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1 C20 Demolition / Alteration / Renovation.

## C20 Demolition

To be read with Preliminaries/General conditions

### GENERAL REQUIREMENTS

#### 115 REFERENCE DRAWINGS

Please refer to Tender Documents. As indicated in Document, P2497 (SO) 102

#### 120 EXTENT OF DECONSTRUCTION/ DEMOLITION

- General: as indicated on the contract documents.

#### 130 GROUNDWORKS

- Old foundations, slabs and the like: Break out in locations and to the extents stated.
- Contaminated material: Remove, and carry out remediation required by the Enforcing Authority.

#### 140 BENCH MARKS

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

### SERVICES AFFECTED BY DECONSTRUCTION/ DEMOLITION

#### 210 SERVICES REGULATIONS

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

#### 220 LOCATION OF SERVICES

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

#### 230 SERVICES DISCONNECTION ARRANGED BY CONTRACTOR

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

#### 240 DISCONNECTION OF DRAINS

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

#### 250 LIVE FOUL AND SURFACE WATER DRAINS

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

#### 260 SERVICE BYPASS CONNECTIONS

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

#### 270 SERVICES TO BE RETAINED

- Damage to services: Give notice, and notify relevant service authorities and/ or owner/ occupier regarding damage arising from deconstruction/ demolition.

- Repairs to services: Complete as directed, and to the satisfaction of the service authority or owner.

## **DECONSTRUCTION/ DEMOLITION WORK**

### **310 WORKMANSHIP**

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

### **320 GAS OR VAPOUR RISKS**

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

### **330 DUST CONTROL**

- General: Reduce airborne dust by periodically spraying deconstruction/ demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.
- Lead dust: Submit method statement for control, containment and clean-up regimes.
- Precautions: Protect site operatives and general public from hazards associated with vibration, dangerous fumes and dust arising during the course of the Works.

### **350 ADJOINING PROPERTY**

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

### **380 DANGEROUS OPENINGS**

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

### **391 ASBESTOS-CONTAINING MATERIALS – UNKNOWN OCCURRENCES**

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

### **410 UNFORESEEN HAZARDS**

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

### **450 SITE CONDITION AT COMPLETION**

- Debris: Clear away and leave the site in a tidy condition.
- Other requirements: All existing internal areas of the building are to be fully protected during the contract. The contractor must take special care in areas that strip-out works are taking place and note the clinical nature of the facility.

## **MATERIALS ARISING**

### **510 CONTRACTOR'S PROPERTY**

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

### **511 EMPLOYER'S PROPERTY**

- Components and materials to remain the property of the Employer: Trust to provide a list of materials to be retained.

- Protection: Maintain until these items are removed by the Employer or reused in the Works, or until the end of the Contract.
- Special requirements: None.

520 RECYCLED MATERIALS

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

2 G20 Carpentry / timber framing / first fixing.

## **G20 Carpentry/ timber framing/ first fixing**

To be read with Preliminaries/ General conditions.

### **GENERAL**

#### **100 STRUCTURAL TIMBER**

- All timber used for structural elements to be in full accordance with BS 14080

#### **105 TIMBER PROCUREMENT**

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

#### **270A UNGRADED SOFTWOOD NON STRUCTURAL USE**

- Quality of timber: Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
- Surface finish: REGULARISED.
- Treatment:
  - Preservative treatment: Fire retardant impregnation to NBS section Z12 and Wood Protection Association Commodity Specification FR2, Type HR.

### **WORKMANSHIP GENERALLY**

#### **402 CROSS SECTION DIMENSIONS OF NONSTRUCTURAL SOFTWOOD**

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

#### **420 WARPING OF TIMBER**

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

#### **430A 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.
- All timber used on the project must be in full accordance with FSC supply criteria and achieve the requirements laid out under BREEAM.

#### **440 PROCESSING TREATED TIMBER**

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

450      MOISTURE CONTENT

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

510      PROTECTION

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

850      INSPECTION GENERALLY

- Structural timber-work: Give reasonable notice before covering up.



3 K10 Plasterboard dry linings / partitions / ceilings.

## **K10 Plasterboard dry linings / partitions / ceilings.**

To be read with Preliminaries/ General conditions.

### **TYPES OF DRY LINING**

#### **100 SCOPE OF WORK**

This includes, but is not necessarily limited to the supply, fabrication and installation of:

- Plasterboard dry-lining to external cladding, plasterboard metal stud partitions and plasterboard suspended ceilings and bulkheads on metal framing, all as indicated on the Architects' drawings. All partitions will be built full height from floor to structural soffit / under side of roof construction.
- Partitions will have a maximum deflection of 40mm (8m bays only) Generally 25mm. refer to Structural Engineers layout for locations.
- Generally all boards are to be skim finished.
- Flush access panels to plasterboard partitions.
- Flush access panels to plasterboard.
- Forming opening for doors, screens, reception hatches and the like as identified on the room layout drawings.
- Forming openings for all M & E services.
- Forming framing, and trimming for all fire dampers strictly in accordance with the approved fire tested detail. The actual sequence of work to be agreed jointly between the partition contractor and the services contractor.
- Responsibility for co-ordinating with the services contractor the fixing of the fire dampers.
- Forming Openings for air transfer grills as indicated on the engineer's drawings.
- Cavity barriers within plasterboard suspended ceilings.
- Angle/edge/movement joint beads, trims, jointing and finishes to receive decorations by others.
- Responsibility for setting out the partitions to a dimensioned plan or grid plan
- Responsibility for the supply and co-ordination of all information to the Contractor showing the requirements for support and fixing of the systems to the base structure.
- Responsibility for co-ordinating via the Contractor with the M & E Contractor to ensure complete resolution of the interface details between the plasterboard partitions and ceilings and the M & E installations.
- Arranging, carrying out and reporting on all material and assembly testing required by the specification, including testing of partitions acoustic performance on completion.
- Safe storage of material, on-site or off-site.
- All other builder's work in connection with the system not identified in the Scope of Works.
- Protection of all finished components during fabrication, transportation and installation to Practical Completion of the Contract or as otherwise advised by the Contractor.
- Provision of as-built drawings, specifications, method statements, programmes, quality control procedures and record and maintenance manuals as required by the Contract documentation.

- The preparation and submission for examination by the Design Team of all structural, thermal and acoustic calculations, data sheets, test reports and technical information associated with the Trade Contract.
- Responsibility for making good ceilings and walls, after the completion of Fire and Acoustic Stopping contractor work, to ensure all areas are left to the required acoustic rating and fire rating.
- Responsibility for leaving all walls & ceilings to a high quality for completion of decorations from sealer coat
- Re-attending to walls or ceilings should the building fail an on site air infiltration tests or acoustic field tests. This will include making good as required & attending retests.

## 102 REFERENCE DRAWINGS

Specification to be read in conjunction with the following contract drawings:

P2497 (SO) 101 – 108

P2497 (MK) 201 – 203

P2497 (SF) 301 - 302

## 105 METAL STUD PARTITION – 30min / 45Rw dB AS INDICATED on the Tender drawings.

Also to be used for fire risk rooms and fire protected corridors]

Drawing reference(s): [Refer to GA's & Details] Manufacturer and reference: [British Gypsum Ltd, East Leake, Loughborough, Leicestershire LE12 6JT Tel: 0870 545 6123 Fax: 0870 545 6356 [Email: BGTechnical.Enquiries@bpb.com](mailto:BGTechnical.Enquiries@bpb.com) Web: [www.british-gypsum.com](http://www.british-gypsum.com) Product reference: British

Gypsum GypWallTM CLASSIC, including Isowool APR 1200 insulation. Nominal thickness (excluding finishes): 120mm Fire resistance: 30 minutes Acoustic rating: n/a Partition duty to BS 5234: Parts 1 and 2: Severe] Studs: [72 / 70 S 50 Gyproframe 'C' studs] at [600] mm centres. Head

condition: [where channel is fixed to soffit of fire rated concrete floor Gyproframe 72DC60 Ceiling Channel, fixed to underside of concrete floor slab, and structural elements, as per British Gypsum standard details.] Deflection allowance: [Nominal 15mm, refer to clause 595 (refer to British Gypsum 60 minute fire rated 15mm deflection head detail)] Head condition: where

channel is fixed to metal deck soffit Gyproframe 72EDC80 Ceiling Channel, fixed to underside of metal deck soffit, and structural elements, as per British Gypsum standard details. Deflection allowance: nominal 25mm, refer to clause 595 (refer to British Gypsum 60 minute fire rated 25mm deflection head detail)] Lining(s): [To 2.4m above finished floor level:- 2 x 12.5 mm Gyproc WallBoard finish plus 1 x 12mm plywood to each side TBA From 2.4m above finished floor level to 2.7m above ffl or 100mm above ceiling height (whichever is the higher):- 2 x 12.5 mm Gyproc WallBoard to each side Above 2.7m above ffl or above 100mm above ceiling height (whichever is the higher) to soffit:- 1 x 12.5 mm Gyproc WallBoard to each side Edge: Tapered edge - with plaster skim joints] Fixing: As clause 590A. Cavity insulation: Type: [Isowool Acoustic Partition Roll 1200 glass mineral wool] Thickness: [50mm] Density: Not less than [n/a] kg/cu m. Sealant: As clause [n/a] Finishing: [Plaster joint as clause 671A.] Primer/sealer: [1 coat of Gyproc Drywall Primer.] Accessories: [Rigid beads/ stops, as clause 690] Other requirements:

[All services penetrations to be fire – proofed]

## 110 METAL STUD PARTITION – 60min / 56Ww dB AS INDICATED on the Tender drawings.

Drawing reference(s): [Refer to GA's & Details] Manufacturer and reference: [British Gypsum Ltd, East Leake, Loughborough, Leicestershire LE12 6JT Tel: 0870 545 6123 Fax: 0870 545 6356 [Email: BGTechnical.Enquiries@bpb.com](mailto:BGTechnical.Enquiries@bpb.com) Web: [www.british-gypsum.com](http://www.british-gypsum.com) Product reference: British

Gypsum GypWallTM CLASSIC, including Isowool APR 1200 insulation. Nominal thickness (excluding finishes): 145mm Fire resistance: 60 minutes Acoustic rating: 56Rw dB Partition duty to BS 5234: Parts 1 and 2: Severe] Studs: [72 / 70 S 50 Gyproframe 'C' studs] at [600] mm centres.

Head condition: [where channel is fixed to soffit of fire rated concrete floor Gyproframe 72DC60 Ceiling Channel, fixed to underside of concrete floor slab, and structural elements, as per British Gypsum standard details] Deflection allowance: [Nominal 15mm, refer to clause 595 (refer to British Gypsum 60 minute fire rated 15mm deflection head detail)] Head condition:

where channel is fixed to metal deck soffit Gyproframe 72EDC80 Ceiling Channel, fixed to underside of metal deck soffit, and structural elements, as per British Gypsum standard details.

Deflection allowance: nominal 25mm, refer to clause 595(refer to British Gypsum 60 minute fire rated 25mm deflection head detail)]Lining(s): [ To 2.4m above finished floor level:- 2 x 15 mm Gyproc Soundbloc plasterboard finish plus 1 x 12mm plywood to each sideFrom 2.4m above finished floor level to 2.7m above ffl or 100mm above ceiling height (whichever is the higher):- 1 x 12.5 mm Gyproc WallBoard plus 2 x 12.5 mm Gyproc Soundbloc to each side Above 2.7m above ffl or above 100mm above ceiling height (whichever is the higher) to soffit:- 1 x 12.5 mm Gyproc WallBoard 1 x 15 mm Gyproc Soundbloc to each sideJoint offsets: The joints between boards must not align between layers of board, joints should be offset by minimum 600mm as per clause 570.Edge: Tapered edge - with plaster skim joints]Fixing: As clause 590A.Cavity insulation:Type: [Isowool Acoustic Partition Roll 1200 glass mineral wool]Thickness: [50mm]Density: Not less than [n/a] kg/cu m.Sealant: As clause [n/a]Finishing: [Plaster joint as clause 671A.]Primer/sealer: [1 coat of Gyproc Drywall Primer.]Accessories: [Rigid beads/ stops, as clause 690]Other requirements: [All services penetrations to be fire-proofed ] .

