Resources and Regulation
Architectural Services

NBS BUILDING SPECIFICATION

for

ELMS BANK
SPECIALIST ARTS COLLEGE

NEW HYDROTHERAPY POOL AND CHANGING ROOMS

at

Ripon Avenue,
Whitefield, Bury. Lancs
M45 8PJ

Prepared By:

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Existing site/buildings/services

C20 Demolition

To be read with Preliminaries/General conditions

GENERAL REQUIREMENTS

120 EXTENT OF DEMOLITION
- General: Subject to retention requirements specified elsewhere demolish structures down to lev els as shown on drawing.

130 GROUNDWORKS
- General:
- Old foundations, slabs and the like: Break out where and to the extent stated.
- Contaminated material: Remove and carry out remediation required by the Enforcing Authority.

140 BENCH MARKS
- Unrecorded bench marks and other survey information: Give notice when found.
  - Do not remove or destroy.

150 FEATURES TO BE RETAINED
- General: Keep in place and protect the following: trees noted on drawings, protect in accordance with BS 5837.

SERVICES AFFECTED BY DEMOLITION

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

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

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

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

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

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

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

DEMOLITION WORK

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

320 GAS OR VAPOUR RISKS
- Precautions: Prevent fire or explosion caused by gas or vapour.

330 DUST CONTROL
- General: Reduce airborne dust by periodically spraying demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.
- Lead dust: Submit method statement for control, containment and clean-up regimes.

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

350 ADJOINING PROPERTY
- Temporary support and protection: Provide. Maintain and alter as necessary as work progresses.
- Damage: Minimize. Promptly repair.
  - Leave no unnecessary or unstable projections.
  - Make good to ensure safety, stability, weather protection and security.
- Support to foundations: Do not disturb.
- Defects: Report when exposed or becoming apparent.

360 STRUCTURES TO BE RETAINED
- Parts which are to be kept in place: Protect.
- Extent of work: Cut away and strip out with care to reduce the amount of making good to a minimum.

370 PARTLY DEMOLISHED STRUCTURES
- General: Leave in a stable condition, with adequate temporary support at each stage to prevent risk of uncontrolled collapse. Keep safe outside working hours.
- Temporary works: Prevent debris from overloading.
- Unauthorised persons: Prevent access.

380 DANGEROUS OPENINGS
- General: Illuminate and protect. Keep safe outside working hours.

390 ASBESTOS CONTAINING MATERIALS
- General: These are known to be present in the structures to be demolished in the following locations:
  refer to asbestos report.
- Removal: By a Contractor licensed by the Health and Safety Executive and prior to other works starting in these locations.

391 ASBESTOS CONTAINING MATERIALS
- Discovery: Give notice immediately of suspected asbestos containing materials discovered during demolition work. Avoid disturbing such materials.
- Methods for safe removal. Submit details and statutory risk assessments.

410 UNFORESEEN HAZARDS
- Unrecorded voids, tanks, chemicals, etc. discovered during demolition: Give notice.
- Methods for safe removal, filling, etc: Submit details.

440 SITE CONDITION AT COMPLETION
- Debris: Clear away and leave the site in a tidy condition.
- Other requirements: refer to relevant prelim section.

MATERIALS ARISING

510 CONTRACTOR'S PROPERTY
- Components and materials arising from the demolition work: Property of the Contractor except where otherwise provided.
  - Remove from site as work proceeds where not to be reused or recycled for site use.

520 RECYCLED MATERIALS
- Materials arising from demolition work: May 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 as necessary.

F
Masonry

F10 Brick/ block walling

To be read with Preliminaries/ General conditions.

TYPES OF WALLING

110 CLAY FACING BRICKWORK (Outer leaf of new cavity walls generally)

- Bricks: To BS EN 771-1.
  - Manufacturer: IBSTOCK Brick Ltd, Leicester Road, Ibstock, Leicestershire, LE67 6HS telephone 01530 261999..
    Product reference: Buff Multi (to match adjacent Sports Hall) 215 x 103 x 65mm.
  - Recycled content: Submit proposals.
  - Special shapes: None.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:1:6 cement:lime:sand.
  - Additional requirements: Natural non-coloured mortar .
- Bond: Half lap stretcher.
- Joints: Bucket handle.
- Features: None.

