 mm and leave rough.
 - Keep damp with fine water spray or by covering with polyethylene until set and allow to dry out slowly before applying bedding.
- 460 SMOOTHING UNDERLAYMENT:
- A type recommended by the adhesive manufacturer.
 - Apply to the base and allow to dry before fixing tiles.

FIXING

- 510 FIXING GENERALLY:
- Check that there are no unintended colour/shade variations within the tiles for use in each area/room. Thoroughly mix variegated tiles.
 - Check that adhesive is compatible with background/base. Use a primer where recommended by the adhesive manufacturer.
 - Cut tiles neatly and accurately.
 - Unless specified otherwise fix tiles so that there is adhesion over the whole of the background/base and tile backs.
 - Before bedding material sets make adjustments necessary to give true, regular appearance to tiles and joints when viewed under final lighting conditions.
 - Clean surplus bedding material from joints and face of tiles without disturbing tiles.
- 520 ADVERSE WEATHER:
- Do not fix tiles if the temperature is below 5 deg C or in damp conditions.
 - Do not use frozen materials or apply finishes to frozen or frost covered surfaces.
 - Comply with manufacturers' recommendations for minimum/maximum temperatures when using proprietary adhesives.
 - Take adequate precautions to protect work from inclement weather, frost and premature drying out.
- 530 SETTING OUT:
- Joints to be true to line, continuous and without steps.

Project No :D071-01 –NBS- **M** Cement based levelling/wearing screeds/plastered/rendered/roughcast coatings
/ ceramic tiling /lino/carpet tiling/sheeting/edge fixed carpeting/painting/clear finishing

- Joints on walls to be truly horizontal, vertical and in alignment round corners.
- Joints in floors to be parallel to the main axis of the space or specified features.
- Cut tiles/slabs to be kept to the minimum, as large as possible and in unobtrusive locations.
- Joints in walls and floors to be in alignment.
- Where positions of movement joints are not specified they are to be agreed with the CA.
- Before laying tiles obtain approval of setting out from CA

- 550 **FLATNESS/REGULARITY OF TILING:** Sudden irregularities not permitted. When checked with a 2 m straight edge with 3 mm feet at each end, placed anywhere on the surface, the straightedge should not be obstructed by the tiles and no gap should be greater than 6 mm.
- 560 **LEVEL OF TILING ACROSS JOINTS:**
Maximum deviation between tile or slab surfaces either side of a joint, including movement joints to be:
1 mm for joints less than 6 mm wide.
2 mm for joints 6 mm or greater in width.
- 570 **MORTAR FOR BEDDING:** Unless specified otherwise:
- Cement: Portland cement to BS 12, class 42.5.
Sand for walls: To BS 1199, Table 1.
Sand for floors: To BS 882, grading limit M, but with not more than 10% passing a 150 micrometre sieve and not more than 3% passing a 75 micrometre sieve. Where fine sand is specified, grading limit F applies.
 - Batch proportions of mixes by weight or by using accurate gauge boxes on the basis of previously established weight: volume relationship(s). Allow for bulking of damp sand.
 - Mix materials thoroughly to a uniform consistence in a suitable forced action mechanical mixer. Do not use a free fall type (tilting drum) mixer. Use the minimum amount of water necessary to give required workability.
 - Use mortar within two hours of mixing at normal temperatures. Do not use after the initial set has taken place and do not retemper.
- 580 **POROUS TILES:** If to be bedded in cement: sand, soak in clean water for at least 30 minutes, and fix as soon as surface water has drained.
- 590 **COVERED TILE SKIRTINGS:** Bed solid to wall with **cement based adhesive** before laying floor tiles. Ensure joints in skirtings match and align with joints in floor tiling.
- 651 **THIN BED ADHESIVE - SOLID (WALLS):** Apply floated coat of adhesive to dry background
2
in areas of approximately 1 sq m and comb the surface with the recommended solid bed trowel. Apply thin even coat of adhesive to backs of dry tiles. Press tiles onto bedding with twisting/sliding action to give finished bed thickness of not more than 3 mm.
- 690 **CEMENT: SAND (WALLS):**
- Dampen background and apply float coat of 1:3-4 cement: sand mortar as clause 570 to an even thickness of not more than 10 mm. Finish with a wood float and allow to stiffen slightly before applying tiles.
 - Without delay, and using 1:2 cement: fine sand mortar, fill any keys and apply 2 mm thick coat to the entire back of each tile. Press tiles onto float coat and tap firmly into position.
- 780 **CHECKING TILE ADHESION:** As work proceeds and before the bedding has set, carefully remove random tiles to verify that there is the specified adhesion. Remove the initial adhesive, butter the removed tiles with fresh adhesive and refix.

MOVEMENT JOINTS/GROUTING/COMPLETION

- 815 **SEALANT MOVEMENT JOINTS FOR INTERNAL WALL & FLOOR TILING**
- Ensure that joints extend through tiles and bedding to substrate and that they coincide with any movement joints in the substrate.
Joint width: 6mm
 - Sealant: Cellular polyethylene
Colour: To suit tiles/grout.
 - Prepare joints and apply sealant as section Z22.
- 875 **GROUTING:**

- Grout tiles as soon as possible after bedding has set sufficiently to prevent disturbance of tiles.
- Ensure that joints are 6 mm deep (or the depth of the tile if less), and are free from dust and debris.
- Fill joints completely, tool to an approved profile, clean off surface and leave free from blemishes.
- Polish wall tiling with a dry cloth when joints are hard.

885 COLOURED GROUT: Check the potential risk of staining by applying the grout to a few tiles in a small trial area. If discolouration occurs apply a protective sealer to the tiles and repeat the trial.

910 PROTECTION GENERALLY: Adequately protect and keep clean all completed areas.
Clean off any droppings immediately.

920 PROTECTION OF FLOORS: Keep completed floors clear of traffic for at least four days and permit only light traffic for the next 10 days.

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

To be read with Preliminaries/General conditions.

TYPE(S) OF COVERING

150 LINOLEUM SHEETING

Location: - As floor layouts/schedules

Base: screed

Preparation: Made good /primer/self levelling screed as clause M10160

General Descriptions-Requirements

- Heavy-duty cork free homogenous linoleum flooring made from linseed oil, rosin, wood flour, limestone and non heavy metal pigments on jute backing, with a 30 plus year life cycle.
- The linoleum must have a minimum of 97% natural raw materials, of which 72% are rapidly within 10 years and a recycled content of at least 43% and has proven bacteriostatic properties.
- Linoleum must not contain any phalates, plasticisers, mineral oil and has been measured against all of the important sustainable global eco labels and has the following awards –
- Nature Plus (Germany), BRE Listed, Cradle to Grave Certificate, The Nordic Swan Label (Scandinavia), Austrian Environmental Label, the Dutch Milieukeur label, Sustainable Materials Rating Technology - SMART (USA), Good Environmental Choice (Australia), Ecolabelling Trust (New Zealand), The Environmental Quality Mark, (The Netherlands) and the British Allergy Foundation seal of approval.
- Be available in an 'Authentic Collection' which consists of 24 colours available up to 2020.
- Available in marbled, solid, patterned and linear formats.
- The linoleum must have a moisture tolerance of up to 4% on a CM Meter using Eurocol 414 adhesive as per the manufacturer's recommendation.
- The linoleum must have a Scientific and independent test report against The 'Norovirus Surrogate Virus' and an independent report against the growth of MRSA
- The matching welding bead must be multicoloured.
- The Topshield 2 factory finish is environmentally friendly water based two coat UV application that does not require any further sealing after installation and prevents staining, scuffing and scratching for lasting appearance retention and provides for easy cleaning and reduced maintenance costs.
- It is suitable for use in association with under-floor heating with a surface temperature of up to 27°.
 - o Base Preparation:
The subfloor to be smooth, clean, free from grease and dirt and in accordance with

BS 8203 or DIN 18 365.

Smoothing underlayment compound: Where necessary apply a smoothing and levelling compound as clause 461.

Moisture suppressing DPM: Where necessary with rising or residual moisture apply a 2 coat epoxy primer DPM

- Flooring roll: Linoleum linear sheet with 2 layer water based top shield factory applied protective finish, must have 97% natural raw materials, be 72% rapidly renewable ,with minimum 43% recycled content, with no cork flour and with independently published LCA test results. Linoleum must have independently proven natural bacteriostatic properties that prove MRSA does not grow and must have the British Allergy Foundations seal of approval that shows indoor allergens cannot breed. Linoleum installed with 414 adhesive must give a minimum 30yr warranty when installed and maintained as per manufacturer's instructions

BSEN685class23/34/42-2.5mm thick sheet

Width: 2000 mm

Thickness: 2.5 mm

Colour/pattern: As per schedule

Adhesive (and primer if recommended by manufacturer):

Forbofix 414.

Seam welding: Multi colour marmoweld

Can be hot seam welded, colour matched or contrasting, to ensure watertight seams or for decorative effect. Precision cut motifs and inserts do not require polish and do not need to be welded.

Accessories:

Linoform S Set-In coved skirting's and angles as clause 770

Self-coved skirting's former as clause 770

Sit- on PVC skirting's, edgings, nosing's, cover strips as clauses 740, 750, 770.

Finishing: No polish required

151 VINYL SAFETY SHEET FLOORING:

General Description: Heavy duty low maintenance slip resistant vinyl flooring -PUR Pearl textured surface- 0.7mm with a pigmented pure plasticised PVC wear layer with quartz and carborundum and coloured quartz particles. durability -Group T rating

Compliance with HSE recommendations: wet pendulum test ≥ 36 , surface roughness ≥ 20 microns.

- Location: - As floor layouts
- Base: screed
- Preparation: Made good /primer/self levelling screed as clause M10160
- Flooring roll: Flexible PVC sheet
- Manufacturer and reference: Contractors choice to CA approval
- Width: 2000 mm.
- Thickness: 2.0mm.
- Colour/pattern: to be selected by CA
- Adhesive and primer: as recommended by manufacturer
- Seam welding: Stepweld cable clause 770
- All seams to be correctly grooved out and heat welded with matching weld rod. Final finish trimming to be carried out when the weld has cooled following manufacturers instructions.
- Accessories: Self-coved skirting's former as clause 770
- Sit- on PVC skirting's, edgings, nosing's, cover strips as clauses 740, 750, and 770.
- Finishing: N/A

GENERALLY

210 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.
- 220 **SAMPLES:** Before placing orders, submit for approval a representative sample of each type of covering. Ensure that delivered materials match samples.
- 230 **CONTROL SAMPLE(S):** Complete area(s) of the finished work in approved location(s) and obtain approval of appearance before proceeding:
- 310 **MARKING:** Ensure that materials are delivered to site in original packing, clearly marked with batch number.
- 320 **STORAGE:** Store materials in a clean, warm, dry, well ventilated place. Keep in original packing until conditioning commences.
- 330 **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 CA not less than 48 hours before commencing laying.
- 340 **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 period by a factor of 2 for materials stored or transported at a temperature of less than 10°C immediately prior to laying.
- 350 **ENVIRONMENT:** Before, during and after laying, provide adequate ventilation and maintain temperature and humidity approximately at levels which will prevail after the building is occupied.