- 120 METAL STUD PARTITION – Type X – 30min – Non acoustic rating – as indicated on the Tender drawings  
Drawing reference(s): [Refer to GA's & Details]Manufacturer and reference: [British Gypsum Ltd, East Leake, Loughborough, Leicestershire LE12 6JT Tel: 0870 545 6123 Fax: 0870 545 6356 [Email: BGTechnical.Enquiries@bpb.com](mailto:BGTechnical.Enquiries@bpb.com) Web: [www.british-gypsum.com](http://www.british-gypsum.com) Product reference: British Gypsum GypWallTM CLASSIC, including Isowool APR 1200 insulation.Fire resistance: 30 minutes protection to fire risk room side]Studs: [existing studs to be augmented with additional studs to achieve 72 / 70 S 50 Gypframe 'C' studs ] at [600] mm centres.Head condition: [where channel is fixed to soffit of fire rated concrete floor]Deflection allowance: [Nominal 25mm (to accommodate Corofil C500X Expansion Joint Fire Protection)]Lining(s): [To fire risk room side:  
To 2.4m above finished floor level:- 1 x 12.5 mm Gyproc Wallboard finish plus 1 x 12mm plywood From 2.4m above finished floor level to 2.7m above ffl or 100mm above ceiling height (whichever is the higher):- 2 x 12.5 mm Gyproc Wall Board Above 2.7m above ffl or above 100mm above ceiling height (whichever is the higher) to soffit:- 2 x 12.5 mm Gyproc Wall Board Immediately below soffit allow a 25mm deflection gap, fill deflection gap with Corofil C500X Expansion Joint Fire Protection Lining(s): To non-fire risk room sideNo works, retain existing plasterboard finish  
Edge: Tapered edge - with plaster skim joints]Fixing: As clause 590A.Cavity insulation:Type: [Isowool Acoustic Partition Roll 1200 glass mineral wool to 100mm above ceiling height]Thickness: [50mm]Density: Not less than [n/a] kg/cu m. Sealant: As clause [n/a]Finishing: [Plaster joint as clause 671A.]Primer/sealer: [1 coat of Gyproc Drywall Primer.]Accessories: [Rigid beads/ stops, as clause 690]Other requirements: [All services penetrations to be fire-proofed on fire risk room side]

## GENERAL/ PREPARATION

- 305 COMPLIANCE WITH PERFORMANCE REQUIREMENTS
- Testing/ Assessment: Submit UKAS accredited laboratory reports for the following: Fire resistance: Partitions (including deflection heads and door sets) and suspended ceilings (including access units).
  - Materials, components and details: As used in testing/ assessment reports. If discrepancies arise, give notice.
- 335 ADDITIONAL SUPPORTS
- Framing: Accurately position and securely fix to give full support to:
    - Partition heads running parallel with, but offset from main structural supports.
    - Fixtures, fittings and service outlets. Mark framing positions clearly and accurately on linings.
    - Board edges and lining perimeters, as recommended by board manufacturer to suit type and performance of lining.

## INSTALLATION

- 435 DRY LININGS GENERALLY
- General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.
  - Cutting plasterboards: Neatly and accurately without damaging core or tearing paper facing. - Cut edges: Minimize and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.

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

#### 455 METAL FRAMING FOR PARTITIONS/ WALL LININGS

- Setting out: Accurately aligned and plumb.
  - Frame/ Stud positions: Equal centres to suit specified linings, maintaining sequence across openings.
  - Additional studs: To support vertical edges of boards.
- Fixing centres at perimeters (maximum): 600 mm.
- Openings: Form accurately.
  - Door sets: Use sleeved or boxed metal studs and/ or suitable timber framing to achieve strength grade requirements for framing assembly and adequately support weight of door.
  - Services penetrations: Allow for associated fire stopping.

#### 510 SEALING GAPS AND AIR PATHS

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

#### 530 CAVITY FIRE BARRIERS WITHIN PARTITIONS/ WALL LININGS

- Metal framed systems:
  - Material: Wire reinforced mineral wool 50 mm (minimum) thick.
  - Installation: Form accurately and fix securely with no gaps to provide a complete barrier to smoke and flame.
- Adhesive fixed wall lining systems:
  - Material: Adhesive compound.
  - Installation: Form in a continuous line with no gaps to provide a complete barrier to smoke and flame.

#### 545 CAVITY FIRE BARRIERS WITHIN SUSPENDED CEILINGS

- Type: As recommended by board manufacturer to meet specified.
- Fire resistance: To BS 476-20, 60/60 minutes (Integrity/ Insulation).
- Ceiling void subdivision: Fix barriers not more than 20 m apart in any direction.
- Fixing at perimeters and joints: Secure, stable and continuous with no gaps, to provide a complete barrier to smoke and flame.
- Service penetrations: Cut and pack to maintain barrier integrity. Sleeve flexible materials. Adequately support services passing through barrier.
- Ceiling systems for fire protection: Do not impair fire resisting performance of ceiling system.

#### 560 JOINTS BETWEEN BOARDS

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

#### 595 DEFLECTION HEADS

- Fixing boards: Do not fix to head channels.

### FINISHING

#### 650 LEVEL OF DRY LINING ACROSS JOINTS

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

- Internal angles: Permissible deviation (maximum) for both faces: 5 mm.

680 SKIM COAT PLASTER FINISH

- Plaster and other wet Trades are not permitted on this project. All partitions are to be self-finished

692 RIGID BEADS/STOPS

- Internal: To BS EN 13658-1.  
And thermal movement: Make adequate allowance for further movement.

## 4 K40 Demountable Suspended Ceilings.

## **K40 Demountable Suspended Ceilings.**

To be read with Preliminaries/General conditions.

### **100 SCOPE OF WORK**

This includes, but is not necessarily limited to the supply, fabrication and installation of:

- Proprietary suspended ceilings and bulkheads suspended from the structural soffit using proprietary suspension systems.
- All vapour barriers, thermal insulation, trims, sealants, timber shadow battens and other accessories required in connection with the suspended ceilings.
- Supply of cut tiles as defined separately to accommodate service fixings.
- Fixing around services hung from the soffit which are integrated into the ceiling system
- Supply of Class O plywood Pattress's to quantities confirmed separately. Pattress's will be fitted to tiles with light fittings or equal where the weight of the fitting or hole size requires additional support. Maximum load of fittings that a tile can take and maximum size of holes that can be cut into a tile without additional support will be in accordance with the manufacturer's recommendation.
- Building around fixed items of equipment that are supported from the ceiling and interface with the suspended ceiling. (Curtain tracks, light pendants, hoists etc.)
- Forming of bulkheads, features etc. as indicated on the drawings.
- Responsibility for the supply and co-ordination of all information to the Contractor showing the requirements for support and fixing of the suspended ceilings to the base structure.
- Responsibility for the co-ordination of the ceiling system with the Services Contractor to ensure all fittings within and above the ceiling are compatible. This includes obtaining from the services contractor a list with reference/manufacturer names of all services fittings, to ensure that all fittings that are to be fixed within the ceiling are compatible and that the ceiling is capable of supporting these fittings and that any additional fixings or supports, which it is good practice to include, are included for such as additional support wires to lights and grilles.
- Drilling of structural components where permitted by the Structural Engineer. Adequate provision and locations of hangers to fully carry the loads of the ceiling system and service fittings supported off the ceiling.
- Provision of visual and quality control samples and mock-ups, including co-ordination with other Trade Contractors for the supply of components to be incorporated in the samples and mock-ups.
- Arranging, carrying out and reporting on all material and assembly testing required by the specification.
- Storage of material, on-site or off-site.
- All other builder's work in connection with the system not identified in the Scope of Works.
- Protection of all finished components during fabrication, transportation and installation to Practical Completion of the Contract or as otherwise advised by the Contractor.
- Provision of as-built drawings, specifications, method statements, programmes, quality control procedures and record and maintenance manuals as required by the Contract documentation.
- The Trade Contractor is to identify any derogation from HTM 60



102 REFERENCE DRAWINGS

Same as Tender Drawings.

103 HTM COMPLIANCE OF BUILDING COMPONENTS

-All ceilings are to be in full accordance with the design and installation criteria laid out under HTM60.

104 TYPES OF TILE AND USAGE

Tile Codes on Drawings. (Refer to drawings for locations) as indicated on the Tender Drawings

-C1 600 x 600 Ecophon Advantage A with Connect T24 Grid. suitable for weekly dusting and cleaning. 95% RH

-C2 600 x 600 Ecophon Meditec A with Connect T24 Grid. suitable for daily dusting and vacuum cleaning. Weekly wet wiping. 95% RH

**TYPES OF CEILING SYSTEM**

106A VOC CRITERIA

Suspended ceiling tiles used within this contract must comply with the requirements of BREEAM non-domestic new construction table 5-3.

European Standard: EN 13964:2004

Emission levels required: Formaldehyde E1 (testing reg 1) no asbestos.

110A SUSPENDED CEILING(S)

- Ceiling System: exposed grid system lay in tile
- Manufacturer: Ecophon Limited, Old Brick Kiln, Ramsdell, Tadley RG26 5PP.  
Tel: 01256 850977  
Fax: 01256 850600  
Contact: Lindsay Beck, Area Sales Manager, Tel: 07771 565391
- Absorption class Class A
- Suspension system: To include all hangers, fixings, main runners, cross members, primary channels, perimeter trims, splines, noggins, clips, bracing, bridging, etc. which are necessary to complete the installation and achieve the performance specified as recommended by the suspended ceiling/membrane manufacturer.
- Grid type: Ecophon Connect C1 T24 Main runner, white 010 with flexible hangers. Protective finish to suspension systems: normal conditions.
- In high humidity areas such as showers (refer to Architects layout) Grid type: Ecophon Connect C3 Corrosion resistant T24 Main runner, white 010 should be used.
- Perimeter trims: flat wall - Angle trim on timber batten, installed as per Ecophon integration detail T1\_A06. To be painted to match wall finish.
- Membrane materials(s) shall be Advantage A high density resin bonded glasswool. installed as per Ecophon installation diagram M119 600x 600 x 15mm  
-Finish/colour: Ecophon white 500 - Advantage  
-Installation to be in full accordance with Ecophon installation diagram M119, which includes information regarding minimum overall depth of system
- Accessories:
  - Connect Edge sealant to match
  - Ecophon Connect grid and accessories must be used with tile as complete system for warranty and weight loading purposes.

**GENERAL/ PERFORMANCE**

- 205 COMPLIANCE WITH PERFORMANCE REQUIREMENTS
- Testing/ assessment: Submit UKAS accredited laboratory reports for the following: Electrical continuity and earth bonding.
  - Materials, components and details: Use those used in the test and identified in the assessment reports. If discrepancies arise, give notice.
- 210 ENVIRONMENT
- Environmental classification to BS EN 13964: Normal.
- 235 ACOUSTIC PERFORMANCE
- All suspended ceiling systems are to be class A absorbers.

## COMPONENTS

- 240 SAMPLES
- General: Submit representative samples of the following: All ceiling files to be presented for final client approval prior use. .
- 245 STANDARDS
- Components: To BS EN 10346.
    - Aluminium sheet, strip and plate: To BS EN 485.
  - Aluminium bars, tubes and sections: To relevant parts of BS EN 515, BS EN 573, BS EN 755 and BS EN 12020.
- 255 EDGE BATTENS to be used as indicated in the ceiling types above
- Manufacturer: Contractors Choice.
    - Product reference: Timber.
  - Material: Planed softwood to BS EN 942, class J10; moisture content at time of fixing: 15% ± 2%.
    - Finished size: 50 x 25 mm.
  - Finish (apply before ceiling grid is installed): Prime, undercoat and final coat of matt (colour to match adjacent wall colour) to all surfaces.

## EXECUTION

- 306 SETTING OUT unless shown otherwise refer to the reflected ceiling layout drawings for all setting out requirements.
- General: Completed ceiling should present, over the whole of its surface exposed to the room below, a continuous and even surface, jointed (where applicable) at regular intervals.
  - Infill and access units, integrated services: Fitted correctly and aligned.
  - Edge/ perimeter infill unit size (minimum): Half standard width or length.
  - Corner infill unit size (minimum): Half standard width and length.
  - Grid: Position to suit infill unit sizes. Allow for permitted deviations from nominal sizes of infill unit.
  - Infill joints and exposed suspension members: Straight, aligned and parallel to walls, unless specified otherwise.
  - Suitability of construction: Give notice where building elements and features to which the ceiling systems relate are not square, straight or level.
- 310 BRACING
- General: Secure, with additional bracing and stiffening to give a stable ceiling system resistant to design loads and pressures.
- 315 PROTECTION
- Loading: Do not apply loads for which the suspension system is not designed.
  - Ceiling materials: When necessary, remove and replace correctly using special tools and clean gloves, etc. as appropriate.
- 325 INSTALLING HANGERS
- Wire hangers: Straighten and tension before use.
  - Installation: Install vertical or near vertical, without bends or kinks. Do not allow hangers to press against fittings, services, or insulation covering ducts/ pipes.
  - Obstructions: Where obstructions prevent vertical installation, either brace diagonal hangers against lateral movement, or hang ceiling system on an appropriate rigid sub-grid bridging across obstructions and supported to prevent lateral movement.