345 CONCRETE COMMON BRICKWORK (below ground level)

- Bricks: To BS EN 771-3.
  - Configuration: Solid.
  - Compressive strength:
    Mean value: Not applicable.
    Characteristic value: -.
    Category: tbc.
  - Freeze/ Thaw resistance: Not applicable.
  - Water absorption by capillarity: Not applicable.
  - Recycled content: Contractor's choice.
  - Work sizes (length x width x height): 215 x 103 x 65 mm & 215 x 140 x 65 mm.
  - Special shapes: None.
  - Additional requirements: None.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: Group 3.
  - Additional requirements: None.
- Bond: Half lap stretcher.

355A CONCRETE COMMON BLOCKWORK (inner leaf of new cavity wall & new internal walls as denoted on drawings)

- Blocks: To BS EN 771-3.
  - Manufacturer: Tarmac Limited.
    - Web: www.tarmac.co.uk.
    - Email: info@tarmac.co.uk.

    Product reference: Hemelite standard concrete blocks.
  - Configuration: Solid.
  - Compressive strength: 7.3 N/mm².
  - Thermal properties: [Thermal conductivity: at 3% moisture content - 0.47 W/mK].
  - Work sizes (length x width x height): 440 long x 140 wide x 215 mm high.
    Mortar: As section Z21.
  - Standard:To BS EN 998-2
  - Mix: 1:1:6.
  - Additional requirements: None.
- Bond: Half lap stretcher.

355B CONCRETE COMMON BLOCKWORK new internal walls where applicable, refer to drawing for position

- Blocks: To BS EN 771-3.
  - Manufacturer: Tarmac Limited.
    - Web: www.tarmac.co.uk.
    - Email: info@tarmac.co.uk.

    Product reference: Hemelite standard concrete blocks.
  - Configuration: Solid.
  - Compressive strength: 7.3 N/mm².
  - Thermal properties: [Thermal conductivity: at 3% moisture content - 0.47 W/mK].
  - Work sizes (length x width x height): 440 long x 100 wide x 215 mm high.

    Mortar: As section Z21.
  - Standard:To BS EN 998-2
  - Mix: 1:1:6.
  - Additional requirements: None.
- Bond: Half lap stretcher.

385A ENGINEERING BRICKWORK (to manholes if required as drainage drawings)

- Bricks: To BS EN 771-1.
  - Mortar: As section Z21.
  - Mix: Group 1with sulfate resisting cement.
- Bond: Flemish bond or English bond, 215 thickness..
- Joints: Flush.

WORKMANSHIP GENERALLY

430 CONDITIONING OF CLAY AND CALCIUM SILICATE BRICKS

- Bricks delivered warm from manufacturing process: Do not use until cold.
- Absorbent bricks in warm weather: Wet to reduce suction. Do not soak.

435 SITE STORAGE

- Store bricks/blocks in stable stacks clear of the ground and clearly identified by type, strength, grade, etc. Protect from adverse weather and keep clean and dry.

440 CONDITIONING OF CONCRETE BRICKS/ BLOCKS

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

460 MORTAR GROUPS

- Mix proportions: For a specified group select a mix design from the following:

Group	1	2	3	4
PC*:lime:sand with or without air entraining additive				
	1:0-0.25:3	1:0.5:4-5	1:1:5-6	1:2:8-9
Masonry cement:sand containing PC* and lime in approx ratio 1:1, and an air entraining additive				
	-	1:3	1:3.5-4	1:4.5
Masonry cement:sand containing PC* and inorganic materials other than lime and air entraining additive				
	-	1:2.5-3.5	1:4-5	1:5.5-6.5
PC*:sand and air entraining additive				
	1:3	1:3-4	1:5-6	1:7-8

PC* = Portland cement

- Batching: Mix proportions by volume.
- Mortar type: Continuous throughout any one type of masonry work.

500 LAYING GENERALLY

- Mortar joints: Fill vertical joints. Lay bricks, solid and cellular blocks on a full bed.
- Bond where not specified: Half lap stretcher.
- Vertical joints in facework: Even widths. Plumb at every fifth cross joint.

510 OVERHAND LAYING

must not be used without approval.

520 ACCURACY

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

521 ACCURACY

Notwithstanding clause 520, comply with any critical dimensions given on the drawings.

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

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

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

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

561 COURSING BRICKWORK WITH EXISTING
- Gauge: Line up with existing brick courses.

580 LAYING FROGGED BRICKS
- Single frogged bricks: Frog uppermost.
- Double frogged bricks: Larger frog uppermost.
- Frog cavity: Fill with mortar.