PREPARING BASES

- 410 **SUITABILITY OF NEW BASES AND CONDITIONS:** Laying of coverings will be taken as joint acceptance by the Main Contractor and Subcontractor of the suitability of the bases and conditions within any given area.
- 420 **SUITABILITY OF EXISTING BASES AND CONDITIONS:**
- Before commencing work the subcontractor must confirm (through the Main Contractor) 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.
- 430 **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.
 - Do not lay coverings until all readings show 75% relative humidity or less.
- 440 **SUBSTRATES:** The specifications for trowel led 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.
- 460 **SMOOTHING UNDERLAYMENT COMPOUND:** Latex cement type recommended for the purpose by the manufacturer. Mix and lay in accordance with manufacturer's recommendations.

470 EXISTING FLOOR COVERING TO BE REMOVED: Completely remove covering and as much adhesive as possible. Skim with smoothing underlayment compound to give a smooth, even surface.

LAYING COVERINGS

- 610 SET OUT TILES from centre of space/room unless specified otherwise, so that wherever possible:
- Tiles along opposite edges are of equal size, and
 - Edge tiles are more than 50% of full tile width.
- 620 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.
- 630 HEATING OF TILES, when recommended by manufacturer, to be carried out in accordance with manufacturer's recommendations. Do not overheat.
- 640 ADHESIVE FIXING GENERALLY:
- Adhesive: when not specified otherwise, 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.
- 650 PATTERNS to be accurately matched at seams.
- 660 SEAMS to be cut in to ensure a tight joint, without gaps.
- 670 BORDERS/FEATURE STRIPS of sheet material:
- Cut strips along the length of the sheet to prevent curl.
 - Mitre joints at corners.
- 680 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.
- 720 DOORWAYS: Make joint on centre line of door leaf unless specified otherwise.
- 770 SKIRTINGS
- Type: Self coved skirting
- Cove former: 38mmradius tapered to architraves. Securely bond to base and background using contact adhesive. Accurately mitre at corners.
- Top edge trim: Captile C8 – supply only – to be fitted by others where wall finish is PVC Cladding or ceramic tiles. HCS48 PVC capping strip to all other areas. Securely bond to background using contact adhesive, with top edge straight and parallel with floor.
- Turn flooring material up wall, securely bond to cove former and background using adhesive specified for fixing to base, and ease top of material into edge trim. Accurately mitre at corners. All joints to be hot welded in accordance with the manufacturer's instructions.
- Height: 100mm

- 780 **TRAFFIC:** After laying, keep floor covering type(s) M50/150,151,152 free from traffic for 7 days

COMPLETION

- 810 **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.
- 870 **PROTECTION:** Cover flooring with clean dust sheets, or other nonstaining 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.
- 880 **WASTE:** Retain spare covering material suitable for patching. On completion hand over to Employer pieces selected by CA.

M60 PAINTING/CLEAR FINISHING

To be read with Preliminaries/General conditions.

COATING SYSTEMS

- 110 **SPECIALIST HIGH PERFORMANCE COATINGS -ALL ROOMS/AREAS** (except where noted)
- General Description: Specialist hygienic coating, high resin content, excellent durability, minimum 10 year life span, scrub & abrasion resistant and repairable. Microbial resistance-single pack, water based coating system with low odour
- **Manufacturer:** Contractors choice to CA approval and as clause 210
 - **Location:** All internal non tiled walls/ceilings generally within existing building all rooms affected by works to be re-painted.
 - **Surfaces:** Internal new and previously painted work-walls/ceilings
 - **Preparation:** As clauses 440, 570 or 580.
 - **Primer:** One coat of White Primer
 - **Undercoat/Topcoat:** Two coats of topcoat eggshell @ 7-9 m²/litre
- PRODUCT PERFORMANCE**
- **Chemical resistance:** to include Sodium Hydroxide (5%), Potassium Hydroxide (5%), Sodium Hypochlorite (5%), Mild Anionic Detergent (15%) and Mild Cationic Detergent (15%).
 - The coating is also resistant to water, bacteria (including MRSA, E. coli
 - and Salmonella typhimurium) and fungi.
 - **Scrub resistance:** Scrub resistance tested to ASTM D2486 - 1200 cycles
 - **Cleaning:** withstand repeated cleaning with mild detergents
 -
 - **COLOURS AND FINISHES**
 - **Finishes:** Eggshell finish.
 - **Colours:** BS 4800, RAL Classic or NCS 2nd Series colour as standard. To be determined on site
- 130 **ALKYD GLOSS TO INTERNAL WOODWORK**
- **Manufacturer:** as clause 210.
 - **Surfaces:** new internal softwood/trims/architraves/doors etc.
 - **Preparation:** as clause 400.
 - **Initial coats:** 2 no. full coats of high gloss finish.
 - **Additional requirements:** sand down surface of first gloss coat. Finished paintwork to have a High decorative finish with a high standard of evenness, smoothness and gloss.
- .

- 133 **ALKYD GLOSS TO EXISTING INTERNAL WOODWORK**

Project No :D071-01 –NBS- **M** Cement based levelling/wearing screeds/plastered/rendered/roughcast coatings
/ ceramic tiling /lino/carpet tiling/sheeting/edge fixed carpeting/painting/clear finishing

- Manufacturer: as clause 210.
- Surfaces: previously painted existing internal doors and woodwork generally.
- Priming:
- Where paint has been completely removed prime with one coat of white wood primer.
- Making good:
- Make good all nail-holes, open joints etc, with a suitable filler, according to the manufacturer's instructions.
- Bring forward made good areas with one coat undercoat.
- Initial coat(s): one coat undercoat.
- Finishing coats: two coats of high gloss finish.
- Additional requirements: sand down surface of first gloss coat. Finished paintwork to have a high decorative finish with a high standard of evenness, smoothness and gloss.

134 ALKYD GLOSS TO EXISTING INTERNAL METALWORK

- Manufacturer: as clause 210.
- Surfaces: previously painted existing metalwork, radiators pipes generally-(refer to Mechanical/Electrical Engineers drawings/schedule.)
- Priming:
- Where paint has been completely removed prime with one coat of white wood primer.
- Making good:
- Bring forward made good areas with one coat undercoat.
- Initial coat(s): one coat undercoat.

- Finishing coats: two coats of high gloss finish.
 - Additional requirements:
- 160 ACID CATALYSED LACQUER TO INTERNAL HARDWOOD
- To all hardwood areas which have not been delivered prefinished. Manufacturer and reference: Contractors choice.
 - Type: acid catalyzed lacquer, 40% gloss, clear.
 - Surfaces: new hardwood door frames and architraves, hardwood skirtings, hardwood glazed screens and all exposed hardwood surfaces.
 - Preparation: as clause 400. Clean to ensure areas are free from dirt and grease, etc. Remove oils from surface by wiping with thinner or White Spirit. Abrade to remove sharp edges and any raised grain etc., working in the direction of the grain. Ensure all surfaces are fully dry before proceeding.
 - Application: apply by brush, 3 coats of acid catalyzed clear brushing lacquer 40: 404/A, 40% gloss with a light sanding between coats.
 - Additional requirements: lacquer system to be applied in accordance with manufacturer's recommendations. Finished lacquer to have a high decorative finish respects the finish on hardwood faced doors, as section L20. PM to approve appearance of control sample prior to proceeding
- 192 TWO PACK POLYURETHANE FINISH TO EXTERNAL GALVANISED STEELWORK
- Manufacturer: Contractors choice.
 - Type: two component acrylic polyurethane finish.
 - Surface: new external hot dip galvanised structural steel.
 - Preparation: remove surface contamination with oil and grease remover. Apply T-wash, thoroughly wash off and allow to dry.
 - Priming: prime with Etch Solution brush applied.
 - Initial coat: 1 coat @ 75um DFT.
 - Finish coats: 2 coats 2 pack polyurethane @ 50um DFT per coat spray applied.
 - Additional requirements: paint system to be applied in accordance with manufacturer's recommendations. Finished paintwork to have a high decorative finish with a high standard of evenness, smoothness and gloss.
- 193 BITUMASTIC PAINT
- Manufacturer: Contractors choice.
 - Surfaces: concealed surfaces of structural steelwork, within masonry walling cavities.
 - Preparation: prepare and prime as section G10. Make good damaged areas of primer.
 - Initial coat: one coat of bitumastic paint, protect membrane from atmospheric attack if it will be left exposed for more than 14 days after application.

GENERALLY

- 210 COATING MATERIALS
Selected manufacturer: submit name before commencement of coating work.
- 215 HANDLING AND STORAGE

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

220 COMPATIBILITY

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

280 PROTECTION

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

310 SUPERVISED CONTROL SAMPLES

- General: Carry out sample areas of finished work, including preparation to all areas
 - Give notice: When each stage is ready for inspection.
- Approval of appearance: Obtain before commencement of general coating work.

320 INSPECTION BY COATING MANUFACTURERS

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

PREPARATION

400 PREPARATION GENERALLY

- To BS 6150, Section 4.
- Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Substrates: Sufficiently dry in depth to suit coating.
- Efflorescence salts: Remove.
- Dirt, grease and oil: Remove. Give notice if contamination of surfaces/substrates has occurred.
- Joints, cracks, holes and other depressions: Fill with stoppers/fillers. Work well in and finish off flush with surface. Abrade to a smooth finish.
 - Water based stoppers and fillers: Apply before priming unless recommended otherwise by manufacturer. If applied after priming, patch prime.
 - Oil based stoppers and fillers: Apply after priming.
- Surface irregularities: Abrade to a smooth finish.
- Dust, particles and residues from abrasion: Remove.
- Doors, opening windows and other moving parts: Ease before coating. Prime resulting bare areas.

425 IRONMONGERY

- Before commencing work: Remove ironmongery from surfaces to be coated.
- Hinges: Do not remove.
- On completion of coating work: Refix.

430 EXISTING IRONMONGERY

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

440 PREVIOUSLY COATED SURFACES GENERALLY

- Preparation: To BS 6150, Section 6.
- Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
- Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.