- Extra hangers: Provide as necessary to carry additional loads.
- Fixing:
  - Wire hangers: Tie securely at top with tight bends to loops to prevent vertical movement.
  - Angle/ strap hangers: Do not use rivets for top fixing.
- Spacings: in full accordance with system recommendations.

### 335 INSTALLING PERIMETER TRIMS

- Jointing: Neat and accurate, without lipping or twisting.
- External and internal corners: Mitre joints generally. Overlap joints at internal corners are not acceptable.
  - Intermediate butt joints: Minimize. Use longest available lengths of trim. Align adjacent lengths.
- Fixing: Fix firmly to perimeter wall, edge battens or other building structure.
  - Fasteners: as system specification.
  - Fixing centres: 450 mm.

### 340 EXPOSED GRIDS

- Grid fixings: Wire hangers.
- Main runners: Install level. Do not kink or bend hangers.
  - Spliced joints: Stagger.
  - Wire hangers passing through main runners: Use sharp bends and tightly wrapped loops.
  - Angle/ strap hangers: Do not use rivets for bottom fixing.
- Angular displacement of long axis of one runner in relation to next runner in line with it: Not visually apparent.
- Cross members supported by main runners or other cross members: Install perpendicular to intersecting runners.
- Cross tees: Flat and coplanar with flanges of main runners after panel insertion.
  - Cross tees over 600 mm long, cut and resting on perimeter trim: Provide an additional hanger.
- Holding down clips: Locate to manufacturer's recommendations.
- Fire protecting/ resisting ceiling systems: Use clip type featured in the fire test/ assessment.

### 355 INSTALLING INFILL UNITS

- General:
  - Perimeter infill units: Trimmed, as necessary, to fully fill space between last grid member and perimeter trim. Prevent subsequent movement.
  - Deeply textured infill units: Minimize variations in apparent texture and colour. In particular, avoid patchiness.
- Concealed grids: Install infill units uniformly, straight and aligned. Avoid dimension creep. - Infill units around recessed luminaires and similar openings: Prevent movement and displacement.

### 390 OPENINGS IN CEILING MATERIALS

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

### 395 INTEGRATED SERVICES

- General: Position services accurately, support adequately. Align and level in relation to the ceiling and suspension system. Do not diminish performance of ceiling system.
- Small fittings: Support with rigid backing boards or other suitable means. Do not damage or distort the ceiling.
  - Surface spread of flame rating of additional supporting material: Not less than ceiling material.
- Services outlets:
  - Supported by ceiling system: Provide additional hangers.
  - Independently supported: Provide flanges to support ceiling system.

### 401 CEILING MOUNTED LUMINAIRES

- Support: By ceiling system.
  - Independently supported luminaires: Suspension adjusted to line and level of ceiling.
  - Ceiling supported luminaires: Modifications and/ or extra support required: To each luminaire.
- Surface mounted luminaires: Units installed so that in event of a fire the designed grid expansion provision is not affected.

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

#### 425 INSTALLING CAVITY FIRE BARRIERS

- Maximum ceiling void dimension in any direction: As generally at 20m.
- Fixing: Secure barrier at head and base using proprietary angle support system.
  - General: Fix barriers securely to channels or angles at abutments to building structure.
  - At perimeters and joints: Provide permanent stability and continuity with no gaps to form a complete barrier to smoke and flame.
- Joints: Form to preserve integrity in fire.
- Service penetrations: Cut barriers neatly to accommodate services. Fit fire resistant sleeves around flexible materials. Fill gaps around services to fire barrier manufacturer's recommendations to maintain barrier integrity. Adequately support services passing through the barrier.
- Ceiling systems intended for fire protection: Do not impair fire resisting performance of ceiling system.
- Ceiling systems not intended for fire protection: Do not mechanically interlink barriers with ceiling system.

### COMPLETION

#### 520 USER INSTRUCTIONS

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

#### 530 SPARES

- General: At Completion supply the following: At completion supply the following: 2 boxes of tiles for each system.

- 540 POST INSTALLATION VISIT After completion of services installation and associated work by others - Thoroughly inspect the ceiling installation for defects. Prepare a schedule of outstanding defects and submit copy to the project Client.
- Check that tiles, integrated luminaires, diffusers etc are correctly fitted, aligned and cleaned.

## 6 L40 General Glazing

## L40 General Glazing

To be read with Preliminaries/ General conditions.

### GENERAL REQUIREMENTS

#### 100 SCOPE

The scope of the works includes the manufacture and installation of single and double glazed units. These will be applied externally or internally as located on the drawings and the scope will include the following: To be designed by a glass specialist taking into account all safety steps to protect the public and staff. The specialist will need to support all proposals with written technical approval from the glass supplier / manufacturers.

- All glazing will be class A safety except for conditions where fire rated glazing will only provide Class B however in these instances they must only be installed in accordance with locations identified in BS 6262.
- Framing members supporting single glazing – at both positive and negative applications of the peak outplane load, the maximum horizontal deflection shall not exceed 1/125 of the length measured along the pane edge of the span
- Framing members supporting double glazing – at both positive and negative applications of the peak out plane load, the maximum horizontal deflection shall not exceed 1/175 of the length measured along the pane edge or 15mm, whichever is the lesser , or more restrictive limits if set by the unit maker.
- Fire rated glazing will be clear
- Glazing acting as a barrier will be designed to BS 6180.
- Manifestation to large pieces of glass will be applied in accordance with the Building Regulations.
- Solar control glazing will be provided to areas indicated on the drawings. The type will be defined separately however the aim is to provide a neutral clear glass.
- Laminated glass will be provided to vertical with unsupported edges, sloping glazing and glazing acting as a barrier (the type of glass within the lamination will be designed by specialist.)
- Toughened glass will be heat soak tested to minimise nickel sulphide inclusions.
- Heat strengthened glass shall be tempered and will exclude \_ Leopard Spots\_
- Full opaque glazing units will have paint on face 2 (locations will be indicated on the drawings)
- Translucent glazing will be achieved using laminated glass with a white interlayer.
- Obscure glazing will be achieved using screen printing, sand blasting or laminated (including a white inter layer) each type will be specified separately (locations will be indicated on the drawings)
- Standards that apply to the glazing are:
  - BS 952
  - BS EN572 visual appearance will be to
  - BS EN572-2 & spot faults to category 3
  - BS 5750
  - BS 6026
  - BS 6180
  - BS 6262
  - DIN 18516 part 4
  - BS EN ISO 12543

- All glazing will be certified with a kite mark (or equal) and have a 12 year warranty.  
All double glazing will be hermetically sealed complying with BS 5750. This may require the use of low emissivity coatings.  
All glazing will be marked in accordance with BS 6026

The completed building will be designed to meet the recommendations of \_ Achieving Energy Efficiency in new Hospitals \_ and will be supported with a whole building calculation as set out in the Building Regulations.

Tenders will be based on with the U values set in the project BRUKL Report.

110 PREGLAZING

- Preglazing of components: Not permitted.

150 WORKMANSHIP GENERALLY

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

151 PREPARATION

- Surrounds, rebates, grooves and beads: Cleaned and prepared by others.

155 GLASS GENERALLY

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

156 TOUGHENED GLASS

- All toughened glasses shall be heat-soak tested to detect the possibility of failure due to nickel sulphide inclusions.

165 HEAT SOAKING OF THERMALLY TOUGHENED GLASS

- Standard: To BS EN 14179.
  - Holding period (minimum): To be confirmed by glass manufacture.
  - Mean glass temperature:  $290^{\circ} \pm 10^{\circ}\text{C}$ .
- Certified evidence of treatment: Submit.
- Designated locations: All locations.

7 M50 Rubber / Plastics / Cork / Lino / Carpet tiling /  
Sheeting



## **M50 Rubber / Plastics / Cork / Lino / Carpet tiling / Sheetting**

To be read with Preliminaries/ General conditions.

### **TYPES OF COVERING**

#### **150 SHEETING VINYL.**

Base: Screeded Substrate.

Manufacturers : Polyflor Ltd

Web : [www.polyflor.com](http://www.polyflor.com)

Tel: 0161 767 1122

Products: Polyflor Ultima Safety Floor, Polyflor Wood FX,

Material: Sheet flooring

Colour Pattern: to be confirmed

Requirements: Install as manufacturers recommendations

#### **460 SMOOTHING/LEVELLING UNDERLAYMENT COMPOUND**

ARDITEX NA

- Manufacturer: ARDEX UK Ltd

Web: [www.ardexcpdacademy.com](http://www.ardexcpdacademy.com)

Email: [cpd@ardex.co.uk](mailto:cpd@ardex.co.uk)

Tel: +44 (0)1440 714939

Fax: +44 (0)1440 716667

Address: Homefield Road, Haverhill, Suffolk CB9 8QP

- Product reference: ARDITEX NA Ultra Rapid Setting Sub-Floor Levelling and Smoothing Compound.

Consult Polysafe Flooring Ltd's and Burmatex Ltd. technical literature for recommendations

### **GENERAL REQUIREMENTS**

#### **210 WORKMANSHIP GENERALLY**

Base condition after preparation: Rigid, dry, sound, smooth and free from grease, dirt and other contaminants.

Finished coverings: Accurately fitted, tightly jointed, securely bonded, smooth and free from air bubbles, rippling, adhesive marks and stains.

#### **230 CONTROL SAMPLES**

General: Complete areas of finished work in approved locations as follows, and obtain approval of appearance before proceeding: All products .

#### **252 LAYOUT - PATTERNS**

Setting out: Agree setting out for covering types M50/ All Products .

#### **250 LAYOUT - ROLL MATERIALS**

Setting out of seams: Before placing orders agree setting out for sheeting types

#### **330 COMMENCEMENT**

Required condition of works prior to laying materials:

Building is weathertight and well dried out.

Wet trades have finished work.

Paintwork is finished and dry.

Conflicting overhead work is complete.

Floor service outlets, duct covers and other fixtures around which materials are to be cut are fixed.

Notification: Submit not less than 48 hours before commencing laying.

#### **340 CONDITIONING**

Prior to laying: Condition materials by unpacking and separating in spaces where they are to be laid. Maintain resilient flooring rolls in an upright position.

Unroll carpet and keep flat on a supporting surface.

Conditioning time and temperature (minimum): As recommended by manufacturer with time extended by a factor of two for materials stored or

transported at a temperature of less than 10C immediately prior to laying.

### **350 ENVIRONMENT**

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

Ventilation: Before during and after laying, maintain adequate provision.

### **PREPARING BASES**

#### **410 NEW BASES**

Suitability of bases and conditions within any area: Commencement of laying of coverings will be taken as acceptance of suitability.

#### **430 NEW WET LAID BASES**

Base drying aids: Not used for at least four days prior to moisture content testing.

Base moisture content test: Carry out in accordance with BS 5325, Annexe A or BS 8203, Annexe A.

Locations for readings: In all corners, along edges, and at various points over area being tested.

Commencement of laying coverings: Not until all readings show 75% relative humidity or less.

#### **440 SUBSTRATES TO RECEIVE THIN COVERINGS**

Trowelled finishes: Uniform, smooth surface free from trowel marks and other blemishes. Abrade suitably to receive specified floor covering material.

#### **460 SMOOTHING/ LEVELLING UNDERLAYMENT COMPOUND**

Type: Latex cement.

Selection: As recommended by covering manufacturer.

#### **470.SURFACE DAMP PROOF MEMBRANE**

Tufcote DPM is a two component surface damp proof membrane and vapour suppressant, based upon a solvent free epoxy resin formulation. Suitable for both interior and exterior applications.

Surface Damp Proof Membrane: Tufcote DPM 2 Coat

One coat surface damp-proof membrane and vapour suppressant

Solvent free. Pack Size: 10KG

Manufacturer: Building Chemical Research Ltd.

Sion Street, Radcliffe, Manchester, M26 3SJ, England.

Tel:0161 723 2237 Fax: 0161 724 7699 E-mail sales@buildchem.co.uk

#### **610 SETTING OUT TILES**

Method: Set out from centre of area/ room, so that wherever possible:

Tiles along opposite edges are of equal size.

Edge tiles are more than 50% of full tile width.

#### **640 ADHESIVE FIXING GENERALLY**

Adhesive: Type to be as specified, recommended by covering/ underlay manufacturer or as approved.

Primer: Use and type as recommended by adhesive manufacturer.

Application: As necessary to achieve good bond.