585 LAYING CELLULAR BRICKS
- Orientation: Cavities downward.

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

610 SUPPORT OF EXISTING WORK
- Joint above inserted lintel or masonry: Fully consolidated with semidry mortar to support existing structure.

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

635 JOINTING
- Profile: Consistent in appearance.

645 ACCESSIBLE JOINTS NOT EXPOSED TO VIEW
- Jointing: Struck flush as work proceeds.

665A POINTING where specified
- Rake out joints to a depth of 12-15 mm as the work proceeds. Subsequently, remove loose debris from the joints using a dry brush, dampen the work, and neatly point to the specified profile in a continuous operation from the top of the wall downwards as the scaffolding is taken down.

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

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

ADDITIONAL REQUIREMENTS FOR FACEWORK

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

730 BRICK/ CONCRETE BLOCK SAMPLES
- General: Before placing orders with suppliers submit for approval of appearance labelled samples of the following: Bricks / blocks as in clause F10 .
- Selection of samples: Representative of the range in variation of appearance.

740 FINISHED MASONRY WORK REFERENCE PANELS
- General: Before proceeding to construct the following walling types, construct panels as specified. Give notice when panels are dry.
- Selection of masonry units: Reasonably representative of the average quality of the whole order to be delivered .
- Panel types:
  - Walling type: F10/ .
    Location: - .
    Size: 1.5 x 1.5 m .
    Other requirements: Air brick as clause F30/ .

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

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

780 GROUND LEVEL
- Commencement of facework: Not less than 150 mm below finished level of adjoining ground or external works level.

790 PUTLOG SCAFFOLDING
- Use: Not permitted in facework.

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

830 CLEANLINESS

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

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

To be read with Preliminaries/ General conditions.

CAVITIES

110A CONCRETE FILL TO BASE OF CAVITY
- Concrete generally: To Structural Engineers Specification
  Extent: Maintain 75 mm between top of fill and external ground level and a minimum of 225 mm between top of fill and ground level dpc.
- Placement: Compact to eliminate voids.

120 CLEANLINESS
- Cavity base and faces, ties, insulation and exposed dpcs: Free from mortar and debris.

132A PERPEND JOINT PLASTICS WEEP HOLES
- Manufacturer: Cavity Trays Ltd.
  - Web: www.cavitytrays.com.
  - Email: enquiries@cavitytrays.co.uk .
  - Product reference: Type W Cavitray Weepvent .
  - Colour: [Brown].
  - Duct extension: [As Required].
  - Render front cover: [As Required]. Colour [Brown] .
- - Locations: Through outer leaf immediately above base of cavity, at cavity trays, stepped dpcs and external openings. 75 mm above top of cavity fill at base of cavity.
- Provision: At not greater than 1000 mm centres and not less than two over each opening.

155A PARTIAL FILL CAVITY INSULATION
- Manufacturer: Kingspan Insulation Ltd.
  - Web: www.insulation.kingspan.com.
  - Email: techline.uk@insulation.kingspan.com.
  - Product reference: Kooltherm® K8 Cavity Board
- Insulation thickness: 40mm.

155B PARTIAL FILL CAVITY INSULATION
- Manufacturer: Kingspan Insulation Ltd.
  - Web: www.insulation.kingspan.com.
  - Email: techline.uk@insulation.kingspan.com.
  - Product reference: Kooltherm® K8 Cavity Board
- Insulation thickness: 80mm.

160A AIR BRICKS IN EXTERNAL WALLING
- Manufacturer: Cavity Trays Ltd.
  - Web: www.cavitytrays.com.
  - Email: enquiries@cavitytrays.co.uk.
  - Product reference: Cavibrick
- Nominal face size of airbrick assembly (height x width): 75 mm x 225 mm.
- Colour: Brown.

180A CAVITY CLOSERS
- Manufacturer: Cavity Trays Ltd.
  - Web: www.cavitytrays.com.
  - Email: enquiries@cavitytrays.co.uk.
  - Product reference: Cavi90 Type H Cavicloser

180B CAVITY CLOSERS
- Manufacturer: Cavity Trays Ltd.
  - Web: www.cavitytrays.com.
  - Email: enquiries@cavitytrays.co.uk.
  - Product reference: Type WCA Cavicloser (acts as dpc)
    " Cavity width: 130 mm.
    " Continuity Advantage Option required (optional extending insulating core for interface with partial fill insulaion)

180C CAVITY CLOSERS
- Manufacturer: Cavity Trays Ltd.
  - Web: www.cavitytrays.com.
  - Email: enquiries@cavitytrays.co.uk.
  - Product reference: Cavi 60 MWR 200 Cavity Fire Stop
    " Cavity width: 130 mm.
    " Length: Contractor's choice.