- Alkali affected coatings: Completely remove.
 - Discovery: Give notice of:
 - Coatings suspected of containing lead.
 - Substrates suspected of containing asbestos.
 - Significant rot, corrosion or other degradation of substrates.
 - Retained coatings: Thoroughly clean to remove dirt, grease and contaminants. Abrade gloss coated surfaces to provide a key.
 - Partly removed coatings: Apply additional preparatory coats to restore original coating thicknesses. Abrade junctions to give a flush surface.
 - Completely stripped surfaces: Prepare as for uncoated surfaces.
- 471 PREPRIMED TIMBER
- Defective primer: Abrade back to bare timber.
 - Bare areas: Reprime.
- 461 PREVIOUSLY COATED TIMBER
- Degraded or weathered surface timber: Abrade to remove.
 - Degraded substrate timber: Repair with sound timber of same species.
 - Exposed resinous areas and knots: Apply two coats of knotting.
- 481 UNCOATED TIMBER
- General: Abrade to a smooth, even finish with arrises and moulding edges lightly rounded or eased.
 - Heads of fasteners: Countersink sufficient to hold stoppers/fillers.
 - Resinous areas and knots: Apply two coats of knotting.
- 500 PREPRIMED STEEL
- Defective primer, corrosion and loose scale: Abrade back to bare metal.
 - Bare areas: Reprime.
- 511 GALVANIZED, SHERARDIZED AND ELECTROPLATED STEEL
- Pretreatment: Apply one of the following:
 - 'T wash'/mordant solution to blacken whole surface.
 - Etching primer recommended by coating system manufacturer.
- 521 UNCOATED STEEL – MANUAL CLEANING
- Oil and grease: Remove.
 - Corrosion, loose scale, welding slag and spatter: Abrade to remove.
 - Residual rust: Treat with a proprietary removal solution.
 - Primer: Apply as soon as possible.
- 560 UNCOATED CONCRETE
- Release agents: Remove.
- 570 UNCOATED MASONRY/RENDERING
- Loose and flaking material: Remove.
- 580 UNCOATED PLASTER
- Nibs, trowel marks and plaster splashes: Scrape off.
 - Overtrowelled 'polished' areas: Abrade lightly.
- 590 UNCOATED PLASTERBOARD
- Depressions around fixings: Fill with stoppers/fillers.
- 622 ORGANIC GROWTHS
- Loose growths and infected coatings: Scrape off and remove.
 - Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.
 - Dead growth: Scrape off and remove.
 - Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.

- Biocides: Types listed in current Health and Safety Executive (HSE) 'Reference Book 500', Part B, as surface biocides.
- 611 WALLCOVERINGS
- Retained wallcoverings: Check that they are in good condition and well adhered to substrate.
 - Previously covered walls: Wash down to remove paper residues, adhesive and size.
- 622 ORGANIC GROWTHS
- Loose growths and infected coatings: Scrape off and remove.
 - Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.
 - Dead growth: Scrape off and remove.
 - Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.
 - Biocides: Types listed in current Health and Safety Executive (HSE) 'Reference Book 500', Part B, as surface biocides.
- 640 EXTERNAL POINTING TO EXISTING FRAMES
- Defective sealant pointing: Remove.
 - Joint depth: Approximately half joint width; adjust with backing strip if necessary.
 - Preparation and application: As section Z22.
 - Sealant: Compound of boiled linseed putty oil with burnt sand.
- 645 POINTING TO INTERNAL LOW MOVEMENT JOINTS
- General: Apply to junctions of walls and ceilings with architraves, skirtings and other trims.
 - Preparation and application: As section Z22.
 - Sealant: Water based acrylic.
- Manufacturer & product reference: Contractor's choice to CA approval.

APPLICATION

- 711 COATING GENERALLY
- Application: To BS 6150, Section 5.
 - Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
 - Surfaces: Clean and dry at time of application.
 - Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
 - Priming coats: Of adequate thickness and to suit surface porosity. Apply as soon as possible on same day as preparation is completed.
 - Finish: Even, smooth and of uniform colour. Free from brush marks, sags, runs and other defects. Cut in neatly.
- 720 PRIMING JOINERY
- Preservative treated timber: Retreat cut surfaces before priming.
 - End grain: Liberally coat, allow to soak in and then recoat.
- 730 WORKSHOP COATING OF CONCEALED JOINERY SURFACES
- General: Apply coatings to all surfaces of components.
- 751 STAINING TIMBER
- Primer: Apply if recommended by stain manufacturer.
 - Stain: Apply in flowing coats. Brush out excess stain before set. Produce uniform depth of colour.
- 760 VARNISHING TIMBER
- First coat: Thin with white spirit. Brush well in and lay off avoiding aeration.
 - Subsequent coats: Rub down lightly between coats along the grain.
- 770 EXTERNAL DOORS
- Bottom edges: Prime and coat before hanging doors.

780 BEAD GLAZING TO COATED TIMBER

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

-

800 GLAZING

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

810 WATER REPELLENT

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

N10 GENERAL FIXTURES/FURNISHINGS/EQUIPMENT

To be read with Preliminaries/General conditions.

COMPONENTS

150 FITTED UNITS: KITCHEN TO HOME ECONOMICS

- Drawing reference(s): D071-05
- To BS 6222 and BS EN 1153.
Dimensions and configurations to be in accordance with HTM 63. Construction and performance to be in accordance with HTM 67.
- Manufacturer and reference: Contractors choice to CA approval
Type: 18mm MDF Laminate
Structural performance to BS 6222: Part 2, grade H
Surface finishes performance to BS 6222: Part 3.
Doors/drawer finish/colour: Soft/slow close type-Clients choice
Side panel/plinth/shelves finish/colour: Clients choice
Worktop classification to BS 6222: Part 3, Type 1
Worktop finish/pattern/colour: Clients choice
Accessories: 200mm stainless steel handles to clients choice
- Sinktop: As section N13
Taps: As section N13
Waste and trap: As section N13

160 FITTED SHELVING UNITS:

- Drawing reference(s): D071-05
 - To BS 6222 and BS EN 1153.
 - Manufacturer and reference: Contractors choice to CA approval
- Type: Laminate-18mm MDF
Structural performance to BS 6222: Part 2, grade H
Surface finishes performance to BS 6222: Part 3.
Doors finish/colour: Laminate - colour to be selected
Side panel/plinth/shelves finish/colour: Light Oak Laminate-2 layers of 18mm bonded
Worktop classification to BS 6222: Part 3, Type 1
Worktop finish/pattern/colour: Light Oak Laminate
Accessories: 200mm stainless steel handles to clients choice

330 BLINDS:

Location: To all windows.
Manufacturer and reference: Contractor's choice to CA approval.
Operation: Vertical louvre /manual operation/metal bead chain/weighted cord.
Material/Finish/: Polyester powder coated rail/flame retardant fabric
Colour: Off white

INSTALLATION

- 710 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 CA, test components with approved moisture meter to manufacturer's recommendations.
- 720 INSTALLATION GENERALLY:** Methods of fixing and fastenings to be as section Z20 unless specified otherwise.
- 740 TAPS:** Fix securely, making a watertight seal with the appliance. Place hot tap to left of cold tap as viewed by user of appliance.
- 750 WASTES/OVERFLOWS:** Bed in waterproof jointing compound and fix with resilient washer between appliance and back nut.
- 760 SEALANT POINTING:**
- Sealant: Silicone based to BS 5889, Type B with fungicide.
Colour: To match background.
Manufacturer and reference: Contractor's choice to CA approval.
 - Application: As section Z22.
- 770 TRIMS:** Wherever possible to be in unjointed lengths between angles or ends of runs. Where running joints are unavoidable obtain approval of location and method of jointing. Mitre angle joints unless otherwise specified.
- 780 COMPLETION:**
- Ensure that doors and drawers are accurately aligned and do not bind. Adjust as necessary to ensure smooth operation.
 - Check, adjust and lubricate ironmongery as necessary to ensure correct functioning.

N15 SIGNS/NOTICES

To be read with Preliminaries/General conditions.

GENERALLY

- 110 GENERAL REQUIREMENTS: Detailed requirements and locations of signs are indicated on the relevant drawings
- 120 ROOM SIGNS RANGE:
- Unless specified otherwise, select signs from one manufacturer's range as far as possible. Where particular signs are unavailable, alternatives compatible in design, style, material, colour and finish may be submitted for approval.
 - Inform CA of selected range, manufacturer and/or supplier.
 - Fabrication/base material: Screen printed silver anodized aluminum
- 130 SAMPLES: Submit examples for approval. Keep approved samples on site for the duration of the contract:

TYPES OF SIGNS

- 210 SIGNS: FIRE SAFETY SIGNS-REFER TO SECTION P21
- 260 PUBLIC INFORMATION SIGNS EXTERNAL
- Standard:
- Layout and graphics: To HSE Signage design guide.
- Manufacturer: Contractors choice.
- Construction:
- Curved aluminum sheeting, satin anodized finish, and extruded powder coated aluminum posts with concealed fixing clips, infill fillets, and end caps.
- Lettering and Logos: vinyl cut, 3m Scotchal Opaque film series 100 or equivalent
- Fixing: Posts sets in concrete bases.
- Other requirements: refer to signage schedule.
- 261 PUBLIC INFORMATION SIGNS — INTERNAL
- Standard:
- Layout and graphics: To HSE Signage design guide.
- Manufacturer: Contractors choice.
- Construction:
- Extruded aluminum signage slats, satin anodized finish, with end caps and concealed fixings
- Lettering and Logos: vinyl cut, 3m Scotchal Opaque film series 100 or equivalent
- Fixing: Suspended ceiling fixed signs, wall fixed signs, door fixed signs, projecting wall fixed signs (refer to signage schedule for types).

Other requirements: refer to signage schedule.

270 DOOR SIGNS-

Location: Refer to finishes drawing/door schedule Layout and graphics: To HSE Signage design guide.

Manufacturer: Contractors choice)

Type: Nameplate with 30mm High Helvetica Letters Engraved & Filled Black with Room

Material - Anodised aluminium sheeting or alucabond with curved profile with end caps. Lettering to be '3m Scotchcal

Opaque Film Series 100 or equal approved

Size - Each panel 60 x 305mm

Text - Upper & Lower Case,

Text Colour - Pantone 561C

Typeface - Helvetica

Letter Height - Minimum 30mm

Location - 1500mm from floor

Braille/Tactile - English Standard located 6 mm below the bottom of the text or as advised by Client

- Method of fixing: Screw fixing
- Ferrous components must be drilled before the application of any finish

271 SIGNS: DIRECTIONAL-CEILING MOUNTED

Standard:

Layout and graphics: To HSE Signage design guide.

Manufacturer: Contractors choice.

Location: Refer to DRAWING

Product reference: Contractors choice to CA approval

Type: Ceiling Mounted Signage as indicated

Size - Each panel 100 x 400mm

Text - Upper & Lower Case, left justified with a left margin.

Text Colour - Pantone 561C with background of anodised aluminium.

Typeface - Helvetica

Letter Height - Standard 50mm with minimum 30mmPosition - Text to be aligned to the left and arrows aligned to the right

Surface: Nonreflective with a maximum gloss factor of 15% when tested to BS 2782: Part 5 or BS3900: Part D5.