Finished surface irregularities: Trowel ridges and high spots caused by particles on the substrate not acceptable.

#### **720 DOORWAYS**

Joint location: On centre line of door leaf.

#### **740 EDGINGS/ COVER STRIPS**

Manufacturer: Gradus Accessories, Park Green, Macclesfield, Cheshire, SK11 7LZ.

Tel: 01625 428922 Fax: 01625 433949 Website: [www.gradusworld.com](http://www.gradusworld.com)

Email: [sales@gradusworld.com](mailto:sales@gradusworld.com)

Reference: RT42/ AFT 28: Coloured capping to be confirmed

Top Shape: Ramped

Material: PVC-u Top / Aluminium base

Colour: to be confirmed

Fixing: Base - Mechanical (screw) and adhesive fix – as per manufacturers instructions

#### **780 TRAFFICKING AFTER LAYING**

Covering types: All.  
Traffic free period: As per manufacturers guidance.

## **COMPLETION**

### **820 FINISHING**

Sheet flooring

Cleaning operations:

Wash floor with water containing neutral (pH 6-9) detergent. If necessary, lightly scrub heavily soiled areas.

Rinse with clean water, removing surplus to prevent damage to adhesive.

Allow to dry.

Emulsion polish: Two coats of a type recommended by covering manufacturer.

### **880 WASTE**

Spare covering material: Retain suitable material for patching. On completion submit pieces for selection. Hand over selected pieces to Employer.

## 8 M60 Painting / Clear Finishing

## M60 Painting / Clear Finishing

To be read with Preliminaries/General conditions.

### COATING SYSTEMS

#### 100 SCOPE

The scope of the work includes painting and finishing of the following:

- Internal site applied paint finishes to plasterboard, metalwork, joinery and block work.
- Clear finishes to timber.
- Specialist coatings to walls and ceilings.
- Wall coverings.
- All internal areas indicated on Drawing P2497 (SO) 101. Including the following.

All work will be prepared and completed to BS6150

General paints unless stated to be supplied by ICI Paints or equal approved supplier.

#### 105 REFERENCE DRAWINGS:

Specification to be read in conjunction with the following contract drawings and documents.

Same as Tender Drawings

#### 106 VOC CRITERIA

- All decorative paints and varnishes used within this contract must comply with the requirements of BREEAM non-domestic new construction table 5-3.
- European Standard: BS EN 13300:2001 referred to the criteria of Decorative Paint Directive 2004/42/CE.
- Emission levels required: VOC (organic solvent) content (testing req. 6) requirement for phase 2. Fungal and algal resistant.

#### 110A EMULSION PAINT To internal walls (GENERAL AREAS) as indicated on Finishes Schedule.

Manufacturer: Dulux Trade, brand of ICI Paints/AkzoNobel or equal approved

- Web: [www.duluxtrade.co.uk](http://www.duluxtrade.co.uk)
- Email: [john\\_ashford@ici.com](mailto:john_ashford@ici.com)
- Tel: +44 (0)870 242 1100
- Fax: +44 (0)1753 532827
- Address: Wrexham, Slough. SL2 5DS
- Product reference: Diamond Matt
- Colour: Refer to Architects Finishes Drawings and schedules
  - Wallboard primer by partition contractor left smooth and even. -Minor filling as required filling by decorator.
  - 1 mist coat of diluted Dulux Trade Diamond Matt.
  - 2 full coats of Dulux Trade Diamond Matt.
  - Additional coat to any thin area.
  - Full compliance with clause 106.

#### 150B SATINWOOD to internal door frames and architraves, and general joinery items.

- Manufacturer: Dulux Trade, brand of ICI Paints/AkzoNobel (Equal or Approved)

Web: [www.duluxtrade.co.uk](http://www.duluxtrade.co.uk)

- Email: [john\\_ashford@ici.com](mailto:john_ashford@ici.com)
- Tel: +44 (0)870 242 1100
- Fax: +44 (0)1753 532827
- Address: Wrexham, Slough. SL2 5DS
- Product reference: Diamond Eggshell

- System code: D1211 Dulux Trade Satinwood
  - Colour: Refer to Architect's Finishes Schedule
- System Code: D1330 Dulux Trade Diamond Satinwood  
 Surface Substrate: Wood - Interior non-resinous softwood / hardwood (Check timber types with door manufacturer prior to decoration)  
 Previous Coating: None / new  
 Surface Condition: Good  
 Durability Performance: High  
 Finish Type: Water-based  
 Sheen: Mid (Satin / Silk)  
 Brand: Dulux  
 Required Finish Coat: Dulux Trade Diamond Satinwood  
 Finish Coat Data Sheet: 521  
 Finish Coat Colour: See Colour Schedule  
 No. of Finish System Coats: 2
- Comply at all times with BS 6150: 2006 Code of Practice for Painting of Buildings (or as amended) and BS EN ISO 12944: 1998 Paints and Varnishes - Corrosion Protection of Steel Structures by Protective Paint Systems (or as amended).
  - AkzoNobel Decorative Paints will not accept responsibility for any unauthorised amendments or usage of the wording contained in this System sheet and in Paint's Site Work Instructions v5.
    - In order to achieve the optimum results, it is extremely important to adhere to the systems and AkzoNobel Decorative Paint's Site Work Instructions v5 quoted.
  - Products supplied for the carrying out of this specification are compliant with Statutory Instrument 2005 No. 2773 (Environmental Protection) - The Volatile Organic Compounds in Paints, Varnishes and Vehicle Refinishing Products Regulations 2005.

#### Preparation

Woods with a knot content above that specified in BS EN 942 should not be used. New wood should ideally be preservative impregnated. In some situations this may be mandatory. Thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Carefully remove any plaster or mortar deposits. Remove oils from surface by wiping with White Spirit. Abrade overall to remove any raised grain and round all sharp edges to a 3mm radius and \*dust off. Apply two thin coats of an appropriate knotting solution to all knots and resinous areas and allow to harden. Ensure all surfaces are fully dry before proceeding.

#### Note

\*When rubbing down dry and/or dusting off wear a suitable face mask to avoid the inhalation of dust.

(See ICI Trade Paints Site Work Instructions v5 Clause SW4.20 for further information.)

#### Priming

One coat of Dulux Trade Metal Primer

Spot prime any bare metal, metal fixings nail heads etc with: 1 coat of Dulux Trade Metal Primer.

One coat of Dulux Trade Diamond Satinwood

Prime overall with: 1 coat of Dulux Trade Diamond Satinwood thinned up to 1 part Water to 10 parts of product as appropriate.

#### Making Good.

Make good all nail-holes, open joints and open grain etc. with a Polycell Trade filler appropriate to the surface and according to the manufacturer's instructions. Allow making good to dry before being rubbed down smooth and

\*dusted off.

#### Fillers

Use only good quality/compatible materials and follow the manufacturers' recommendations for use, even if at variance with this system.

#### Note

\*When rubbing down dry and/or dusting off wear a suitable face mask to avoid the inhalation of dust.

(See ICI Trade Paints Site Work Instructions v5 Clause SW4.20 for further information.)

#### NOTE

Linseed oil putty is not suitable for use under woodstains, varnishes or water based systems.  
Finishing System  
2 coats of Dulux Trade Diamond Satinwood of selected shade.  
-Full compliance with clause 106.

## **GENERALLY**

### 210 COATING MATERIALS

- Manufacturers: Obtain materials from any of the following:  
ICI Paints,  
Wrexham Road,  
Slough,  
Berkshire SL2 5DS  
Tel:08444 817 818  
Or equal approved.
- Selected manufacturers: Submit names before commencement of coating work.

### 215 HANDLING AND STORAGE

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

### 220 COMPATIBILITY

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

### 230 APPLICATORS WORKING PROCEDURES (INTUMESCENT COATINGS)

- Comply with Nullifire requirements, specific project recommendations and all relevant product literature. Immediately after completion of the work submit copies of the quality control records as specified in the contract documents

### 230A APPLICATORS PERSONNEL (INTUMESCENT COATINGS)

- Applicator's personnel must have appropriate skill in applying and general knowledge of anticorrosive and System S Coatings.  
Provide evidence of competence and experience on request e.g. Firas, LPCB or Nullifire Applicator Course.

### 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.

### 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

- Standard: In accordance with BS 6150.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.

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

#### 420 FIXTURES AND FITTINGS

- Removal: Before commencing work remove: doors prior to coating frames. All Group 1 and 2 fittings.
- Replacement: Refurbish as necessary, refit when coating is dry.

#### 425 IRONMONGERY

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

#### 440 PREVIOUSLY COATED SURFACES GENERALLY

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

#### 461 PREVIOUSLY COATED WOOD

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

#### 471 PREPRIMED WOOD

- Areas of defective primer: Take back to bare wood and re-prime.

#### 500 PREPRIMED STEEL

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

#### 580 UNCOATED PLASTER

- Nibs, trowel marks and plaster splashes: Scrape off.
- Over trowelled 'polished' areas: Key lightly.

#### 590 UNCOATED PLASTERBOARD



- Depressions around fixings: Fill with stoppers / fillers.

#### 645A SEALING OF INTERNAL MOVEMENT JOINTS

- General: To junctions of walls and ceilings with architraves, skirtings and other trims.  
Sealant: Water based acrylic.
- Manufacturer: [Adshead Ratcliffe, Derby Road, Belper, Derbyshire DE56 1 WJ, England.  
Telephone: 01773 826661  
Fax: 01773 821215  
Internet: [www.arbo.co.uk](http://www.arbo.co.uk).  
Product reference: [Arbocaulk].
- Preparation and application:  
Joint preparation  
The joint surfaces must be clean, dry and free from all contamination. The surfaces should be degreased using the appropriate Arbo Cleaner.  
Joint Backing: Where applicable, appropriate joint filler e.g. closed cell polyethylene foam, should be used to provide the correct joint depth.  
Application: All joint preparation, priming, and sealant application should be carried out in accordance with BS 8000 Part 16, the British Standard for the sealing of joints in buildings using sealants.  
Arbocaulk is supplied in polyethylene 380ml cartridges and can be applied using an Arbo Caulking Gun  
Joint Size Suitability  
Joint Width  
Minimum 6mm  
Maximum 20mm (single application); for advice on multiple applications please contact Adshead Ratcliffe Technical Services Department.  
Joint Depth  
Minimum 10mm on porous substrates  
Minimum 6mm on non-porous substrates  
Maximum 10mm  
Width: Depth ratio (within above min/max restrictions) 1:1

### APPLICATION

#### 711 COATING GENERALLY

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

#### 720 PRIMING JOINERY

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

#### 730 WORKSHOP COATING OF CONCEALED JOINERY SURFACES

- General: Apply coatings to all surfaces of components.

## 9 N10 General Fixtures / Furnishings / Equipment

## N10 General Fixtures / Furnishings / Equipment

To be read with Preliminaries/General conditions.

### PRODUCTS

#### 100 SCOPE

- The supply and installation of general fixtures and fittings to be supplied loose or fixed to the fabric of the building.
- All fixtures and fittings will be scheduled from room loaded drawings and located in accordance with these drawings
- All fixtures and fittings will comply with recommendations for strength, stability and quality set out in relevant sections of British Standards
- The scope of this specification will include all wall mounted writing or display, isolated small cupboards, mirrors, racks, rails, towel rails, shelves.
- All items shall be securely fixed and be level. Items not level will be removed, re-fixed and walls made good.

#### 193A WHITEBOARDS GENERALLY

- Type: Marker pen.
- Manufacturer: Sundeala Ltd..
  - Product reference: Freshman Dry Wipe Board.
- Frame:
  - Material: Aluminium.
  - Finish/ Colour: Satin silver anodized.
- Size: As indicated on Tender Drawings
- Accessories: 1 set of whiteboard pens and 1 eraser with each board.

#### 195A NOTICEBOARDS GENERALLY

- Type: Wall mounted.
- Use: Pins.
- Manufacturer: Sundeala Ltd..
  - Product reference: Notice Boards.
- Size: As indicated on Tender Drawings.
- Fire resistance: Class 0.
- Board:
  - Covering finish/ Colour: FRB Colour.
- Frame: Aluminium.
  - Finish/ Colour: Satin silver anodized.

#### 200A WORKTOPS As Tender Drawings.

- Manufacturer: Adshead Ratcliffe & Co Ltd.
- Product reference: Arbosil 1081.
- Colour: SL8130CWH.