185A TRANSMITTED NOISE REDUCTION SYSTEM refer to plan for positions.
- Type: Flanking wall system.
- Manufacturer: Cavity Trays Ltd.- Web: www.cavitytrays.com.- Email: enquiries@cavitytrays.co.uk. . .
  - Product reference: Cavi 240 Type SAF Vertical Barrier. .
- Width: special to suit 130mm.

REINFORCING/ FIXING ACCESSORIES

211A CAVITY WALL TIES USED WITH PARTIAL FILL INSULATION
- Manufacturer: Ancon Building Products.
  - Web: www.ancon.co.uk.
  - Email: info@ancon.co.uk.
  - Product reference: Double Triangle Wall Tie
- Length: 250 mm.
- Material: Stainless steel grade 1.4301 (304).

233 FIXING TIES IN MASONRY CAVITY WALLS WITH PARTIAL FILL CAVITY INSULATION
- Embedment in mortar beds (minimum): 50 mm.
- Placement: Sloping slightly downwards towards outer leaf, without bending. Drip centred in the cavity and pointing downwards.
- Spacing: Evenly space in non staggered horizontal and vertical rows.
  - Horizontal centres: 600 mm .
  - Vertical centres: 450 mm .
- Spacing centres of top (eaves) row of ties: Not more than 450 mm .
- Provision of additional ties: Within 225 mm of reveals of unbonded openings.
  - Spacing: At not more than 300 mm centres vertically .

241A WALL STARTERS/ CONNECTORS
- Manufacturer: Cavity Trays Ltd.
  - Web: www.cavitytrays.com.
  - Email: enquiries@cavitytrays.co.uk.
  - Product reference: Cavilinks

251A WALL HEAD RESTRAINT SLIP TIES
Refer to Structural Engineers Details

255A WIND POSTS
- Refer to Structural Engineers Details

260A ANGLE SUPPORTS
Refer to Structural Engineers Details

281A LATERAL RESTRAINT TIES FOR MOVEMENT JOINTS
- Refer to Structural Engineers Details

FLEXIBLE DAMP PROOF COURSES/ CAVITY TRAYS

360A GAS RESISTANT DPCS/ CAVITY TRAYS refer to details
- Manufacturer: Visqueen Building Products.
  - Web: www.visqueenbuilding.co.uk.
  - Email: riba@visqueenbuilding.co.uk.
  - Product reference: Co2 Gas Resistant DPC
- Width: to suit.

385A PREFORMED DPC/ CAVITY TRAY JUNCTION CLOAKS/ STOP ENDS
- Manufacturer: Cavity Trays Ltd.
  - Web: www.cavitytrays.com.
  - Email: enquiries@cavitytrays.co.uk.
  - Product reference: Advantage Unleaded Gable Abutment Trays
- Location: As shown on drawing where any roof abuts cavity masonry .
- Cavity width: As shown on drawing .
- Types: As shown on drawing .
- Rake out strips: As shown on drawing .

390 SITE FORMED DPC/ CAVITY TRAY JUNCTIONS/ STOP ENDS
- Three dimensional changes in shape: Form to provide a free draining and watertight installation. Seal laps.
- Alternative use of preformed junction cloaks/ stop ends: Submit proposals.

INSTALLATION OF DPCS/ CAVITY TRAYS

400 COLD WEATHER WORKING
- In cold weather warm dpc rolls before unrolling, to avoid cracking.

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

425 GROUND LEVEL DPCS
- Joint with damp proof membrane: Continuous and effectively sealed.

435 STEPPED DPCS IN EXTERNAL WALLS
- External walls on sloping ground: Install dpcs not less than 150 mm above adjoining finished ground level.