Method of fixing: Screw fixing

- Ferrous components must be drilled before the application of any finish

272 SIGNS: DIRECTIONAL-WALL MOUNTED-

Standard:

Layout and graphics: To HSE Signage design guide.

Manufacturer: Contractors choice. to CA approval

Location: At external entrance-Refer to finishes drawing-

Product reference: Contractors choice to CA approval

Type: Wall Mounted Signage as indicated

Material - Anodised aluminium sheeting or alucabond with curved profile with end caps.
Lettering to be '3m Scotchcal
Opaque Film Series 100 or equal approved
Size - 600 x 300mm
Text - English & Irish with Upper & Lower Case.
Text Colour - Pantone 561C
Logo - HSE logo on a white Powder Coated background
Typeface - Helvetica
Letter Height - Minimum 150mm.
Position - Text to be centered on the sign.
Braille/Tactile - Standard located 6 mm below the bottom of the text. As advised by Client
Surface: Nonreflective with a maximum gloss factor of 15% when tested to BS 2782: Part 5 or BS 3900: Part D5.
- Method of fixing: Screw fixing
- Ferrous components must be drilled before the application of any finish

273 SIGNS: DIRECTIONAL-WALL MOUNTED-

Standard:

Layout and graphics: To HSE Signage design guide.
Manufacturer: Contractors choice. to CA approval
Location: -Refer to finishes drawing-
Wall Mounted Signs
Material - Anodised aluminium sheeting or alucabond with curved profile with end caps. Lettering to be '3m Scotchcal
Opaque Film Series 100 or equal approved
Size - Header 110 x 400mm with each panel 110 x 400mm
Text - Upper & Lower Case, left justified with a left margin.
Text Colour - Pantone 561C
Typeface - Helvetica
Letter Height - Header minimum 90mm. Lower panels minimum 30mm.
Position - Text to be aligned to the left and arrows aligned to the right.
Braille/Tactile - As advised by Client
Braille/Tactile - Standard located 6 mm below the bottom of the text. As advised by Client
Surface: Nonreflective with a maximum gloss factor of 15% when tested to BS 2782: Part 5 or BS 3900: Part D5.
- Method of fixing: Screw fixing
- Ferrous components must be drilled before the application of any finish

275274SIGNS: DIRECTIONAL-WALL MOUNTED-

Standard:

Layout and graphics: To HSE Signage design guide.
Manufacturer: Contractors choice. to CA approval
Location: -Refer to finishes drawing-
Wall Mounted Signs
Material - Anodised aluminium sheeting or alucabond with curved profile with end caps. Lettering to be '3m Scotchcal
Opaque Film Series 100 or equal approved
Size - Each panel 110 x 600mm
Text - Upper & Lower Case,
Text Colour - Pantone 561C
Typeface - Helvetica
Letter Height - Recommended 70mm Braille/Tactile - Standard located 6 mm below the bottom of the text. As advised by Client
Surface: Nonreflective with a maximum gloss factor of 15% when tested to BS 2782: Part 5 or BS 3900: Part D5.
- Method of fixing: Screw fixing
- Ferrous components must be drilled before the application of any finish

FIXING SIGNS

410 **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.

420 **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.

N25 PERMANENT ACCESS AND SAFETY EQUIPMENT

To be read with Preliminaries/General conditions.

TYPE(S) OF SYSTEM/EQUIPMENT

225 **FREESTANDING CONSTANT FORCE POST: MASS FRICTION ANCHOR**

General description: versatile anchorage capable of providing fall protection either as fall arrest or as fall restraint -allowing the anchor to be disassembled, moved and reassembled when and where required to create a safe access solution, complying with the recommendations of BS EN 795: 'Protection Against Falls From A Height – Anchorage Devices – Requirements And Testing ' Class E

- Manufacturer and reference: **Contractor's choice and to CA approval.**
- Type: Mass Friction anchor
- Material/Finish: Stainless steel/galvanised steel
- Location(s): -2 nr. to be provided to provided/stored to agreed location.
- Install in accordance with BS 7883.
- Provide with each anchor:
 - A backing disc giving the manufacturer's name and telephone number and the date of installation.
 - A certificate of compliance with testing and examination requirements of BS EN 365.

GENERAL REQUIREMENTS

DESIGN/PERFORMANCE REQUIREMENTS

430 **SAFETY:**

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

440 **DESIGN LIFE /MAINTENACE** Submit to the CA a schedule for maintenance and for replacement of components.

450 **TESTING OF PERMANENT SUSPENDED ACCESS EQUIPMENT:**

- Carry out testing of the roof rig at the manufacturer's/supplier's works. The rig must be capable of lifting and sustaining a proof load of 125% of the specified safe working load without suffering damage or permanent deformation.
- Immediately on completion of the installation, or when otherwise agreed with the CA, examine and test the complete installation in accordance with recommendations given in BS 6037, clause 19. Give adequate notice of testing arrangements to enable the CA and/or other affected parties to be present.

- Forward certificates for works and site testing to the CA within 7 days of completion of satisfactory acceptance tests.
- 460 ASSESSMENT/TESTING OF FIXING POINTS FOR ANCHOR DEVICES:
- For fixings in steelwork or timber, the design and installation should be verified by calculation by a qualified engineer to be capable of sustaining the relevant static and dynamic test forces specified in BS EN 795, clause 4.3.
 - For fixings in other materials the installer must verify the suitability by carrying out a test in a sample of the material. The sample must be capable of sustaining the relevant static and dynamic test forces specified in BS EN 795, clause 4.3. Thereafter, each structural anchor installed in that material must be subjected to an axial pull out force of 5 kN to confirm the soundness of the fixing. The structural anchor must sustain the force for a minimum of 15 seconds.

FABRICATION, ASSEMBLY AND INSTALLATION

- 510 FABRICATION AND ASSEMBLY GENERALLY:
- Carry out as much machine cutting, drilling and assembly as possible in the workshop. Obtain approval for any reassembly on site.
 - Isolate dissimilar metal surfaces of assembly components/supports/fixings to prevent electrolytic corrosion.
- 520 PROTECTION AND HANDLING:
- Protect all assembled items against damage, corrosion and disfigurement during handling, installation and subsequent site operations.
 - Do not deliver to site any components or assemblies that cannot be installed immediately or unloaded into a suitable well protected storage area.
- 530 SUITABILITY OF STRUCTURE/FABRIC:
- Before commencing installation carry out a visual and geometrical survey of the supporting building structure and fabric. Report immediately to the CA if structure/fabric will not allow the required accuracy or security of erection/ fixing.
- 540 MECHANICAL FIXINGS: Unless otherwise recommended by equipment manufacturer:
- Connecting bolts and other fixings fully accessible for inspection to be mild steel hot dip galvanized to BS 7371:Part 6. Nuts to be tapped after galvanizing.
 - Cast-in anchors and other fixings not accessible for routine inspection to be austenitic stainless steel, grade 1.4401 (316) to BS EN 10088:Part 1.
- 550 FIXINGS, INSERTS AND BOLTS for building in to be supplied by equipment manufacturer/supplier.
- 560 FIXINGS FOR SECURING EQUIPMENT must be capable of adequate three dimensional adjustment to accommodate building structure/fabric irregularities.
- 570 FIXING ANCHOR INSTALLATION:
- Site drill or cut into structure/fabric only in approved locations.
 - Distance between all fixing devices and edges of supporting material to be not less than recommended by fixing manufacturer.
- .
- 640 MARKING OF ANCHOR DEVICES:
- Provide on or near each anchor device a label or other clear marking giving:
 - Manufacturer's name and telephone number
 - Serial number and year of manufacture of device
 - Maximum number of personnel that may be attached to the device at any one time
 - Requirements for energy absorbers, ground clearance, etc.
 - Where an anchor device is intended solely for use with personal protective equipment, this restriction must be indicated by pictogram or other suitable marking on or near the device.

820 OPERATING INSTRUCTIONS: Where appropriate, ensure that equipment and accessories are marked in such a way that it is possible to identify the correct mode of operation for their safe use.

830 OPERATING AND MAINTENANCE MANUAL: Before Practical Completion provide for inclusion in the Building Manual printed instructions and recommended procedures to be established by the Employer for operating and routinely maintaining the equipment. Provide diagrams where appropriate. The information must include:

- Instructions for assembling/erecting equipment for use
- Comprehensive operating instructions, including safety and emergency procedures, for all motions including upward, downward and lateral travel, and slew
- Servicing and planned maintenance procedures, including assembly instructions where maintenance necessitates dismantling of machinery parts
- List of replacement parts, with references
- Recommended procedures for testing equipment.

840 AS INSTALLED DRAWINGS: After commissioning/testing of the equipment and before Practical Completion provide 2 sets of drawings for inclusion in the Building Manual.

Drawings must give:

- Contractor's name and contract number
- Location and date of installation
- Manufacturer's name, model and type number(s)
- General arrangement of the complete installation
- Electrical circuit wiring diagrams complete with details and ratings of all items of equipment.

P10 SUNDRY INSULATION/PROOFING WORK/FIRE STOPS

- 50 INSULATION FITTED BETWEEN STUDS
- Manufacturer and reference: Contractor's choice to CA approval.
Thickness: 100mm.
 - Fit tightly with closely butted joints, leaving no gaps. Use fasteners where necessary to prevent slumping.
- 70 FIRE STOPPING TO SERVICE PENETRATIONS BETWEEN WALLS & FLOORS: Ensure that any imperfections of fit between building elements which 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.

- 120 HARDWOOD ARCHITRAVING BOARDS
- Quality of timber and fixing: To BS 1186: Part 3.
Species: White Oak.
Class: CSH
Moisture content at time of fixing: 8 to 12 %
Desired service life: 60 years.
 - Profile: Chamfered
Finished size: 100 x 18 mm
 - Fixing: Screwed and pelleted @450mm crs. Brass screws.
 - Finish: As clause M60/111.
- 121 SOFTWOOD DOOR ARCHITRAVES
- Quality of timber and fixing: To BS 1186: Part 3.
Species: Pine
Class: 1
Moisture content at time of fixing: 10 to 14 %
 - Preservative treatment: Organic solvent as section Z12 and BWPDA Commodity Specification C5.
Desired service life: 40 years.
 - Profile: Chamfered
Finished size: 100 x 21 mm
 - Fixing: Lost head nail at 450mm centres
- 130 HARDWOOD TRIMS/CAPPING
- Quality of timber and fixing: To BS 1186: Part 3.
Species: White Oak. Formica
Class: CSH
Moisture content at time of fixing: 8 to 12 %
Desired service life: 60 years.
 - Profile: Chamfered
Finished size: 150 x 45 mm
 - Fixing: Screwed and pelleted @450mm c/c. Brass screws.
 - Finish: As clause M60/111.
- 135 WINDOW BOARDS
- Type: Formica laminated
 - Profile: Bull Nose
Finished size: 10mm thick to suit window length/depth
 - Fixing: Contactors choice.