### EXECUTION

#### 710 MOISTURE CONTENT OF WOOD AND WOOD BASED BOARDS

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

#### 720 INSTALLATION GENERALLY

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

### COMPLETION

910 GENERAL

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

920 APPLIANCES

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

10 P20 Unframed isolated trims/ skirtings/ sundry items

## **P20 Unframed isolated trims/ skirtings/ sundry items**

To be read with Preliminaries/ General conditions

### **110 SOFTWOOD trims, rails, skirtings and architraves**

- Quality of wood and fixing: To BS 1186-3.
- Species: European redwood.
- Class: 2-3.
- Moisture content at time of fixing: 9-13%.
- Preservative treatment: Water-based microemulsion as section Z12, service life 30 years.
- Fire rating: To BS EN 13501-1, Class A2.
- Profile: As drawing 32134/ 28
- Finished size: As drawings but to match the existing profile on site
- Finish as delivered: Prepared and primed, as section M60.
- Fixing: Plugged, screwed and pelleted at 450mm centres.

### **200B MEDIUM DENSITY FIBREBOARD WINDOW BOARDS/ PELMETS**

- Manufacturer: Contractor's choice.
- Product reference: To Be Confirmed.
- Standard: To BS EN 622-5.
- Type: ZERO-F MDF (or similar), MOISTURE RESISTANT GRADE.
- Formaldehyde class: To BS EN 622-1, Class E1.
- Fire rating: Not applicable.
- Edges: Pencil Round.
- Thickness: 25 mm.
- Finish: Prepared and primed as section M60 .
- Recycled content: To be confirmed by manufacturer
- Support/ Fixing: Counter sunk screwed and filled.

### **240 PLYWOOD GENERALLY**

- Manufacturer: Contractor's choice.
- Product reference: WBP plywood, manufacturer, contractors choice
- Face ply species: Contractor's choice.
- Appearance class to BS EN 635: Class I/II.
- Bond quality to BS EN 314-2: Class 1.
- Fire rating: To BS EN 13501-1, Class A2.
- Thickness: As drawings.
- Edges: As drawings.
- Finish: Prepared and primed as section M60 .
- Support/ Fixing: Brass cups and screws at 450 mm centres or as drawings

12 Z10 Purpose made joinery

## Z10 Purpose made joinery

To be read with Preliminaries/ General conditions.

### 100 SCOPE

The scope of this specification will apply to all project work which includes the manufacture of purpose made joinery.  
For preservative and fire treatments this will be dealt with in project Specification Z12  
For specifications of fixings for purpose made joinery this will be dealt with under Z20  
Fabrication will be BS 1186-2  
General timber classification will be as BS 942  
Timber will be selected from sustainable and well managed sources. The supplier will be expected to follow and demonstrate he has followed guidance issued by Building Research Establishment  
Cross sections will be to BS 1313-1 & 2  
Timber will be free from decay  
Moisture content to be maintained within range specified.  
Laminates & Veneers to be fabricated to British Laminated Plastics Fabricators Association Ltd.  
All veneers and laminates to have a balancing layer  
All finished products to be smooth even with arises eased.  
The scope as described above will form the basis of the detailed specification.

### 105 BREEAM VOC CRITERIA BY PRODUCT TYPE

- All Wood Panel products (including particle board, Fibreboard (MDF) OSB, Cement bonded particleboard, plywood, solid wood panel and acoustic boards) used within this contract must comply with the requirements of BREEAM non-domestic new construction table 5-3.
- To be in full accordance with European Standard EN 13986:2004.
- Formaldehyde E1 in accordance with EN 13986:2004 Annex B

### 110 FABRICATION

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

### 120 CROSS SECTION DIMENSIONS OF TIMBER

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

### 130 PRESERVATIVE TREATED WOOD

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

### 140 MOISTURE CONTENT



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

#### 210 LAMINATED PLASTICS VENEERED BOARDS/ PANELS

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

#### 220 WOOD VENEERED BOARDS/ PANELS

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

#### 250 FINISHING

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

## 13 Z 12 Preservative / Fire Retardant treatment

## **Z 12 Preservative / Fire Retardant treatment**

To be read with Preliminaries/ General conditions.

### **100 SCOPE**

The scope of this specification will apply to all project work which includes the requirement for treated timber.

Generally, BS 476, 4422, 5268, & 5589 will apply

The suitability of the preservative treatment will be selected in accordance with TRADA Wood Information Section 2/3 Sheet 33

Timber to be treated and the type of preservative will select from table 4 of the NBS SPECIFICATION

The scope as described above will form the basis of a detailed specification

### **110 TREATMENT APPLICATION**

- Timing: After cutting and machining timber, and before assembling components.
- Processor: Licensed by manufacturer of specified treatment solution.

Certification: For each batch of timber provide a certificate of assurance that treatment

## 14 Z 20 Fixings and adhesives

## **Z 20 Fixings and adhesives**

To be read with Preliminaries/ General conditions.

### **100 SCOPE**

The scope of this specification will apply to all project work which requires mechanical or adhesive fixing  
The type size and quantity together with spacing will be selected to support the component and not to cause distortion  
Provide isolating washers to dissimilar metals  
General usage of fixings will be in accordance with manufactures written details  
The appearance of all fixings will be via approval of a sample from each Works Contractor  
Corrosion resistant materials will be used for all external and internal areas that are humid  
Nails will be to BS 1202  
Screws will be BS 1210  
Adhesives will be stored and used strictly in accordance with manufactures instructions and COSH statements  
The scope as described above will form the basis of the detailed specification.

### **PRODUCTS**

#### **310 FASTENERS GENERALLY**

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

#### **320 PACKINGS**

- Materials: No compressible, corrosion proof.
- Area of packings: Sufficient to transfer loads.

#### **330 NAILED TIMBER FASTENERS**

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

#### **340 MASONRY FIXINGS**

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

#### **350 PLUGS**

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

#### **360 ANCHORS**

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

#### **370 WOOD SCREWS**

- Type:
  - Wood screws (traditional pattern).

- Standard: To BS 1210.
- Wood screws.
- Pattern: Parallel, fully threaded shank or twin thread types.
- Washers and screw cups: Where required are to be of same material as screw.

#### 380 MISCELLANEOUS SCREWS

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

#### 390 ADHESIVES GENERALLY

- Standards:
- Hot-setting phenolic and amino plastic: To BS 1203.
- Thermosetting wood adhesives: To BS EN 12765.
- Thermoplastic adhesives: To BS EN 204.

### EXECUTION

#### 610 FIXING GENERALLY

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

#### 620 FIXING THROUGH FINISHES

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

#### 630 FIXING PACKINGS

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

#### 640 FIXING CRAMPS

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

#### 650 NAILED TIMBER FIXING

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

#### 660 SCREW FIXING

- Finished level of countersunk screw heads:
- Exposed: Flush with timber surface.
- Concealed (holes filled or stopped): Sink minimum 2 mm below surface.

#### 680 PLUGGED COUNTERSUNK SCREW FIXING

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

#### 700 APPLYING ADHESIVES

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

15 Z 22 Sealants

## **Z 22 Sealants**

To be read with Preliminaries/General conditions.

- 110 SEALANTS
- Classification: As specified in the relevant section.

### **PRODUCTS**

### **EXECUTION**

- 610 SUITABILITY OF JOINTS
- Pre-sealing checks:
    - Joint dimensions: Within limits specified for the sealant.
    - Substrate quality: Surfaces regular, undamaged and stable.
  - Joints not fit to receive sealant: Submit proposals for rectification.
- 620 PREPARING JOINTS
- Surfaces to which sealant must adhere:
    - Remove temporary coatings, tapes, loosely adhering material, dust, oil, grease, surface water and contaminants that may affect bond.
    - Clean using materials and methods recommended by sealant manufacturer.
  - Vulnerable surfaces adjacent to joints: Mask to prevent staining or smearing with primer or sealant.
  - Backing strip and/ or bond breaker installation: Insert into joint to correct depth, without stretching or twisting, leaving no gaps.
  - Protection: Keep joints clean and protect from damage until sealant is applied.
- 630 APPLYING SEALANTS
- Substrate: Dry (unless recommended otherwise) and unaffected by frost, ice or snow.
  - Environmental conditions: Do not dry or raise temperature of joints by heating.
  - Sealant application: Fill joints completely and neatly, ensuring firm adhesion to substrates.
  - Sealant profiles:
    - Butt and lap joints: Slightly concave.
    - Fillet joints: Flat or slightly convex.
  - Protection: Protect finished joints from contamination or damage until sealant has cured.



# **ELECTRICAL SPECIFICATION**

**For**

**Starting Point**

**St Helens Town Centre**

**Project No:** TRU-SP-01

**Date:** February 2018 **Prepared by:** Mark Kinsey

**Status:** Tender Issue 01

**Issuing Office:** Truline Electrical  
01942 227333

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Where reference is made to a particular proprietary product in the specification, the Contractor may allow for using other products offering equivalent guarantees of safety, suitability and fitness for purpose. Any articles allowed for in the Contractors tender other than proprietary products specified, shall be shown on the Appendix to the form of Tender for the Contractor Administrators approval.

The following is a list of the proposed alternative materials to those specified in the Specification/Drawings which have been included in the tender and for which approval has been obtained from the Contract Administrator prior to return tender.

The Contractor shall also submit the following:-

- > Full technical data for each such alternative together with details of any consequential amendments to the design and/or other parts of the works.
- > A detailed breakdown of any reductions or additions to the basic tender sum indicated on the appropriate document.
- > All necessary measures to ensure alternative manufacturers equipment and the total installation is equivalent to the specified.
- > The costs necessary for re-sizing and reselection of associated equipment (including protective devices and cable sizes) resulting from the proposed alternative together with all resulting design and co-ordination.

Alternative offers will only be considered if accompanied by a compliant tender. No alternatives will be permitted, should the above procedures not be adhered to.

No consideration will be given to products or components that have increased maintained requirements or shorter plant replacement/life cycle than that specified.

Where the CA has accepted proposed alternative equipment or materials prior to the award of the Contract and which subsequently varies the main works and/or the works in any way whatsoever, then the Contractor shall:-

- > Be responsible for meeting all the additional costs and technical requirements arising from such a charge.

Undertake the redesign of all engineering services and builders work affected by these equipment changes at no additional cost or extension or delay to the programme.

No claim for additional costs or delay to the completion of the works will be accepted. Should any alternative item proposed not carry appropriate certification, the Contractor shall ensure independent testing is carried out to confirm compliance at no additional cost.

## **SCOPE**

The scope of this section covers all aspects of the technical requirements of the materials and workmanship required to ensure the installation is carried out to an appropriate standard.

All definitions of materials, systems etc. are in accordance with the definitions given in Part 2 of BS7671, where applicable.

Certain clauses may not, at the time of tender be applicable, however they have been included to cater for circumstances caused due to variations to the contract during its building programme.

## **MATERIALS**

The Contractor shall include for the supply, delivery, installation, testing and commissioning of all materials and systems necessary to complete the works.

The materials supplied by the Contractor shall be of the sizes, type and quantities approved by the CA and conform to the requirement of this specification, the drawings, schedules or any supplementary specification issued with the contract documents.

Where a particular manufacturer is specified, NO other type shall be used without prior approval of a sample alternative and the written consent of the CA. Where such approval is given the contract price shall be adjusted accordingly.

Where the Contractor is given a choice of equipment or manufacturer then the selected equipment or manufacturer shall be used throughout the Contract.

Where free issue materials or equipment are indicated to be supplied by the employer or other Contractors, they will be delivered to site by them. The Contractor is to include in his price for receiving, safe storage, putting into position, fixing where necessary, connecting and testing materials or equipment.

All materials, equipment and plant shall be purchased and supplied as new. The use of reconditioned, overhauled or second hand equipment or plant shall not be allowed.

All materials, equipment and plant shall comply with the appropriate British or European Standard, where a standard is issued for the material, whether specified or not.

Unless specifically stated, material item shall be of the same finish and/or quality and/or grade as the system within which they are installed.

All materials, equipment, plant or fittings shall be suitable for purpose and in particular, selected in accordance with the appropriate ingress protection (I.P.) rating applicable for the environment/position installed.

The Contractor shall, where specified, be deemed to have included for all specified materials and equipment. Where alternative materials are proposed by the Contractor, they shall be of equal or better quality and performance to those specified and subject to approval of the CA.

The words "or equal and approved" shall mean goods or materials of equal quality, but the use of such alternatives shall be to the approval of the CA before installing such goods or materials.

All goods and materials shall be to the satisfaction of the CA who shall have the power to reject anything considered not to be in accordance with the requirements of the specification. Any materials so rejected shall immediately be removed from the site by the Contractor and shall be replaced by him with correct materials without additional charges.

Include for all sundry items, whether or not specified or mentioned, necessary to form a complete electrical installation.