445 SILL DPCS
- Form and placement: In one piece and turned up at back when sill is in contact with inner leaf.

475 SITE FORMED CAVITY TRAYS
- Requirements to prevent downward ingress of water:
  - Profiles: To match those shown on drawings. Firmly secured.
  - Joint treatment: Use unjointed wherever possible, otherwise lap at least 100 mm and seal to produce a free draining and watertight installation.
  - Horizontal cavity trays: Support using cavity closer.
  - Sloping cavity trays: Prevent sagging.
  - Cleanliness: Free from debris and mortar droppings.

485 CAVITY TRAYS OVER OPENINGS AND OTHER CAVITY BRIDGINGS
- Length: To extend not less than 150 mm beyond ends of lintels/ bridgings.

495 GAS RESISTANT DPCS/ CAVITY TRAYS
- Joint treatment: Use unjointed wherever possible, otherwise lap at least 150 mm and seal to form a gas and watertight installation.
- Joint with damp proof membrane: Overlap dpc/ cavity tray not less than 150 mm.

515 DPC/ CAVITY TRAY LEADING EDGE IN FACEWORK - FLUSH
- Treatment at face of masonry: Finish flush and clear of mortar at the following locations: Genera lly .

560 VERTICAL DPCS GENERALLY
- Form: In one piece wherever possible.
  - Joints: Upper part overlapping lower not less than 100 mm.

570 JAMB DPCS AT OPENINGS
- Joint with cavity tray/ lintel at head: Full underlap.
- Joint with sill/ horizontal dpc at base: Full overlap.
- Projection into cavity: Not less than 25 mm.
- Relationship with frame: In full contact.

JOINTS

610A MOVEMENT JOINTS WITH SEALANTTO BLOCKWORK NON-FIRE-RESISTING)
- Joint preparation and sealant application: As section Z22.
- Refer to Structural Engineers specification

611 MOVEMENT JOINTS WITH SEALANTTO BLOCKWORK FIRE-RESISTING)
- Joint preparation and sealant application: As section Z22.
- Refer to Structural Engineers specification

612 MOVEMENT JOINTS WITH SEALANTTO BRICKWORK -
- Joint preparation and sealant application: As section Z22.
- Refer to Structural Engineers specification

630 UNEXPOSED CONTRACTION JOINTS
- Formation: Close butt as work proceeds.

650 POINTING IN FLASHINGS
- Joint preparation: Free of debris and lightly wetted.
- Pointing mortar: As for adjacent walling.
- Placement: Fill joint and finish flush.

660 PINNING UP TO SOFFITS
- Top joint of loadbearing walls: Fill and consolidate with mortar.

670A TOPS OF NONLOADBEARING WALLS
- Restraints: 75 x 100 mm channel of galvanized steel sheet to BS EN 10326 fixed to metal deck with selftapping screws at 600 mm centres. .
  - Fixing: Secure to soffit.
- Joint filler: as required .
  Manufacturer: Rockwool Ltd.
  - Web: www.rockwool.co.uk.
  - Email: info@rockwool.co.uk.
  - Product reference: Fire Barrier Slab.
  " Accessories: Rockwool Acoustic Intumescent Sealant.
  - Placement: Full, no gaps.

PROPRIETARY SILLS/ LINTELS/ COPINGS/ DRESSINGS

745A PRE-STRESSED CONCRETE LINTEL
- Manufacturer: Naylor Industries plc.
  - Web: www.naylor.co.uk.
  - Email: sales@naylor.co.uk.
  - Product reference: refer to Structural Engineers specification.
- Length: refer to Structural Engineers specification.

755A PREFABRICATED STEEL LINTELS
- Standard: To BS EN 845-2.
- Manufacturer: IG Lintels .
  Web: www.IGLtd.co.uk.
  - Email: sales@IGltd.co.uk.
  - Product reference: [refer to Structural Engineers specification].
    Length: [refer to Structural Engineers specification].

MISCELLANEOUS ITEMS

840 OPENINGS FOR FRAMES
- Formation: Use accurate, rigid templates to required size.

850 WALL PLATES
- Placement: On full bed of mortar to correct horizontal level.

F31 Precast concrete sills/ lintels/ copings/ features

To be read with Preliminaries/ General conditions.

TYPES OF COMPONENT

105 PRECAST external door threshold
- Concrete: Components manufacturer's 'proprietary' concrete.
  - Identity: Manufacturer's mix reference .
- Conformity: To BS 8500-2 and the recommendations of BS 8500-1 Annex A5 for the specified exposure class.
  - Evidence: Submit third party certification from a UKAS accredited laboratory.
- Exposure class: - .
  - Strength class (cylinder/ cube): Manufacturer's choice .
- Reinforced components: Submit proposals for type of reinforcement and cover.
- Matching sample for finish to visible faces: As existing .
- Other requirements: Concrete grade and cover to reinforcement as clause 361. Finish: Smooth, generally as specified under 'Fair faced components'. .