- Special requirements: Splayed 45 degree where indicated.

P12 FIRE STOPPING SYSTEMS

To be read with Preliminaries/ General Conditions.

GENERAL

- 130 FIRE STOPPING SYSTEM TO INDIVIDUAL SERVICES PENETRATIONS (GAPS UP TO 40MM)**
 Service: metal pipes, conduits, trunking, ducts etc and plastic pipes or conduits with internal diameter no greater than 40mm.
 Location: fire resisting walls and all floor slabs.
 Manufacturer: Contractors choice
 Sealing material: emulsion based sealant with 10% butt joint movement accommodation factor (to 5-20mm wide gaps) or multi component sealant with 25% butt joint and 50% lap joint movement accommodation factor (to gaps up to 40mm wide) with primer and closed cell polyethylene backup strips.
 Method: completely fill gaps to manufacturer's instructions. Finish neatly to all visible areas.
 Requirement: 30 minute and 60 minute fire resistance as indicated on Fire Safety Plans.
- 140 FIRE STOPPING SYSTEM TO MULTIPLE SERVICES PENETRATIONS AND OPENINGS LARGER THAN 40MM IN MASONRY WALLS AND PLASTERBOARD PARTITIONS.**
 Manufacturer: Contractors choice.
 Type: Mineral fibre panel coated and jointed with fire resistant acrylic mastic, and integral support system to openings greater than 900mm.
 Sizes: 60mm thick panel.
 Fixing / special requirements: in accordance with manufacturer's instructions.
 Fixings must not incorporate plastics materials.
 Fire resistance: 30 minute and 60 minute fire resistance as indicated on fire safety plans
 Integrity: fit tightly and accurately to structure and services to maintain fire resistance. Fill gaps with intumescent material.
- 305 PRODUCT CERTIFICATION**
 Certification: For products specified generically, submit evidence of compliance with the specification.
 Acceptable evidence: Agrément Certificate.
- 380 INTUMESCENT COLLARS FOR PLASTIC PIPE PENETRATIONS OF FIRE RESISTING FLOORS AND WALLS**
 Manufacturer: Contractors choice
 Pipeline nominal sizes: 50, 82, 110, & 160 mm outside dia.
 Fixing: Bolt fixings in accordance with manufacturer's instructions.
 Fixings must not incorporate plastics materials.
 Fire resistance: 1/2 hour or 1 hour as indicated on fire safety plans.
 Integrity: Fit tightly and accurately to structure and pipe to maintain fire resistance. Fill gaps between collar and structure and/or pipe with intumescent material.
 Fit collars to both sides of plasterboard partitions where recommended by manufacturer.

EXECUTION

620 WORKMANSHIP GENERALLY

Gaps: Seal gaps between building elements and services, to provide fire resistance and resist the passage of smoke.

Adjacent surfaces: Prevent overrun of sealant or mortar on to finished surfaces.

660 INSTALLING INTUMESCENT FOAM

- New joints: Remove builder's debris, mortar droppings, grease, and the like.
- Old joints: Clean and remove existing sealant from the joint.
- Priming: Lightly moisten substrate with water.
- Application: Fill joint to approximately half its depth, allowing foam to expand to face of joint.
- Trimming: Do not trim or cut the face of the cured foam.

670 APPLYING INTUMESCENT MORTAR

- Sequence: Install mortar after services are permanently installed.
- Loose dust and combustible materials: Remove from the opening.
- Shuttering: Install suitable shuttering panels to the faces of the opening.
- Temperature: Do not apply mortar when it could be damaged by frost.
- Mortar cure: Do not disturb mortar before final set has taken place.
- Shuttering: Remove after mortar has cured

690 APPLYING INTUMESCENT PUTTY

- Sequence: Install putty after services are permanently installed.
- Loose dust and combustible materials: Remove from the opening.

710 INSTALLING BATTS

- Installing batts: Fit tight into void between the floor or wall and the penetrating services.
- Face of batts: Flush with the surface of wall, floor or soffit.
- Joints: Sealed with fire resistant sealant.
- Gaps between services and bulkhead: Seal with fire resisting sealant.

730 FIXING PIPE COLLARS

- Collar fixing: Screw / bolt fixings in accordance with manufacturer's instructions.
- Gap around collar: seal with joint filler and sealant.

P21 IRONMONGERY

To be read with Preliminaries/General conditions.

GENERALLY

121 IRONMONGERY FROM SINGLE PROPRIETARY RANGE

- Manufacturer: FSB or equal approved
- Principal material/ Finish: Satin Stainless Steel
- Items unavailable within selected range: Submit proposals.

130 APPROVED SUPPLIERS

- Source: All ironmongery available from the following: TBC

140 SAMPLES

- General: Before placing orders with suppliers submit labeled samples of the following: All Items.

- Conformity: Retain samples on site for the duration of the contract. Ensure conformity of ironmongery as delivered with labeled samples.
- 141 **SAMPLE BOARDS**
- General: Before placing orders with suppliers submit a sample board, containing labeled samples of ironmongery and showing methods of fixing.
 - Range: Include All Items .
 - Conformity: Retain board on site in an approved location for the duration of the contract. Ensure conformity of ironmongery as delivered with labeled samples.
- 170 **IRONMONGERY FOR FIRE DOORS**
- Relevant products: Ironmongery fixed to, or morticed into, the component parts of a fire resisting door assembly.
 - Compliance: Ironmongery included in successful tests to BS 476-22 or BS EN 1634-1 on door assemblies similar to those proposed.
 - Certification CERTIFIRE or Equal Third Party Independent Fire Testing Body.
 - Melting point of components (except decorative non functional parts): 800°C minimum.
 - CE Certificates required
- 180 **CATEGORY OF DUTY FOR DOOR IRONMONGERY**
- Standard: To DD 171.
 - Category of duty of doors: Heavy Duty.
 - General: Durability of ironmongery components to be compatible with stated category of duty of each door leaf.
 - Exclusions: Ironmongery with specific duty or 'category of use' defined elsewhere.
- Documentation: Before placing orders with suppliers submit documentation showing product compliance with stated category of duty.

DOOR HANGING DEVICES

- 310 **SINGLE AXIS DOOR HINGES**
- Standard: To BS EN 1935.
 - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
 - Manufacturer: Cooke Brothers.
 - A- Product reference: 7230 Hinge
 - B- 1mm Mono Ammonium Phosphate Intumescent Pack Cut to Suit Hinge
 - Type: Shrouded Bearing
 - Size: 101x76x3mm.
 - Material/ finish: Satin Stainless Steel
- Hinge Grade: 13
- Other requirements: Maintenance Free 25 Year Manufacturers Warranty
- 315 **PERFORMANCE SPECIFICATION FOR SINGLE AXIS DOOR HINGES GENERALLY**
- Standard: To BS EN 1935.
 - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
 - Minimum classification grades:
 - Category of use: 4
 - Durability: 7.
 - Test door mass: 6
 - Suitability for use on fire/ smoke doors: 1.
 - Safety: 1.
 - Corrosion resistance: 4.
 - Security - Burglar resistance: 0.
 - Hinge grade: 12
 - Type: Shrouded Bearing.
 - Size: 102 x 76 mm.

- Material/ finish: Satin Stainless Steel, grade 1.4301 (304)
Other requirements: - . Fire Tested with Independent CERTFIRE or equivalent
Independent Third Party Fire Testing & CE Certificate
25 Year Manufacturers Warranty
Maintenance Free

320 SINGLE AXIS DOOR HINGES GENERALLY

- Standard: To BS EN 1935.
 - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
- Product reference: PDH/HI/008
- Type: Concealed Bearing Hinge
- Size: 101x76x3mm.
- Material/ finish:SSS
- Hinge Grade: 14
- Other requirements: Maintenance Free
25 Year Manufacturers Warranty

325 PERFORMANCE SPECIFICATION FOR SINGLE AXIS DOOR HINGES GENERALLY

- Standard: To BS EN 1935.
 - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
- Minimum classification grades:
 - Category of use: 4
 - Durability: 7.
 - Test door mass: 6
 - Suitability for use on fire/ smoke doors: 1.
 - Safety: 1.
 - Corrosion resistance: 4.
 - Security - Burglar resistance: 0.
 - Hinge grade: 13
- Type: Shrouded Bearing.
- Size: 102 x 76 mm.
- Material/ finish: Satin Stainless Steel, grade 1.4301 (304)
Other requirements: - . Fire Tested with Independent CERTFIRE or equivalent
Independent Third Party Fire Testing & CE Certificate
25 Year Manufacturers Warranty
Maintenance Free

330 SINGLE AXIS DOOR HINGES GENERALLY

- Standard: To BS EN 1935.
 - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
- Product reference:
- Type: MU/
- Size: 102x3.3mm.
- Material/ finish: SSS
- Hinge Grade: 13
- Other requirements: To suit template drilled steel framed timber doors

335 PERFORMANCE SPECIFICATION FOR SINGLE AXIS DOOR HINGES GENERALLY

- Standard: To BS EN 1935.
 - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
- Minimum classification grades:
 - Category of use: 4
 - Durability: 7.
 - Test door mass: 6
 - Suitability for use on fire/ smoke doors: 1.
 - Safety: 1.
 - Corrosion resistance: 0.
 - Security - Burglar resistance: 0.

		teel Frame Pocket.	
		• Size: 102 x 3.3 mm.	
	-	Material/ finish: SSS, grade 1.4301 (304)	
		Other requirements: - . Fire Tested with Independent CERTFIRE or equivalent Independent Third Party Fire Testing & CE Certificate 25 Year Manufacturers Warranty	
		Maintenance Free	
	340	DOOR HINGE FINGER GUARD	
		Description: Gap-filling aluminium and fabric retrofit finger guard for doors	
		Manufacturer: Contractors choice to CA approval	
		Location: To all doors as indicated-to both pull and push	
		Product details:	
	• T	Push side:-Retrofit finger guard with patented gap-filling, finger ejection	
	y	Durable aluminium body and fabric finger ejection system, 1925mm long, for	
	p	44 -54mm	door
	e	opening up to 180°. As standard - SAA finish, char coal-grey retracting fabric,	
	:	including screw fixings.	
	B	Pull side: Retrofit finger guard 2000mm for hinge knuckle side of door, for door	
	a	opening up to 180 deg, SAA finish, including self-adhesive fixing.	
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- Material/ finish: Nickel plated brass.
- Other requirements: Successfully Type Tested to EN1303
Pextra Grade 6 Extra High Security, Anti-Bump,
Anti-Snap, Patented Protected Restricted Profile
6 Pin Anti Drill & Anti Pick Hardened Steel Pins