All materials shall be delivered, off loaded and stored in accordance with the manufacturers instructions. Any materials or equipment that is damaged shall be replaced with new.

The Contractor shall ensure all plant, equipment and materials are protected against damage or adverse weather conditions until practical completion. Any plant, equipment or materials that have been subjected to damage, incorrect storage or incorrect installation will require to be replaced.

Damaged or deteriorated material, plant or equipment shall be removed from site.

All materials, such as accessories, conduit, trunking, fittings, etc. shall be purchased from a single manufacturer and be of a consistent and standard manufacture, quality and appearance.

The Contractor shall also be responsible for:-

- placing orders for goods and materials required for the works immediately instructions have been received to proceed. Delay in delivery, due to late ordering therefore will not be accepted as the basis for a request for extension of time to complete the works or a reason for change for specified equipment. Any known delay in delivery must be referred to the CA.

- ensuring that all materials are available as needed, in particular to comply with the phas

forewarning all suppliers/manufacturers of equipment at the start of the Contract

of such demands to be made on their stock levels and services to enable the suppliers/manufacturers to be in a position to meet the needs of the Contract.

-ensuring that all materials and methods used under this Contractor are to be to the complete satisfaction of the CA. Any doubtful points arising at any time during the Contract will be decided by the CA whose decision will be final and binding.

Note: The Contractors failure to comply with this Clause will not absolve him to his responsibility to ensure that all materials and services are available as needed. All delays and/or expenses incurred as a result of not complying with this Clause will be met by the Contractor.

## **WORKMANSHIP**

The Contractor shall be responsible for providing all labour necessary to complete the works.

All work shall be carried out by qualified and skilled labour, for which the CA may request evidence of same to satisfy this requirement.

A competent foreman shall be kept constantly on the works, to whom instruction may be given, and he shall not be withdrawn until completion and handing over to the Employer, except by instruction from the CA.

The Contractor shall be responsible for ensuring that all workmanship conforms to current accepted standards and codes of practice.

The Contractor shall:-

- > liaise with all trades to establish an appropriate mounting height/location for each item of plant, fixing, accessory or equipment.
- > allow for taking down and the removal from site all materials made redundant as a direct result of this Contract, unless instructed to the contrary.
- > where requested allow for supplying and fitting dust sheets where applicable to furniture and floor coverings in each room during the course of the work and ensure that any sub-contractor employed by him complies with the Clause.
- >where appropriate allow for moving furniture, lift coverings prior to carrying out the work in each room and leave the furniture and flooring coverings etc., to the satisfaction of the Contract Administrator at the end of each day and on completion of the works.

include for all necessary protection against mechanical damage to cables as required to complete the installation.

include for the repair and/or renewal of any damage caused to the building structure or contents arising out of the works.

The Contractor must clean and tidy all areas at the end of each working day. No part of the building is to be used as storage space. Pipe threading machines must be used on boards on plastic sheeting and the Contractor will be responsible for the complete removal of any cooling oil stains.

## **REFERRED DOCUMENTS**

Documents referred to in this section:-

BS7671:2001 Requirements for Electrical Installations - IEE Wiring Regulation

- Soundfield System Commissioning Certificate
- Access Control System Commissioning Certificate
- Intruder Alarm System Commissioning Certificate
- CCTV System Commissioning Certificate & Log Book

The Contractor shall, where applicable submit to the Supply Authority all necessary supply declaration/application certificates for the supply of electricity to be connected to the installation when required.

#### **A.2.10.03 APPROVAL AND ACCEPTANCE**

After receipt of the results of satisfactory tests, the CA shall authorise the installer to proceed with the commissioning and system performance tests.

The installer shall give the CA prior notice to his intention to demonstrate and seek "approval" for any item or system.

The installer shall allow for giving such notice and making adjustments, setting up and other preparations for testing and for witnessing such tests.

#### **B.1.1 GENERAL**

The scope of this section covers all aspects of the particular requirements of the electrical services for the project to ensure the installation is carried out in accordance with the design drawings.

#### **B.1.2 EXTENT OF WORKS**

The extent of the engineering services works, as briefly described in the sub-clauses below, shall include but are not limited to the following:-

Electricity supply and earthing arrangement.  
 LV distribution.  
 Containment and wiring systems.  
 General lighting.  
 General lighting controls.  
 Emergency lighting.  
 External lighting.  
 Small power.  
 Fire detection and alarm system.  
 Security and intruder detection system.  
 Telecommunication/data communication services.  
 Electrical supplies to the mechanical services installation.  
 Lightning protection system.  
 Earthing and bonding.  
 Testing and commissioning.

## **SECTION 2 – DESCRIPTION OF WORKS**

### **LV DISTRIBUTION**

#### **GENERAL SYNOPSIS**

The general synopsis for LV distribution is to use existing distribution boards on all floors to the premises.

#### **MAIN DISTRIBUTION POSITION**

#### **FIRE ALARM**

Contractor shall include for the adaptation to the fire alarm as detailed on the drawing.

All other systems must be kept live during the works.

#### **FINAL CIRCUIT DISTRIBUTION BOARD**

Final circuit mcb's/RCBO's shall be a combination of type B or type C with a minimum short circuit current rating of 10kA.

All Lighting and small power circuits shall be fitted with type C m.c.b.'s

All supplies to mechanical services equipment shall be fitted with type C m.c.b's.

All spare ways to be fitted with manufacturers recommended blanking plates.

#### **COMMAND DEVICE EQUIPMENT**

Command devices controlling the final circuit arrangements of the lighting and power installations (i.e. time switches, contactors, etc.) shall be mounted within a command device enclosure or combination of command device enclosures.

Command device enclosures to be of the same range of equipment as the final circuit distribution boards, including the same modular size to allow the flexibility of installation (i.e. command device enclosure may be required to stack vertically above distribution boards).

Command device enclosures to be supplied with part glazed door and incorporate the appropriate DIN rail for the mounting of the command devices.



Layout of command devices and enclosures to take into consideration modular width, recommended spacing requirements etc. All spare ways to be fitted with the manufacturers recommended blanking plates.

Command device contactors to be the AC1 rating with blanking module fitted every 2 contactors.

Time switches to be the analogue type, quartz stabilised, single channel 24 hour pattern.

## **SUB-MAIN SUPPLIES**

All sub main supplies shall be Utilized as existing.

## **CONTAINMENT AND WIRING SYSTEM**

### **CONTAINMENT SYSTEM**

The Electrical Contractor shall provide a comprehensive containment network for the routing of service cables. All containment is to be installed in accordance with the relevant British Standards and in particular the requirement of BS7671 Requirements for Electrical Installation (The IEE Wiring Regulations).

The containment network shall make provision for the installation of:

- LV final circuit, small power and lighting systems.
- fire alarm system wiring.
- data/telecommunications system wiring.
- mechanical services system and control wiring.

Generally all cabling throughout the building shall be concealed within the ceiling voids, where applicable and installed flush down walls as far as is practicable. The use of surface mounted conduit drops shall be avoided, however if surface conduit drops are required these shall be carried out using galvanised steel conduit. The Contractor shall make provision for the installation of white uPVC 3-compartment dado trunking for the containment of LV circuits and data/telephone wiring in functional areas as detailed on the design drawings.

Installations within plant and switchroom areas shall be surface mounting galvanised conduit/trunking throughout.

All containment system shall be sized to accommodate planned cabling plus 25% allowance for future use.

All containment system shall be clearly identified with suitable marker system.

Conduit drops shall be provided from the primary containment systems within the ceiling space to each accessory position, unless contained within dado trunking.

Conduit drops to flush mounting accessory positions shall be in UPVC. Minimum size of conduit drops shall be 20mm.

Flush mounted conduits shall be fixed with a minimum of 2 No. saddles prior to plastering. All conduit drops shall extended into the interfloor/ceiling space by a minimum of 75mm and shall be suitably bushed at the primary containment position. Entry into accessory boxes shall be provided with a proprietary coupling and bush arrangement.

Where data and power circuits are to run adjacent to each other in operational areas (i.e. offices/classrooms etc.), they shall be contained within a uPVC dado trunking. Data trunking to be as the "President" PVCu chamfered profile range, as manufactured by Centaur Trunking Ltd. Trunking to incorporate grey coloured centre lid for compliance with Part M.

Dado trunkings to incorporate vertical risers at appropriate positions within the relevant areas to link with the primary containment system in the ceiling space or at high level.

All trunking and dado system shall be installed to provide continuous wireways throughout the installation.

## **WIRING SYSTEMS**

The following wiring system shall be used:-

General Lighting & Power -	XL-LSF insulated multi core cables on galvanised steel cable basket/tray (and within uPVC dado trunking or galvanised steel conduit drops to outlet points).
Mechanical Services Wiring -	XL-LSF insulated multi-core cables on galvanised steel cable basket/tray (and within uPVC dado trunking or galvanised steel concealed conduit drops to flush outlet points).
Fire Alarm System - with	LSZH enhanced category cables to BS7629 RED over sheath.
Voice/Data Systems -	Cat 5e UTP or STP cable as appropriate installed on cable basket (and within uPVC dado trunking or galvanised steel conduit drops to flush outlet points).
Alarm Systems - BS4737	Multistrand flexible security cable to Section 3.30 installed on basket and galvanised steel concealed drops.

Where applicable, the Contractor shall allow sufficient time for vertical conduit drops to be chased within the internal blockwork walls. The requirements for this

element of the works shall be identified at an early stage of the construction phase to avoid any chases being undertaken once the plaster skim has been applied to the relevant areas.

All cable routes passing through elements of the structure will be sealed, made good, where necessary and fire stopped when the installation is complete.

Openings and penetrations through fire compartments will either be filled after cable installation with a proprietary intumescent sealant or via a complete fire barrier composite sheet system cut and formed to the containment system. Both systems will be tested to BS476. The type of fire barrier selected shall maintain the rating of the fire compartment as a minimum.

All barriers shall be installed in accordance with manufacturer's literature to ensure that the barrier is fit for purpose, and inspected prior to the area ceiling tile being replaced.

Installation of data/telecommunication and intruder alarm system cables shall be carried out by specialist contractors, and in accordance with the specific system requirements.

Main body of wiring for these systems shall be installed within the ceiling space, containment within suitably sized cable basket. Final drops to accessory positions shall be contained within suitably sized conduit drops.

Installation of data cable, where multiple data outlet points are indicated, shall be contained within the uPVC dado trunking system, installed to the perimeter of the room.

## **ACCESSORIES**

All accessories shall comply with the requirements of Part A, Section 2.7.

In addition the Contractors attention is brought to the current DDA requirements for all accessory plates to have a contrasting colour to the background finishes to which they are installed.

The provision of other accessory finishes is not excluded from this specification, but in order to meet the above requirement it is suggested that all accessories be a satin chrome finish.

Accessories and fixings shall be appropriate for the area installed and the system of wiring employed. Mounting heights of all accessories shall be relevant to the equipment/system supplied and where appropriate in accordance with Section 7 of the current Approved Document "M" of the Building Regulations.

Where socket outlets, switches, fire alarm equipment are positioned in close proximity these will be installed horizontally in-line, in accordance with BS7671 requirements.

## **LIGHTING INSTALLATION**

### **GENERAL**

The works to be executed by the Contractor under these clauses shall comprise the providing, fixing, wiring, suitably supporting and connection of the whole of the lighting installation including all luminaires, lamps, conduits, outlet boxes, fixings, light switches, switch boxes, wiring, plug-in ceiling roses, etc. and all other items that may be required to complete the installation as indicated on the drawing and as detailed within this specification.

### **LUMINAIRES**

Luminaires shall be of the type and manufacture as detailed on the drawings. All luminaires shall be supplied complete with the correct size and type of lamps. All fluorescent luminaires shall incorporate high frequency ballasts.

Where dimmable fluorescent luminaires are detailed they shall incorporate high frequency regulating DSI or DALI ballasts.

The Contractor shall be responsible for the correct ordering of all luminaires.

All linear fluorescent lamps T5 and T8, to be high efficiency, triphosphor, 4000k.

All compact fluorescent lamps TC-L, TC-D and TC-T to be 4000k.

All LED fittings shall be ECA/L2 compliant incorporating high performance chip modules and integral drivers equivalent to a 400K colour 84 light output.

All luminaires shall be independently secured to the main building structure and the Electrical Contractor shall include for installing all additional supports within the ceiling structure as necessary.

In areas where suspended ceilings are providing, final connection to luminaires shall be made via a plug-in ceiling rose or plug-in lighting distribution module, with flexible connections to the luminaire position.