130A CONCEALED PRECAST LINTELS (Refer to Structural Engineers Spec)
- Standard: To BS EN 845-2.
  - Verification of performance: Submit calculations or test certificates.

140A CONCEALED PRECAST LINTELS (Refer to Structural Engineers Spec)
- Concrete: Designated to BS 8500-2: Minimum RC30.
  - Aggregate (maximum): size: 20 mm.
- Reinforcement provision for spans up to 1800 mm

Clear span	Section	Bearing	Reinforcement
Up to 900 mm wall	140 mm deep x width of	150 mm at both ends each 105 mm of wall thickness.	One. 12 mm mild steel bar for
900 to 1800 mm wall	215 mm deep x width of	225 mm at both ends each 105 mm of wall thickness.	One. 16 mm mild steel bar for

- Cover to reinforcement (nominal): 20 mm minimum.

GENERAL REQUIREMENTS

210 MOULDS
- Permissible fabrication and operating tolerances: Length 0 to +6 mm, other dimensions ±3 mm.

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

230 AGGREGATES

" Standard: To BS 882.
Maximum drying shrinkage when tested to BS 812-120: 0.075%

250 REINFORCEMENT

- Carbon steel reinforcement: As appropriate to BS 4449, BS 4482 and BS 4483.
  - Cutting and bending: To BS 8666.
- Galvanized reinforcement: Galvanized to BS EN ISO 1461 after cutting. Chromate treated.
- Stainless steel reinforcement: To BS 6744.
  - Designation 1,4301.
  - Cutting and bending: To BS 8666.
- Non structural reinforcement: Include to resist shrinkage and handling stresses.
- Bimetallic corrosion and staining: Prevent by appropriate selection and use of materials.
- Condition at time of placement: Clean, free of corrosive pitting, loose materials and substances that adversely affect reinforcement, concrete, or bond between the two.
- Fixing: Accurate and secure.
  - Method: Wire tying, approved steel clips or tack welding if permitted.
  - Concrete cover: Maintain free of all tying wire or clips.

255 QUALITY ASSURANCE OF REINFORCEMENT

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

260 CASTING AND CURING

- Placing of concrete: Thoroughly compact.
- Protection against drying out: Methods and duration to BS EN 13369 clause 4.2.1.3.
- Immature components: Avoid movement, vibration, overloading, physical shock, rapid cooling and thermal shock.
- Delivery to site: Not until at least 14 days after casting.

261 CUTTING

- Cutting of precast concrete components: Not permitted.

262 RECORDS

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

FAIR FACED COMPONENTS

320 DETAILS OF SAMPLES

- Submittals after approval of appearance and before manufacture of production units:
  - Aggregates: Confirm type, maximum size, grading and source.
- Conformity of designed concrete: Evidence of compliance for compressive strength class and limiting values of composition.

330 MIXES FOR VISIBLE FACED COMPONENTS
- Constituent materials and mix design for each finish type: To remain constant.
- Colour and appearance of each finish type: To remain constant.
- Aggregates: To BS EN 12620.
  - Origin: Single source for each finish type, having sufficient quantity for whole contract.

341 CONDITIONS FOR SEPARATE FACING AND BACKING MIXES
- Difference in cement content: Not greater than 80 kg/m³.
- Thickness of facing mix: 10 mm greater than maximum aggregate size, minimum 25 mm.
- Location of reinforcement: Minimum 20 mm away from the interface between mixes.
- Compaction of facing and backing mix: Carry out to create monolithic construction.

350 QUALITY OF FINISHES
- Appearance standard: As established by samples.

365 COVER ON EXPOSED AGGREGATE FACES
- Nominal cover: Exclusive of aggregate projection.

370 COVER ON VISIBLE FACES
- Spacers: Not permitted.
- Proposed method statement: Submit.

380 CONSISTENCY OF PRODUCTION METHODS
- Production methods: To remain consistent for each matching type of finish.
  - Finish appearance: To remain within the range of variation indicated by the samples submitted.
- Changes to production methods: If variations are proposed for components of the same finish, submit evidence that there will be no difference in appearance.