585 SNIB TURNS TO DOORS

- Manufacturer: Contractors choice to CA approval
 - Product reference: GDN EK3 70 RP NI.
- Type: Restricted Profile Key And Turn Cylinder.
- Material/ finish: Nickel plated brass.
- Other requirements: Successfully Type Tested to EN1303
Pextra Grade 6 Extra High Security, Anti-Bump,
Anti-Snap, Patented Protected Restricted Profile
6 Pin Anti Drill & Anti Pick Hardened Steel Pins

587 PRIVACY INDICATOR BOLTS TO TOILETS

- Manufacturer: Contractors choice to CA approval
 - Product reference: 1732 0054
- Type: Disabled WC Thumb turn t/s morticed lock c/w Thumb turn & Release c/w Indicator
Thumb turn to release under resistance from inside
- Material/ finish: SSS
Emergency release facility: Thumb turn to release under resistance from inside

DOOR FURNITURE

610 LEVER HANDLES TO INTERNAL DOORS GENERALLY

- Standard: To BS EN 1906 Exceeding Class 4
- Manufacturer: FSB Germany
 - Product reference: 7246
- Style: Return to Door section lever handle with radiused tip
Size: 20mm diameter t/s DT 44mm
- Material/ finish: SSS
- Mounting: Turnably Fixed Click On Concealed Fix 1743 1801 Turnably Fixed Roses
Additional requirements: With FSB 0102 Tolerance Compensator Bearing Spindle c/w Grub
Screw to Pierce Spring Plate.
Tested to 1 million cycles
Degree of slack 0.25mm when assembled hardware is at rest
60NM Torosional Rigidity of Spindle,
1000NM Tensile Stress on assembled fittings to prevent slippage
and drooping to suit heavy duty use.

620 DOOR KNOBS

- Standard: To BS EN 1906 CLASS 4
- Manufacturer: Contractors choice to CA approval
 - Product reference: 2304/ 06
- Style: Oval Shaped Offset Knob
- Size: 48 *77mm
- Material/ finish: SSS
- Mounting: Fixed Dead on FSB 1731 55x 7 x 1.5mm Rose c/w Bolt Through M5 Bolt Fixings
Additional requirements: With FSB 0177 Swivel Adjustable Threaded Tolerance
Compensator Bearing Spindle c/w Grub Screw to Pierce Spring Plate.
Degree of slack 0.25mm when assembled hardware is at rest,
60NM Torosional Rigidity of Spindle,
1000NM Tensile Stress on assembled fittings to prevent slippage and drooping

621 DOOR KNOBS

- Standard: To BS EN 1906 CLASS 4
- Manufacturer: Contractors choice to CA approval

- Product reference: 2326/ 04/06
- Style: Hartmut Weise Oval Shaped Offset Knob
- Size: 68 *82mm
- Material/ finish: SSS
- Mounting: Fixed Dead on FSB 1731 55x 7 x 1.5mm Rose c/w Bolt Through M5 Bolt

Fixings

Additional requirements: With FSB 0177 Swivel Adjustable Threaded Tolerance
Compensator Bearing Spindle c/w Grub Screw to Pierce Spring Plate.
Degree of slack 0.25mm when assembled hardware is at rest,
60NM Torosional Rigidity of Spindle,
1000NM Tensile Stress on assembled fittings to prevent slippage and drooping

622 PERFORMANCE SPECIFICATION FOR LEVER HANDLE SETS _____

- Standard: To BS EN 1906.
- Minimum classification grades:
 - Category of use: 4
 - Durability: 7
 - Door mass: - (no classification).
 - Fire resistance: 0
 - Safety: 1
 - Corrosion resistance: 3
 - Security: 0
 - Type of operation: U
- Style As indicated
- Size: As indicated
- Material/ finish: As indicated
- Mounting: Concealed Fixings Turnably Fixed
- Additional requirements: Heavy Duty Use

625 PERFORMANCE SPECIFICATION FOR KNOBSETS _____

- Standard: To BS EN 1906.
- Minimum classification grades:
 - Category of use: 4
 - Durability: 7
 - Door mass: - (no classification).
 - Fire resistance: 0
 - Safety: 1.
 - Corrosion resistance: 3
 - Security: 0
 - Type of operation: U
- Style As indicated
- Size: As indicated
- Material/ finish: As indicated
- Mounting: Concealed Fixing
- Additional requirements: Heavy Duty Use

641 PULL HANDLES

- Product reference: PH/00015/SS
- Shape: Round Section Straight Pull Handle
- Diameter: 25mm
- Distance between centres: 600mm
- Radius of Bend: 60mm
- Material/ finish: SSS
- Mounting: M8 Bolt Through Fixing

642 PULL HANDLES

- Product reference: CP/00101/SS
- Shape: Cylinder Pull Handle
- Material/ finish: SSS

- Mounting: DCSK Screw Fixing
- 645 LESS ABLED GRAB RAIL
- Product reference: PDH/1001/24 Manufacturers Standard or Equal Approved
 - Size: 600x32mm
 - Material/ finish: SSS
 - Mounting: Screw Fix
- Additional requirements: On Concealed Fixing Roses
- 670 PUSH PLATES
- Product reference: PDH/FP/105
 - Size: 700 x 80mm
 - Material/ finish: SSS
 - Mounting: Screw Fix
- Additional requirements: Drilled & Countersunk with Radiused Corners
- 680 MIDRAIL PLATES
- Manufacturer: Contractors choice to CA approval
 - Product reference: .
 - Size: 900 x 200mm or as indicated on schedule
 - Material/ finish: SSS
 - Mounting: Screw Fix
- Additional requirements: Drilled & Countersunk with Radiused Corners
- 690 KICK PLATES
- Product reference: PDH/KP/104
- Size: 900 x 200mm or as indicated on schedule
 - Material/ finish: SSS
 - Mounting: Screw Fix
- Additional requirements: Drilled & Countersunk with Radiused Corners
- .
- 695 KICK PLATES
- Product reference: PDH/KP/113
 - Size: 450 x 200mm or as indicated on schedule
 - Material/ finish: SSS
 - Mounting: Screw Fix
- Additional requirements: Drilled & Countersunk with Radiused Corners
- 710 ESCUTCHEONS TO INTERNAL DOORS
- Manufacturer: Contractors choice to CA approval
- Product reference: 1744 1801 PZ
- Type: Concealed Snap On
- Size: 55 x 7 x 1.5mm
- Material/ finish: SSS
- Keyhole type: Euro Profile
- Usage: To Suit Europrofile Sash locks where specified
- 725 DOOR STOPS
- Product reference: DS/00201/NP
 - Type: Heavy Duty Wall Mounted Projecting Door Stop 90mmx30mm high
 - Material/ finish:SSS- Usage: To doors opening against walls other than those fitted with door mounted coat hooks.
- 812 DOOR MOUNTED HAT & COAT HOOKS
- Product reference: A – FSB 8260 0005 Single
B - FSB 8260 0007 Double
 - Type: Solid Stainless Steel

- Size: Single 55mm Diameter
Double
 - Material/ finish: SSS
 - Fixing: Concealed Fix Sub Rose Screw Fixing
- 899 SIGNAGE
- Product reference: PDH/SS/SSS Series
 - Type: Circular Disc c/w Engraved Black Infill Symbol (Screen Printed Not Acceptable)
 - Size: 75mm
 - Material: SSS
 - Mounting: Drilled & Countersunk
 - A- MALE
 - B- FEMALE
 - C- UNISEX
 - D- DISABLED
 - E- BABY CHANGE
 - F- SHOWER
 - G- W.C.
- 899 SIGNAGE
- Product reference: PDH/FS/SSS
- Type: Circular Disc c/w Regulation Blue Background & White Lettering to BS 5499
 - Size: 75mm
 - Material: SSS (Plastic not acceptable)
 - Mounting: Drilled & Countersunk
- H- FIRE DOOR KEEP SHUT
I- FIRE DOOR KEEP LOCKED
J- AUTOMATIC FIRE DOOR KEEP CLEAR
- 900 DOOR SIGN
- Product reference: ENG/SIGN/SSS
- Type: Engraved Room Sign Letters 19mm High
 - Size: 300x50x14mm
 - Material: SSS
 - Mounting: DCSK
- 901 SIGNAGE GENERALLY
- Product reference: PDH/SIGN/XXX1
 - Type: Arial 25mm Lettering
 - Size: 25mm lettering as per name specified
 - Material: SSS (Plastic not acceptable)
 - Mounting: On 15mm Ø SSS Pillar with SSS Flat Threaded Cover Cap
 - A- FEMALE STAFF CHANGING
 - B- MALE STAFF CHANGING
- 1000 BREAK GLASS UNITS
- Manufacturer: Contractors choice to CA approval
- Product reference: 0700
 - Type: Green Break Glass Unit
 - Size: 85x85mm
 - Material: Plastic
 - Mounting: Concealed c/w Backbox
- 1001 RELEASE BUTTON
- Manufacturer: Contractors choice to CA approval
- Product reference: 0658
 - Type: Vandal Resistant Release Butto

- Project No :H025-14 –NBS- R Rainwater pipework/gutters/foul drainage above ground/drainage below ground/land drainage

Revision Schedule and status				
Issue No./Rev.	Amendments		Date	Checked

R10 RAINWATER PIPEWORK/GUTTERS

To be read with Preliminaries/General conditions.

TYPE(S) OF PIPEWORK/GUTTER

GENERAL

- 100 GRAVITY RAINWATER DRAINAGE SYSTEM.
Rainwater outlets: As per detail sections below
Gutters: As per detail sections below
Pipework: As per detail sections below
Accessories outlets: As per detail sections below

SYSTEM PERFORMANCE

- 210 DESIGN
Design: Complete the design of the rainwater drainage system
Standard: To BSEN12056-3:2000, clauses 3-7 and National Annexes
Proposals: Submit Drawings, technical information, calculations and manufacture's literature.
- 221 COLLECTION AND DISTRIBUTION OF RAINWATER
General: Complete, and without leakage or noise nuisance
- 230 DESIGN PARAMETERS - GENERAL
Roof and gutter construction and finish: As per detail sections below
Design Rate of rainfall: As per BSEN12056-3:2000, National Annex NB.2 - Category 1
Available capacity of existing below ground drainage (maximum):
TBC
- 250 PVC-U PIPEWORK FOR INTERNAL USE:
- Pipes, fittings and accessories: To BS 4514, Kitemark certified.
Manufacturer and reference: Contractors choice to CA approval
Nominal size(s), 100 as required by outlets
Colour: To be agreed on site.
Accessories: As required.
- Method of jointing: Push fit.
- Method of fixing: Clips at 1200mm centres plugged and screwed to walls.
- 311 ALUMINIUM GUTTERS
General description: Contemporary extruded aluminum box gutter profiles with secret fix brackets and all weather 'dry' jointing, with full provision for thermal movement. smooth, clean external appearance, with a uniform cross section along the whole length of the gutter.
Gutters and fittings to: BS 8530
Manufacturer: Contractors choice to CA approval
Profile: Box
Size: 120 x 80 (fast flow) mm
Outlet Size: 75 mm
Type / grade: Extruded from 6063 T6 alloy to BS1474:1972
Finish: Polyester powder coated to BS EN 12206-1:2004
Colour: To be advised
Jointing: Internal union clips placed over each butt joint and locked with

a slide lock within the front lip.