Where lighting fittings are to be surface mounted, on no account shall wiring be routed through lighting fittings or shall conduit terminate on the fittings. Where cables enter the fluorescent lighting fittings, grommets shall be installed. These cables shall also enter adjacent to the fittings terminal blocks and heat resistant over sleeving shall be used.

### **LIGHTING**

Lighting installations within the new premises areas shall generally comprise recessed luminaires installed within the proposed suspended ceiling structures of the building.

Lighting to be controlled via a combination of automatic detection, absence detection and conventional local switching as indicated on the drawings.

The proposed lighting control systems to be implemented are outlined in a subsequent clause of this specification.

## **LIGHTING CONTROLS**

A comprehensive lighting control system shall be provided to serve the lighting installations of the premises.

Lighting controls shall consist of a combination of stand alone presence detection and modular units comprising lighting connection units, plug-in control devices, room sensors, time switches, network leads, luminaire leads and local wall switches configured to provide the following lighting control arrangement:

- occupancy control in circulation areas
- occupancy control in toilets, storerooms, hygiene rooms etc.
- absence control in main room and kitchens (daylight dimming not required).

Modular Lighting control systems shall be as the "Flex-7" range of lighting control equipment as manufactured by Flex Connectors Ltd, tel: 020 8580 1066 or "MLS Connect Digital" as manufactured by EX-OR Lighting Management Systems tel no: 01942 719229.

Full details of the lighting control system shall be developed in conjunction with the system manufacturer following confirmation of the architectural layouts and lighting systems to be provided. Contractor shall also be responsible for the provision of all sundry components, including wall switches etc. as necessary to ensure the lighting control strategy is provided in accordance with the design intent.

In areas where automatic controls are not deemed necessary (i.e. plant rooms/Kitchen etc), provision shall be made for the installation of a conventional light switch.

Stand alone lighting controls shall be as the "Silver-Series" range of PIR presence detection as manufactured by EX-OR Ltd. Stand alone units installed in toilet/hygiene areas incorporating individual ventilation extraction fans shall be the dual circuit type.

## **EXTERNAL LIGHTING**

N/A

## **EMERGENCY LIGHTING INSTALLATION**

### **GENERAL**

The works executed by the Contractor under this section shall comprise the providing, fixing, wiring and connecting of the whole of the emergency lighting system including all luminaries, lamps, outlet boxes, test switches, switch boxes,

wiring, supports, fixings, etc. as indicated on the drawings and detailed within this specification.

The installation of the emergency lighting system shall comply with BS5266. The General Electrical Specification, the relevant British Standards and this Particular Specification.

## **EMERGENCY LIGHTING – GENERAL SYNOPSIS**

The emergency lighting for the premises shall generally consist of integral emergency packs fitted into the general luminaire.

Emergency lighting to be supplied from the local lighting circuit via an emergency lighting test switch and generally operate in the non-maintained mode (i.e. emergency operation only activated on failure of the local mains supply).

## **LUMINAIRES**

Emergency luminaires shall generally be integrated into the luminaires for the general lighting system. The luminaires shall be switchable as part of the general lighting.

Self contained, non-maintained, illuminated exit signs, with European Standard pictogram shall also be provided as part of the emergency lighting system to cover all fire escape routes and final exits.

Final exit doors from the building shall be provided with an external IP65 emergency luminaire mounted above or adjacent to the door position.

All emergency luminaires shall be self contained type with 3 hour emergency duration and incorporate high frequency control ballasts. All emergency control equipment, including battery packs etc. shall be integral to the luminaire.

Note: remote control/battery shall NOT be considered.

In general luminaires, identified as emergency, shall be supplied from the local lighting circuit and have both switchable supply for the general operation of the luminaire and a permanent live supply for the purpose of battery charging and supply monitoring.

Illuminated emergency exit signs shall be provided in accordance with Approved Document Part B of the Building Regulations.

The construction of luminaires shall be in accordance with the requirements of BSEN 60598 and have adequate resistance to fire; all insulating materials used must be self extinguishing type

All luminaires/signs shall incorporate a fuse so that the malfunction of any one shall not impair the operation of the remainder of the circuit. All luminaires/signs shall be fitted with labels providing details of the type, rated voltage and rated wattage of the lamps required.

All external emergency luminaires shall be IP65.

Emergency luminaires and exit signs shall be designated by the suffix (E), and be of the type and size as specified in the "Schedule of Luminaires" as detailed on the drawings.

All lighting circuits supplying emergency luminaires and illuminated exit signs shall be wired via an emergency lighting test facility located adjacent to the main entrance of an area as indicated on the drawings.

### **EMERGENCY LIGHTING TEST FACILITY**

All circuits supplying emergency luminaires/exit signs shall be connected via an emergency lighting test facility.

Test switches to be the key switch type incorporated into the ganging arrangement of the local light switch where necessary. Emergency lighting test switches shall be clearly labelled as to their function and a neon indicator lamp shall be included in the ganging arrangement of the switch which shall be configured to illuminate when in the emergency test mode.

### **TESTING, COMMISSIONING AND CERTIFICATION**

The Contractor shall include for the testing and commissioning of the emergency lighting upon completion.

Any faults shall be rectified and the Contractor shall bear the cost of any additional charges that may be incurred for rectifying the fault, re-commissioning and any subsequent re-visits by the system manufacturer,

In addition to the above the Contractor shall complete, sign and handover the following:-

- a) Manufacturers commissioning certificates/documentation.
- b) A certificate of Test and Inspection as referred to Appendix A of BS 5266, Part 1, 1988.
- c) Emergency Lighting Log Book – comprising front and back covers and 20 No. A4 size pages of certificates of Inspection and Testing.
- d) N.I.C.E.I.C. Emergency Lighting Completion and Inspection Certificate.

## **SMALL POWER INSTALLATIONS**

### **GENERAL**

The works to be executed by the Contractor under these clauses shall comprise the providing, fixing, wiring and connecting of the whole small power installation including all socket outlets, spur units, double pole switches, cables, conduits, back boxes, etc., and all other items required to complete the installation as indicated on the drawings and as detailed within this specification.

All accessories associated with the general power installation shall be of a matching range to give a standard appearance with lighting accessories in common areas.

General power installation shall generally comprise, but is not limited to the following:-

- new ring main power circuits to general socket outlet positions.
- new dedicated circuit to fixed equipment.
- supply and installation of hand dryers to toilet areas.
- supplies to mechanical services installation.
- supplies to security system equipment (intruder alarm/CCTV/access controllers etc)

## **SOCKET OUTLET INSTALLATION**

All socket outlets shall be the 13A switched type to BS 1363, Part 2: 1995.

All socket outlet circuits shall be wired as ring circuits and supplied via a combined 32A residual current device with integral protection (RCBo) and 30mA tripping sensitivity.

Socket outlet circuits supplying I.T. equipment shall be installed in accordance with the requirements of Section 543 of BS7671 and Contractor shall include for:-

- (i) all socket outlets to have a double earth facility, similar to the "Logic Plus" range as manufactured by MK Electric Ltd. Where twin sockets are unavailable with double earth facility, 2 No. single gang sockets shall be installed as an alternative to 1 No. twin gang.
- ( ) all circuit protective conductors of the ring to be a minimum of 1.5mm<sup>2</sup>.
- (i) the circuit protection conductors of the ring circuit to be separately clamped in the earthing terminal block of the relevant distribution board and at each earth termination of each socket outlet position.
- (ii) a maximum of 8 No. socket outlets to be provided for each I.T. ring main circuit.

Generally in all areas socket outlets shall be fixed to steel back boxes with adjustable lugs.

Socket outlets mounted on dado trunkings shall be fixed to proprietary back boxes suitable for the relevant dado trunking.

## **CONNECTION UNITS**

The Contractor shall allow for providing, installing and fixing fused connection units in the positions indicated for items of fixed equipment.



Connection units supplying extract fans shall be supplied from the relevant lighting or ring power circuit as indicated on the drawings. Connection units supplying extract fans shall be mounted at 150mm below ceiling height.

All other connection units supplying door entry systems, water boilers, hand dryers, disabled toilet alarms etc., shall be supplied from the local ring power circuit as indicated.

All connection units shall be the D.P. switches type, unless indicated otherwise, and shall match the accessories of the lighting and socket outlet installations.

Connection units supplying hand dryers, disabled toilet alarms, door entry systems shall be mounted at 150mm below ceiling height, with the equipment supplied mounted directly below at the heights indicated on the drawing or detailed within this specification.

Connection units supplying equipment of the mechanical plant installation shall be installed adjacent to the item of equipment and Contractor shall liaise with the Mechanical Contractor/Specialist Contractor where necessary to establish the exact mounting position of equipment, terminal location and final connection requirements prior to commencement of the first fix installation to these items of equipment.

Connection units shall be fitted with the appropriate size fuse of the equipment they are supplying as recommended by the supplier of the equipment.

The Electrical Sub-Contractor shall make connections from the fused connection units to the designated items of equipment.

Where fused connection units are indicated as controlling fixed items of equipment the final connections shall be in the form of double insulation LSF cable enclosed within conduit, terminating immediately behind the items of equipment served in a standard BS conduit box, with the cables entering the particular equipment from the rear.

Where connections are to portable or semi-portable equipment, the final connections shall comprise a multi-core butyl heat resistant flexible cables, which shall be taken from the flex outlet of the connection unit direct to the terminal of the appliance served.

## **POWER SUPPLIES – INTRUDER ALARM, DOOR ACCESS SYSTEM**

Contractor shall include for the supply and installation of 230v supplies to the P.S.U. of the intruder alarm system; Door Access System Controllers, Electrically operated automatic doors and fire alarm door retainers.

Supplies shall terminate at a 13A fused connection unit. Connection units to be installed at high level and mounted adjacent to the relevant controller as necessary.

Contractor shall liaise with the system installers to establish to optimum mounting position/location of connection units.

## **KITCHEN AREA BASEMENT**

Contractor shall include for the installation of a separate ring power circuit to serve the Kitchen.

All accessories to the kitchen areas to be mounted 150mm to the bottom edge of accessory from finished worktop height.

At under worktop dishwasher/fridge and freezer positions, Contractor shall include for installing an unswitched socket outlet at 400mm AFL. Socket outlet to be supplied from A S.F.C.U. mounted above the worktop and supplied from ring power circuit.

S.F.C.U shall be clearly labelled as to their function.

Hydroboil unit to be supplied as a separate radial circuit from the Distribution Board.

## **ROLLER SHUTTER**

Contractor shall include for the supply and installation of 230v supplies to electrically operated roller shutter above each window opening ground floor.

Supplies shall terminate at a 13A fused connection unit. Connection units to be installed at high level and mounted adjacent to the relevant controller as necessary.

Contractor shall liaise with the system installers to establish to optimum mounting position / location of connection units.

## **ELECTRICAL SUPPLIES TO MECHANICAL SERVICES**

The Contractor shall make provision for the installation of electrical supplies to the mechanical services installation.

Electrical supplies to the mechanical plant items shall be provided from the main LV switchpanel or final circuit distribution boards, as designated on the drawings.

Contractor shall include for the final connection to all items of mechanical equipment. Final connections to equipment served by armoured cable shall be made via a suitably rated isolator using single core cables installed via a flexible conduit. Equipment supplied from final circuit distribution boards shall terminate in switched fused connection units, T.P. fan isolators or suitably rated D.P. switches for dedicated radial circuits. Final connection from accessory position to the item of equipment shall be in multi core, double insulated flexible cable.

Note: all local isolators serving water heating appliances shall be D.P.

The Electrical Contractor shall be responsible for liaising with the Mechanical Services Contractor to obtain all relevant control accessories, as supplied by the Mechanical Services, required for installation by the Electrical Contractor and all other associated documentation/instructions etc. necessary to

complete the installation and in full compliance with the appropriate standard and manufacturers guidelines.

Provision of electrical supplies to the mechanical services equipment shall be as listed, but not limited to the following:-

- Local extract/ventilation fans
- Boiler supply to top floor multipoint.

## **FIRE DETECTION AND ALARM SYSTEM**

### **GENERAL SYNOPSIS**

A fire alarm system to serve the new premises shall include, but is not limited to the following:

- Installation of new system wiring and detection/annunciation devices within the Premises.
- Programming of the complete system to reflect the actual layout and room designation of the premises.
- Provision of a mimic diagram at the Main Entrance of

the building.

The system shall comply with the requirements of BS5839:2013.

### **DETECTOR/SENSOR UNITS**

Detector/sensor units whether smoke or temperature shall be an analogue addressable type mounted on common bases which provide for full interchangeability.

All detectors shall have an LED type indicator which shall flash during an alarm condition.

All smoke sensors shall be optical type and installed in the positions indicated on the drawings.