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

INSTALLATION

420 LAYING
- Mortar for bedding and jointing: As section Z21.
  - Mix: As used for adjacent work .
  - Packing: If required use slate.
- Bedding components: On full bed of mortar
- Removal of marks, stains and extraneous mortar on visible faces: Rubbing not permitted.

430 SUPPORT OF EXISTING WORK OVER NEW LINTELS
- Joint above lintels: Fully fill and compact with semidry mortar.

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

G
Structural/Carcassing metal/timber

G20 Carpentry/ timber framing/ first fixing

To be read with Preliminaries/ General conditions.

GENERAL

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

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

160 GRADING AND MARKING OF SOFTWOOD
- Timber of a target/ finished thickness less than 100 mm and not specified for wet exposure: Graded at an average moisture content not exceeding 20% with no reading being in excess of 24% and clearly marked as 'DRY' or 'KD' (kiln dried).
- Timber graded undried (green) and specified for installation at higher moisture contents: Clearly marked as 'WET' or 'GRN'.
- Structural timber members cut from large graded sections: Regraded to approval and marked accordingly.

PRODUCTS

210 STRUCTURAL SOFTWOOD (GRADED DIRECT TO STRENGTH CLASS) FOR STRUCTURAL USE GENERALLY
- Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
- Strength class to BS EN 338: C24 or as Structural Engineers specification.
- Treatment: NBS section Z12 and Wood Protection Association Commodity Specification C8, Service life: 40 years.

270 UNGRADED SOFTWOOD FOR INTERNAL NONSTRUCTURAL 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: Sawn.
- Treatment: NBS section Z12 and Wood Protection Association Commodity Specification C8.

WORKMANSHIP GENERALLY

401 CROSS SECTION DIMENSIONS OF STRUCTURAL SOFTWOOD AND HARDWOOD
- Dimensions: Dimensions in this specification and shown on drawings are target sizes as defined in BS EN 336.
- Tolerances: The tolerance indicators (T1) and (T2) specify the maximum permitted deviations from target sizes as stated in BS EN 336, clause 4.3:
  - Tolerance class 1 (T1) for sawn surfaces.
  - Tolerance class 2 (T2) for further processed surfaces.

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.

403 CROSS SECTION DIMENSIONS OF NONSTRUCTURAL HARDWOOD
- Dimensions: Dimensions in this specification and shown on drawings are finished sizes.
- Maximum permitted deviations from finished sizes: As stated in BS EN 1313-2:
  - Clause 6 for sawn sections.
  - Clause NA.3 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.

430 SELECTION AND USE OF TIMBER
- Timber members damaged, crushed or split beyond the limits permitted by their grading: Do not use.
- Notches and holes: Position in relation to knots or other defects such that the strength of members will not be reduced.
- Scarf joints, finger joints and splice plates: Do not use without approval.

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

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

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

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

520A EXPOSED END GRAIN
- Components: Seal exposed end grain of the following before delivery to site:

530 PAINTED FINISHES
- Structural timber to be painted: Primed as specified before delivery to site.

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

550 EXPOSED TIMBER
- Planed structural timber exposed to view in completed work: Prevent damage to and marking of surfaces and arrises.

JOINTING TIMBER

570 JOINTING/FIXING GENERALLY
- Generally: Where not specified precisely, select methods of jointing and fixing and types, sizes and spacings of fasteners in compliance with section Z20.

580A FRAMING ANCHORS
- Refer to Structural Engineers & Haworth Timber specification.

590A METAL PLATE FASTENERS/GUSSETS
- Refer to Structural Engineers & Haworth Timber specification.

615A BOLT/ SCREW ASSEMBLIES if required
- Refer to Structural Engineers & Haworth Timber specification.

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

ERECTION AND INSTALLATION

760 TEMPORARY BRACING
- Provision: As necessary to maintain structural timber components in position and to ensure complete stability during construction.

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

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

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

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

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

H
Cladding/Covering

H31 Metal profiled/ flat sheet cladding/ covering

To be read with Preliminaries/ General conditions.

TYPES OF CLADDING/ COVERING SYSTEM

110A METAL Profiled Cladding to New Pitched Roofs and Walls on Steel Frame
- Secret fix insulated standing seam to CONTRACTOR DESIGN - Refer to drawings & Structural Engineers drawings & spec

GENERAL REQUIREMENTS

170 DESIGN
- Cladding/ covering system: Complete detailed design and submit before commencement of fabrication.
  - Standard: To BS 5427-1.
- Related works: Coordinate in detailed design.