Fixing: The gutter is clip fixed with fascia bracket fixed at maximum 900mm centres and at each fitting. Brackets fixed to the wall using number 12 x 38mm round head twin thread screws and washers bright zinc plated.

Finish: Polyester powder coated to BS EN 12206-1:2004

Colour: To be advised

Additional requirements: BAA, IAB approved

360 ALUMINIUM DOWNPIPE FOR EXTERNAL USE:

General description: Contemporary extruded aluminum downpipes, Flush joint system / concealed spigots /smooth/clean appearance //Minimal maintenance requirements/ Compatible with gutter system/outlets.

Pipes, fittings and accessories: To BS 8530.

Manufacturer: Contractors choice to CA approval:

Size: 100 x 75mm rectangular

Type / grade: 6063 TF alloy

Finish: Polyester powder coated to BS EN 12206-1:2004

Colour: To be advised

Fixing: Pipe clip fixed at maximum 2.0m centres. Plug and screw to wall with number 12 x 50mm round head twin thread screws and washers bright zinc plated to BS 1706:1960

Class ZN3. Seal internal spigot joints with Dow corning 791 silicone sealant allowing for a 3-4 mm vertical thermal movement gap. **Note: In areas where wall is externally drylined bracket/fixing to be extended/and secured to original wall.**

Accessories: Bends, Branches, Access Pipes, 3 Piece Offset, Shoes, Rainwater Head, Pipe Clips

Additional requirements: BAA, IAB approved

370 RAINWATER OUTLETS: TO FLAT ROOF AREAS

High performance metal roof outlet suitable for continuous membranes/and existing reformed gutter outlet for vertical discharge

- Roof construction: Proprietary mechanically fixed roof system /taper insulation to original concrete deck-Polyester coated Life expectancy aluminium: 40 years
- Manufacturer and reference: Contractors choice to CA approval

Type: High performance metal roof outlet

Type of grate: Dome grate

Outlet: Type and direction to suit pipework with adaptors and connections recommended for the purpose by outlet manufacturer.

Accessories: As per manufacturer's instructions.

- Method of fixing: Bolt down clamping ring and grate as per manufacturer's instructions.

Additional requirements: BAA, IAB approved

INSTALLATION

400 BEFORE COMMENCING WORK specified in this section, ensure that:

- Below ground drainage is ready to receive rainwater or that the discharge can be dispersed by approved means to prevent damage or disfigurement of the building fabric.
- Any specified painting of surfaces which will be concealed or inaccessible is completed.

410 INSTALLATION GENERALLY:

- Install 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 rodding 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.
- 415 BUILDERS WORK: Comply with restrictions on the cutting of holes, chases, notches, etc. and methods of attachment to the building fabric specified in section P31.
- 417 PREPARATION OF EXISTING TIMBER BASES: Inform CA of any defective boards/sheets and comply with instructions for replacement. Ensure that all boards/sheets are securely fixed. Punch in any protruding fastenings and plane or sand as necessary to achieve an even surface.
- 420 FIXING GUTTERS:
- Set out to a true line and even gradient to ensure no ponding or backfall. Position high points of gutters as close as practical to the roof and low points not more than 50 mm below the roof.
 - Position outlets to align with connections to below ground drainage, unless shown otherwise on drawings.
 - Provide for thermal and building movement when fixing and jointing, and ensure that clearances are not reduced as fixing proceeds.
 - Seal as specified to make watertight.
 - Ensure that roofing underlay is dressed into gutter.
- 430 GUTTER BRACKETS: Fix securely at specified centres and at all joints in gutters, with additional brackets near angles and outlets.
- 435 SEALANT JOINTS IN GUTTERS:
- Spread jointing compound evenly over jointing face of socket.
 - For gutters with bolted joints, tighten joints in the gutter sole before any other bolts. Fit suitable washers, and spacers to prevent over tightening, unless specified otherwise.
 - Tighten fixing to squeeze out some compound.
 - Remove surplus, squeezed out compound and neatly clean off.
- 450 RAINWATER OUTLETS: Ensure that:
- Outlets are securely fixed before connecting pipework.
 - Junctions between outlets and pipework can accommodate all movement in the structure and pipework.
- 460 FIXING PIPEWORK:
- Fix securely at specified centres plumb and/or true to line.
 - Make changes in direction of pipe runs only where shown on drawings unless otherwise approved.
 - Fix branches and low gradient sections with uniform and adequate falls to drain efficiently.
 - Fix externally socketed pipes/fittings with sockets facing upstream.
 - Provide additional supports as necessary to support junctions and changes in direction.
 - Fix every length of pipe at or close below the socket collar or coupling.
 - Provide a load bearing support for vertical pipes at not less than every storey level. Tighten fixings as the work proceeds so that every storey is self supporting and undue weight is not imposed on fixings at the base of the pipe.
 - Isolate from structure where passing through walls or floors and sleeve pipes as specified in Section P31.
 - Provide for thermal and building movement when fixing and jointing, and ensure that clearances are not reduced as fixing proceeds.
 - Fix expansion joint pipe sockets rigidly to the building and elsewhere use fixings that allow the pipe to slide.
- 465 JOINTING PIPEWORK/GUTTERS:

- Joint using materials, fittings and techniques which will make effective and durable connections.
 - Joint differing pipework/gutter systems with adaptors recommended by manufacturer(s).
 - Cut ends of pipes to be clean and square with burrs and swarf removed. Chamfer pipe ends before inserting into ring seal sockets.
 - Ensure that jointing or mating surfaces are clean, and where necessary lubricated, immediately before assembly.
 - Form junctions using fittings intended for the purpose ensuring that jointing material does not project into bore of pipes, fittings and appliances.
 - Remove surplus flux/solvent/cement/sealant from joints.
- 485 COATED PIPEWORK/GUTTERS: Make good to coatings after cutting and any other damage or recoat, as recommended by the manufacturer.
- 490 PIPEWORK WITH UNSEALED JOINTS: Ensure that pipes are firmly secured to prevent rattling at joints and fixings.
- 510 ELECTRICAL CONTINUITY: Use clips or suitable standard couplings supplied for the purpose by pipework manufacturer to ensure electrical continuity at all joints in metal pipes with flexible couplings and which are to be earth bonded.
- 550 TESTING GENERALLY:
- Inform CA sufficiently in advance to give him a reasonable opportunity to observe tests.
 - Check that all sections of installation are free from obstruction and debris before testing.
 - Provide clean water, assistance and apparatus for testing as required.
 - Carry out tests as specified. After testing, locate and remedy all defects without delay and retest as instructed.
 - Keep a record of all tests and provide a copy of each to the CA.
- 570 GUTTER TEST: Block all outlets, fill gutters to overflow level and after 5 minutes closely inspect for leakage.
- 590 IMMEDIATELY BEFORE HANDOVER:
- Remove construction rubbish and debris from all roofs and gutters. Where possible, sweep and remove fine dust which may enter rainwater systems. Do not sweep or flush dust or debris into the rainwater system.
 - Remove swarf, debris and temporary caps from the entire rainwater installation.
 - Ensure that all access covers, rodding eyes, outlet gratings, etc. are secured complete with all fixings.

R11 FOUL DRAINAGE ABOVE GROUND

To be read with Preliminaries/General conditions.

TYPE(S) OF PIPEWORK

- 110 PVC-U PIPEWORK FOR DISCHARGE STACKS
- Pipes, fittings and accessories: PVC-U to BS 4514, Kitemark certified.
Manufacturer and reference: Contractors choice to CA approval
Nominal size(s), 100 as required by sanitary ware,
Colour: To be agreed on site.
Accessories: As required.
 - Method of jointing: Push fit.
 - Method of fixing: Clips at 1200mm centres plugged and screwed to walls.
- 120 PLASTICS PIPEWORK FOR INTERNAL SANITARY PIPEWORK-BRANCHES
- Pipes, fittings and accessories: Polypropylene to BS EN 1451-1., Kitemark certified.
Manufacturer and reference Contractors choice to CA approval

Size(s): DN 32-40mm, as required by sanitary ware – toilets, showers, and kitchen sinks,
Colour: White

- Accessories: As required
- Method of jointing: Push Fit
- Method of fixing: Plastic clips-colour to match

INSTALLATION

- 510 **PERFORMANCE CRITERIA:** Install pipework, fittings and accessories to ensure that:
- Appliances drain quickly, quietly and completely at all times without nuisance or risk to health.
 - Discharge is conveyed without crossflow, backfall, leakage or blockage.
 - Air from the drainage system does not enter the building.
 - Pressure fluctuations in pipework do not vary by more than +/- 38 mm water gauge and traps retain a water seal of not less than 25 mm.
 - The system can be adequately tested, cleaned and maintained.
- 520 **INSTALLATION GENERALLY:**
- Before commencing work specified in this section, ensure that any specified painting of surfaces which will be concealed or inaccessible is completed.
 - Install pipes, fittings and accessories in accordance with BS 5572.
 - Obtain all components for each type of pipework from the same manufacturer unless specified otherwise.
 - Provide access fittings and rodding 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 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.
- 530 **BUILDERS WORK:** Restrictions on the cutting of holes, chases, notches, etc., installation of pipe sleeves and stopping are specified in section P31.
- 540 **PIPE ROUTES** to be the shortest practical, with as few bends as possible and no bends in wet portion of soil stacks, unless specified otherwise. Pipe routes not shown on drawings to be approved before commencing work.
- 550 **FIXING PIPEWORK:**
- Fix securely at specified centres plumb and/or true to line.
 - Make changes in direction of pipe runs only where shown on drawings unless otherwise approved.
 - Fix branches and low gradient sections with uniform and adequate falls to drain efficiently.
 - Fix externally socketed pipes/fittings with sockets facing upstream.
 - Provide additional supports as necessary to support junctions and changes in direction.
 - Fix every length of pipe at or close below the socket collar or coupling.
 - Provide a load bearing support for vertical pipes at not less than every storey level. Tighten fixings as the work proceeds so that every storey is self-supporting and undue weight is not imposed on fixings at the base of the pipe.
 - Isolate from structure where passing through walls or floors and sleeve pipes as specified in section P31.
 - Provide for thermal and building movement when fixing and jointing, and ensure that clearances are not reduced as fixing proceeds.
 - Fix expansion joint pipe sockets rigidly to the building; elsewhere use fixings that allow the pipe to slide.
- 560 **JOINTING PIPEWORK:**