Heat detectors shall be fixed temperature type installed in the positions indicated. All smoke sensors in roof space areas shall be installed at the apex position. Where roof space sensors are located in the vicinity of a vertical wall surface, the sensor shall be installed a minimum 500mm from the wall.

All smoke detector or heat detector bases shall be fixed, wiring connected and the detectors fitted following testing of the wiring and prior to final commissioning of the whole system. The fire alarm panel shall be connected after all wiring has been tested and prior to full commissioning of the whole system.

(NOTE – prior to connecting equipment, agree with specialist supply if connecting of any equipment is to be left until the specialist engineer is on site to commence testing and commissioning).

All smoke or heat detectors shall be protected with plastic cover, either before or after commissioning and up to date of handover. Immediately prior to handover, remove all plastic covers.

### **MANUAL CALL POINTS**

All manual call point shall comply with BSEN54-11, single action Type A version only.

Manual call points shall be installed 1200mm A.F.L. and have a facility for testing by insertion of a specialist test key and without operating the frangible push.

Manual call points shall be sited in accordance with BS5839: 2002 and as detailed on the drawings.

### **SOUNDERS, STROBES AND SOUNDER/BEACONS**

All sounders shall have a minimum output of 90dB @ 1m and shall comply with the requirements of BSEN54-3.

Sounders/strobes and sounder/beacons shall be wall mounting or ceiling mounted as applicable to the installation requirement and shall include strobe elements where visual indication of an alarm is required.

In general all sounders and strobe units shall be loop powered devices subject to the following parameters.

-  
system supply/manufacture undertakes an appropriate calculation for the system to ensure the total quantities of sounder/strobes meet the audibility levels required and are within acceptable performances limitations of the fire alarm panel loop.

Audible output of all sounders whether wall or ceiling mounting type shall be fully synchronised throughout the premises.

### **ZONE MONITORS/ISOLATORS**

Short circuit zone isolator units shall be installed within the detector loops between adjacent zones of the system and at any additional position as designated by the manufacturer of the relevant system.

Zone isolators may either comprise individual zone isolators mounted at high level immediately below ceilings, or suspended ceilings, in stores, adjacent distribution board positions or other unimportant positions or be integral with the ceiling mounted detector heads. Zone isolator positions shall be agreed with the commissioning Engineer and fitted at the time of commissioning. Individual zone isolators shall be provided with an engraved label stating the function and, where

isolators are integral with detectors, this shall be indicated on the traffolyte label with the detector information.

## **SYSTEM WIRING**

The wiring of the system shall be carried out in OHLS manufactured to BS7629 -1 enhanced category of duty cables as "Firetuf-Plus " enhanced or equal and approved. LSF over sheath to be coloured RED, including any gland shrouds.

All cables shall be installed on the new cable tray installation with flush drops to accessory positions.

Where surface runs are necessary the architectural features of the building shall be taken into account. Surface runs shall be kept to an absolute minimum.

Prior to commencing the installation, the Contractor shall agree with the fire alarm supplier the extent of connecting and fitting of equipment e.g. the specialist supplier may want to connect the fire alarm control panel.

System wiring to be fully tested prior to connection and Contractor shall ensure that all test readings are above the required insulation levels as laid down in the current I.E.E. Regulations and that the correct polarity is maintained throughout the installation. Under no circumstances will "T" junctions be allowed.

## **INPUT/OUTPUT INTERFACE MODULES**

Contractor shall include for the supply and installation of fire alarm interface modules to automatically release the door access system controllers and shut down designated items of mechanical plant, on activation of the fire alarm system.

Interface modules shall be compatible for use with the relevant fire alarm system protocol.

Interface modules shall be loop powered and provide independent volt free relay contacts for interfacing with the relevant systems.

Interface modules shall generally be installed adjacent to the item of equipment controlled, but all quantities to be determined by the system manufacturer and Electrical Contractor prior to 1<sup>st</sup> fix electrical installation.

Contractor shall also include for the supply and installation of a key operated auxiliary device isolator to be installed adjacent to the fire alarm panel. Auxiliary device isolator shall be connected to the fire alarm system and programmed at commissioning stage to prevent operation of the fire alarm interface units controlling kitchen and boiler plant gas valve shut-down or other elements of the mechanical services plant as designated by the engineer, during normal weekly testing of the fire alarm system.

## **LABELLING SYSTEM DEVICES**

The Contractor shall label all detectors and call points etc. with a suitable self adhesive label indicating the wiring sequence number and zone. The "as fitted" drawings shall also include the same information. The sequence number shall follow the sequence of wiring from point to point. "As fitted" documentation shall also

include details of wiring, identification of any wiring terminating in junction boxes or specialist equipment such as relays or plant control panels.

Copies of all address sheets shall be included in the O & M Manuals together with any additional schematic wiring diagrams required to indicate the connection to the specialist equipment.

### **REMOTE MONITORING OF SYSTEM**

The fire alarm system is to be monitored off-site by the Clients appointed monitoring station via an external telephone line connected to a digital communicator located in the intruder alarm panel.

Contractor shall include for a communication link to be provided from the panel position to the intruder alarm system panel for this purpose.

Contractor shall engage the services of a specialist contractor to carry out this element of the works.

Contractor shall make due allowance in his tender for this element of the works.

### **MIMIC DIAGRAM**

The Contractor shall provide and install a mimic diagram, adjacent to the fire alarm panel.

Mimic diagram shall be diagrammatic to the plan of the building and indicate the zonal configuration of the premises.

Mimic diagram to be wall mounted and fixed using security type screws.

The engraving shall be on white "traffolyte" and the diagram shall, provisionally, be the same height as the panel and approximately 200/300 wide. A full size drawing of the proposed zone location diagram shall be forwarded to the engineer for approval prior to engraving.

### **CERTIFICATION, TESTING AND COMMISSIONING**

Contractor shall include for the system to be fully tested and commissioned by the equipment manufacturer/supplier upon completion.

During commissioning any faults shall be rectified and the Contractor shall bear the cost together with any additional charges that may be incurred for subsequent revisits by the system supplier/manufacturer.

All certification, system log books etc., as detailed in Part A of this document shall be provided at handover of the installation.

a)

The Contractor shall include for instruction to the user and also include for visits as are necessary by the specialist supplier to provide instructions on the operation of the fire alarm system.

## **MAINTENANCE**

A maintenance contract shall be taken out for the first 12 months following handover to include maintenance in accordance with the British Standard and 24 hours call out cover.

## **EARTHING AND BONDING**

### **GENERAL**

The Contractor shall include for the supply, installation and connection of a complete earth cabling system for the proposed buildings, including all equipotential and supplementary bonding requirements.

The building shall be fully earthed in accordance with BS7671, the 17<sup>th</sup> Edition of the IEE Wiring Regulations. This shall include main equipotential bonding, supplementary bonding and cross bonding to maintain all conductive parts of the same electrical potential.

### **EARTHING CONDUCTORS**

In general, protective conductors shall comprise the steel wire armour of main and sub-main cables. Where additional conductors are required a single core LSF/Cu (green/yellow) cable shall be provided and installed, strapped to the appropriate multi-core using cable ties.

All cable terminations for mineral insulated cables shall be fitted with earth tails, fitted to the gland components in the manufacturers works.

### **MAIN EQUIPOTENTIAL BONDING**

Main Equipotential bonding shall include connection to the incoming gas, water services, lifts, pipework, ductwork, lightning protection system. Cable routes shall follow those of the associated mains cable.

Bonds to gas and water services shall be made as close to the point of entry to the building as possible and shall be clearly identified at each end of the cable. Care to be taken not to connect on the incoming side of any insulated inserts must be made.

### **SUPPLEMENTARY BONDING**

Supplementary bonding conductors shall be 4mm<sup>2</sup> single core yellow/green LSF/Cu cables (unless otherwise stated elsewhere in the specification) and shall be installed between the following:-

- a) All flexible joints in pipework.
- b) All flexible joints in ductwork.
- c) Pipes and singe units.
- d) Building cladding.
- e) Cable containment systems.

## **PART C - DRAWINGS AND EQUIPMENT SCHEDULES**

### **C.1      DRAWINGS** – Starting Point St Helens



## C.2 SCHEDULE OF PREFERRED EQUIPMENT AND MANUFACTURERS

ELEMENT	ITEM	SUPPLIER	RANGE
LV Distribution Equipment	Distribution Boards/ Command Devices	MEM	
Containment Systems	Cable Trunking Cable Trays Dado Trunking	Legrand  Centaur Ltd	Salamandre Swift President
Cables	General Wiring (singles) General Wiring (T&E) Fire Performance Armoured	AEI Cables	6491B 6242BH DHLS Enhanced BS7629-1 694-LSH
Fire Alarm Equipment			
Lighting Equipment	Luminaires Lighting Controls (modular) Lighting Controls (standalone)	Ansell Lighting  Ex-Or	-- Flex-7 or MLS Digital Connect  Silver Series
Accessories	MK	Socket Outlets Connection Units DP Switches	Logic/Platinum
Hearing Enhancement Systems			

# Starting Point- St.Helens

## Mechanical specification

### Basement: Plantroom

Please use specification in accordance with the mechanical plantroom drawing.

- Supply and fit 2no Potterton Sirius 2 FS 70kw boilers inclusive of the potterton low loss header kit, potterton shunt pumps, isolation valves and strainers for 2no boilers. 80mm F&R mains from the low loss header output.
- 50mm screwed gas main picked up from the existing to supply each boiler with a 22mm supply. Supply and fit new 2" gas solenoid, emergency stop button and gas monitoring alarms.
- Supply and fit 1no Flamco Flexfiller mini 230D (or similar approved) with flexible external quickfill option.
- Supply and fit 1no Flamco 6litre dosing pot (or similar approved) with F&R isolation valves.
- Supply and fit 1no Flamco 150litre expansion vessel with isolation and drain off valve.
- Existing CT CIRCUIT: connect onto the existing 50mm F&R pipework. Supply and fit 3no 50mm full bore lever isolation valves. 1no 50mm strainer. 2no expansion bellows. 1no 50mm NRV. 1no 4" face temperature gauge. 2no 4" face pressure gauges. 1no 50mm commissioning set. Supply and fit 1no 50mm Twin head pump set.
- New VT CIRCUIT to new fan convectors: supply and fit new 50mm F&R pipework to feed the ground floor. Supply and fit 3no 50mm full bore lever valves. 1 no 50mm strainer. 2no 50mm expansion bellows. 1no 50mm NRV. 1no 4" face temperature gauge. 2no 4" face pressure gauges. 1no 50mm Belimo 3-port valve and open/close actuator head. 1no 50mm double regulating valve.

1no 50mm commissioning set. Supply and fit 1no 50mm Twin head pump set .

- Existing VT CIRCUIT (2 of). Each circuit to have the following: connect onto the existing 22mm heating pipework. Supply and fit 3no 22mm full bore lever valves. 1no 22mm strainer. 2no 22mm expansion bellows. 1no 22mm NRV. 1no 4" face temperature gauge. 2no 4" face pressure gauges. 1no 22mm Belimo 3-port valve with open/close actuator head. 1no 22mm double regulating valve. 1no 22mm commissioning set. Supply and fit 1no 22mm Twin head pump set.
- HOT WATER- set aside and re-use the existing TP180B water heater. Primary pipework to be a 22mm circuit. Supply and fit 1no Wilo 28mm single phase secondary return pump. To supply and fit 1 full 28mm secondary return pipework circuit to each HW outlet (a site visit is essential). Installation of TMVs to each sink area.
- HEATING- full clean and inhibitor must be provided with a lab tested certification provided upon completion.
- FLUE- full new flue-liner and flueways to the new boilers required to suit the boiler output. Must be suitable for condensing boilers.
- All exposed pipework to be red oxide painted then lagged in foil back lagging.
- All pumps to be correctly sized and manufactured by Grundfos or Wilo.
- All pipework upto 54mm to be screwed steel. Over and above to be pressfit or welded.
- All pumps and expansion bellows to be flanged.
- CONTROLS-Full new Control panel required and full re-wire o the plantroom. Ambiflex or JBC user face on the control panel.

### Ground floor:

Please use specification in accordance with the mechanical drawing.

- Isolate, Drain and remove 4no radiators in the main area under the windows. Cut back all pipework to under the ground level.
- Disabled wc-Supply and fit 1no Stelrad LST 500x760 P+.
- Supply and fit new VT heating circuit (in accordance with plantroom schedule).
- To supply and fit 4no Dunham Bush 600 series 3kw ceiling mounted heaters located throughout the ground floor open area.- See plantroom drawing for Fan coil unit valve set up.