- Joint using materials, fittings and techniques that will make effective and durable connections.
 - Joint differing pipework 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.
- 600 COATED PIPES: Make good to coatings, after cutting and any other damage, or recoat as recommended by the pipe manufacturer.
- 710 ELECTRICAL CONTINUITY: Use clips 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.
- 730 IDENTIFICATION OF INTERNAL FOUL DRAINAGE PIPEWORK: To BS 1710 using self-adhesive bands or identification clips located at junctions, at both sides of each slab, bulkhead and wall penetration, and elsewhere as directed
- 740 AIR ADMITTANCE VALVES: Agrément certified.
- Install in a vertical position, above the flood level of the highest appliance served, and so that insulation materials (other than the manufacturers insulating cover) are kept clear of the valve body.
 - Fit using a ring seal connection, or in such a way that the valve can easily be removed to allow the discharge stack to be rodded.
 - Fit the manufacturers insulating cover in roof spaces and other unheated locations.
- 750 INTUMESCENT COLLARS: FOR PVC PIPE PENETRATIONS OF FLOORS & INTERNAL WALLS
- Manufacturer and reference: Contractors choice to CA approval
 - Pipeline nominal size(s): 100 -150 mm.
 - Fire rating: 1 hour.
 - Fixing: As required by location.
Do not use fixings incorporating plastics materials.
 - Fit tightly and accurately to structure and pipe to ensure maintenance of the specified fire resistance. Fill gaps between collar and structure and/or pipe with intumescent material recommended by the collar manufacturer.
- 800 ACCESS FOR TESTING AND MAINTENANCE:
- Install pipework 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.
- 810 TESTING GENERALLY:
- Inform CA sufficiently in advance to give him a reasonable opportunity to observe tests.
 - Check that all sections of installation are securely fixed and free from obstruction and debris.
 - Ensure that all traps are filled with clean water.
 - Carry out tests as specified. After testing, locate and remedy all defects without delay and retest as instructed. Do not use smoke to trace leaks.
 - Keep a record of all tests and provide a copy of each to CA.
- 820 PIPEWORK TEST:
- Temporarily seal open ends of pipework with plugs.
 - Connect a U tube water gauge and air pump to the pipework via a plug or through the trap of an appliance.

- Pump air into pipework until gauge registers 38 mm.
- Allow a period for temperature stabilisation, after which the pressure of 38 mm is to be maintained without loss for not less than 3 minutes.

830 SIPHONAGE AND BACK PRESSURE TESTS:

- Test WC pans by flushing and test other appliances by filling to overflow level, then removing the plug.
- Carry out tests at least 3 times with traps recharged before each test.
- Test each appliance individually for self siphonage, then test for induced siphonage and back pressure by discharging the following numbers of appliances simultaneously on each stack:

WCs: **1**

Washbasins: **1**

Sinks: **1**

Agree selection of appliances with CA.

- 850 IMMEDIATELY BEFORE HANDOVER:** Ensure that temporary caps have been removed and that permanent blanking caps, access covers, rodding eyes, floor gratings and the like are secured complete with all fixings.

R12 DRAINAGE BELOW GROUND

- 01 EXISTING DRAINS:** Before starting work, check levels and positions of existing drains, inspection chambers and manholes against drawings and report any discrepancies.

- 04 IN SITU CONCRETE:** To BS 5328, Gen 1 or equivalent or better mix subject to approval. Different mixes may be used for different parts of the drainage work.

14 PLASTICS PIPELINES FOR DRAINAGE GENERALLY

- Pipes, bends and junctions: PVC-U to BS EN 1401-1, class SN4, Kitemark certified. Manufacturer and reference: Contractor's choice and to CA approval.
- Size(s): DN 100
- Assumed type of subsoil: VI
- Bedding class P

15 PLASTICS PIPELINES- TWINWALLED PERFORATED

- Pipes, bends and junctions: PVC-U to BS EN 1401-1, class SN4, Kitemark certified. Manufacturer and reference: Contractor's choice and to CA approval
- Size(s): 100 MM
- Assumed type of subsoil: VI
- Bedding class: X

19 EXCAVATING PIPE TRENCHES:

- Trench width to be as small as practicable but not less than external diameter of pipe plus 300 mm.
- Trench sides must be vertical from bottom up to 300 mm above crown of pipe.
- Where the type of subsoil at the level of the crown of the pipe differs from that stated for the type of pipeline, obtain instructions before proceeding.
- Excavate to formation immediately before laying beds or pipes.
- Remove mud, rock projections, boulders and hard spots and replace with bedding material, well consolidated.
- Harden local soft spots by tamping in bedding material.

21 BEDDING/JOINTING GENERALLY:

- Lay pipes to true line and regular gradient on an even bed for the full length of the barrel with sockets (if any) facing up the gradient.
- Joint using recommended lubricants, leaving recommended gaps at ends of spigots to allow for movement.

- Comply with local authority requirements in respect of arrangement, flexible jointing, bedding and surround of pipes at junctions with manholes, foundation walls and other points where differential settlement may occur.
- 27 CLASS P FULL DEPTH GRANULAR SUPPORT:
- Granular material: 10 mm single sized aggregate to BS 882.
 - Lay and compact to a thickness not less than 100 mm. Scoop out locally at couplings/sockets and lay pipes digging slightly into bed and resting uniformly on their barrels. Adjust to line and gradient.
 - After initial testing, lay and compact by hand more granular material uniformly to 100 mm above crown of pipe.
- 35 CLASS X GRANULAR SURROUND FOR GROUND WATER:
- Lay 75 mm deep bed, at least 100 mm wider than pipe, with 10 mm single size material to BS 882.
 - Lay pipes and adjust to line and gradient.
 - Complete surround with more 10 mm single size material compacted to 150 mm above crown of pipe.
- 37 CLASS Y CONCRETE SURROUND FOR SHALLOW PIPES UNDER BUILDINGS:
- Where crown of pipe is less than 300 mm below underside of slab, encase pipe in concrete, of same mix as slab and cast integrally with slab. Extend length of concrete surround to within 150 mm of nearest flexible joint.
 - Excavate trench after hardcore has been laid and compacted.
 - Lay concrete blinding, 25 mm thick, over full width of trench.
 - Lay pipes on folding wedges of compressible board not less than 100 mm above blinding.
- 41 TRENCHES LESS THAN 1 M FROM FOUNDATIONS: Where bottom of trench is lower than bottom of foundation, use Class Z concrete surround. Top of concrete to be not lower than bottom of foundation.
- 44 BENDS AT BASE OF SOIL STACKS:
- Unless specified otherwise, use a 90° nominal re st bend with a minimum radius of 200 mm to centre line of the pipe.
 - Invert of horizontal drain at base of stack to be not less than 450 mm below centre line of lowest branch pipe.
 - Stabilize bend(s) by bedding in concrete without impairing the flexibility of couplings.
- 47 DIRECT CONNECTION OF GROUND FLOOR WCS TO DRAINS: Drop from crown of WC trap to invert of drain must not exceed 1.5 m. Horizontal distance from the drop to a ventilated drain must not exceed 6 m.
- 50 PLAIN GULLIES: GENERALLY
110mm Plain Gully and grate-or similar approved
- 50 UNIVERSAL GULLIES
110mm Universal Gully and grate–or similar approved
- 50 YARD GULLIES
Yard Gully and grate-or similar approved
- 54 ACCESS POINTS: TO DEPTH OF 600mm
Access Junction – Class C
- 58 INSTALLATION OF FITTINGS:
- Set fittings square with and tightly jointed to adjacent construction as appropriate.
 - Bed and surround fittings, traps, etc. in concrete, 150 mm thick, mix as clause 04.
 - Permissible deviation in level of gullies to be +0 to -10mm.

- 64 PLASTICS INSPECTION CHAMBERS IN HARDSTANDINGS & FOOTPATHS
- Manufacturer and reference: Contractor's choice and to CA approval
 - Bedding: 100mm granular material to BS 882
 - Surround: Not required
 - Backfilling: Granular material to BS 882
 - Concrete collar: Mix as clause 04, 300mm wide 225mm deep
 - Access covers and seating: FW: Class D400, 600 x 450mm heavy duty covers, stainless steel locking bolts.
- 69 CONVENTIONAL CHANNEL(S), BRANCHES AND BENCHING:
- Bed main channel solid in 1:3 cement: sand mortar. Connect branches to main channel, preferably at half channel level, so that discharge flows smoothly in direction of main flow.
 - Form concrete benching, mix as clause 04, to rise vertically from main channel to a height not lower than soffit of outlet pipe, then slope upwards at 10% to walls. Within 3 hours steel float with coat of 1:3 cement: sand mortar.
- 81 CONNECTION TO SEWERS: Connect new pipework to existing sewers to the requirements of the Adopting Authority.
- 84 TESTING/INSPECTION GENERALLY:
- Check that all sections of installation are free from obstruction and debris before testing.
 - Provide water, assistance and apparatus as required.
 - All lengths of drain, manholes and inspection chambers must pass the tests specified. If permitted test loss or infiltration is exceeded, remedy defect(s) before retesting after an appropriate period.
- 87 WATER/AIR TESTING OF DRAINS:
- To ensure that pipelines are sound and properly installed, air test short lengths to BS 8301, clause 25.6.3 immediately after completion of bedding/surround.
 - For final checking and statutory authority approval, water test to BS 8301, clause 25.6.2 all lengths of pipeline from terminals and connections to manholes/chambers and between manholes/chambers.
- 89 WATER TESTING OF MANHOLES/INSPECTION CHAMBERS: Before backfilling test each manhole or chamber in accordance with BS 8301, clause 25.7 for:
- Exfiltration: Drop in water level to be not more than relevant dimension in Table 9.
 - Infiltration: Inflow to be not more than 1 litre per hour per m² of manhole/inspection chamber wall. Repair any visible leaks.
- 91 BACKFILLING TO PIPELINES GENERALLY: Unless specified otherwise, backfill from top of specified surround or protective cushion with material excavated from the trench, compacted in 300 mm layers. Do not use heavy compactors before there is 600 mm of material over pipes.
- 94 BACKFILLING UNDER ROADS AND PAVINGS: Backfill from top of specified surround or protective cushion up to formation level with well graded gravel or hardcore passing a 75 mm sieve, well compacted in 150 mm layers.
- 97 CLEANING: Flush out the whole installation and remove all silt and debris immediately before handing over.

Project No :D071-01 –NBS H

ALUMINIUM STRIP/SHEET COVERINGS/FLASHINGS

Project No :H025-14 –NBS T Mechanical Heating/Cooling/Refrigeration
Systems

Revision Schedule and status

Issue No./Rev.

Amendments

Date

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