172 THERMAL PERFORMANCE/ BRIDGING
- Requirement: Complete the thermal design of the cladding/ covering system to avoid excessive thermal bridging.
  - Standards: MCRMA Technical Paper 14 and BRE Information Paper 1/06.

175A PRODUCT SAMPLES
- General: Before commencing detailed design, submit labelled samples

176 FASTENER SAMPLES
- General: During detailed design, submit labelled samples of each type of fastener.

DESIGN/ PERFORMANCE REQUIREMENTS

185A PERFORMANCE COMPLIANCE
- Verification: Before commencing fabrication, submit evidence based on laboratory testing or computer modelling.

198 WATER PENETRATION
- Requirement: Under site exposure conditions, moisture must not penetrate onto internal surfaces, or into cavities not designed to be wetted.

202 AVOIDANCE OF SURFACE CONDENSATION
- Requirement: Determine surface condensation risk of cladding/ covering system using the method described in BS EN ISO 13788. If necessary, revise thermal insulation to provide satisfactory temperature factor (fmin). ensure that damage and nuisance from surface condensation does not occur.

FIXING CLADDING/ COVERING

219 FASTENERS
- Unspecified fasteners: Recommended for the purpose by the cladding/ covering manufacturer.

221 FITTINGS AND ACCESSORIES
- Unspecified fittings and accessories: Recommended for the purpose by the cladding/ covering manufacturer.

223 PREVENTION OF ELECTROLYTIC ACTION
- Isolating tape: Type recommended by cladding/ covering manufacturer.
  - Location: To contact surfaces of supports and sheets of dissimilar metals.

234A GUTTERS TO BOUNDARY OF NEW METAL DECK ROOF AREA
Refer to drawings & Structural Engineers drawings & spec.
- Material: Alumium.
  - Gauge/ Thickness: 2 mm.
  - External finish: powder coated HPS200 Anthracite.
- Eaves box gutter: 2mm post coated aluminium gutter, including butt straps welded one side and stop ends, colour TBC, gutter width TBC mm, TBC mm deep. Fix to pan of SpeedDeck using BulbTite rivet or stainless steel screw as appropriate, minimum 1No per pan. Gutter arms at 510mm centres over interlocking ribs, min 1m long, secured by 3No BulbTite rivets. Downpipes TBC mm round/square*, powder coated to match. Designed to BSEN 12056.
  Jointing method: Butt joint with butt strap, sealed with silicone sealant. Secure with aluminium bolts. Provide movement joints within runs of guttering..
- Fixing method: To structural engineer's requirements..

261A VAPOUR CONTROL MEMBRANE TO NEW ROOF AREA
Refer to drawings & Structural Engineers drawings & spec.
Material: 250g/m² reinforced polyethylene.
Supplier and reference: SpeedDeck Building Systems Ltd StramCheck
Lay as the work proceeds ensuring continuity at openings and over ridges/hips.
Lap sides and ends of sheets not less than 75mm and seal with butyl strip supplied by SpeedDeck Building Systems Ltd.
Seal with adhesive tape to all penetrations, pipes, 'Mansafe' posts, ducts, structural members, ventilator/rooflight upstands etc which pass through and to perimeter abutments. On roofs with perforated liners or decks the air tightness and vapour control is only provided by the StramCheck vapour check membrane.
Carefully check for tears and punctures and seal them with adhesive tape before covering.
Ensure that bottom edges overlap flashings, gutters, sills etc to allow free drainage to the exterior.

410 FIXING SHEETS GENERALLY
- Cut edges: Clean true lines.
- Penetrations: Openings to minimum size necessary.
  - Edge reinforcement: Sections to details.
- Sheet orientation: Exposed joints of side laps away from prevailing wind unless shown otherwise on drawings.
- Sheet ends, laps and raking cut edges: Fully supported and with fixings at top of lap.
- Fasteners: Drill holes. Position at regular intervals in straight lines, centred on support bearings.
  - Position of fasteners in oversized drilled holes: Central.
  - Fasteners torque: Sufficient to correctly compress washers.
- Debris: Remove dust and other foreign matter before finally fixing sheets.
- Completion: Check fixings to ensure watertightness and that sheets are secure.
- Cut edges: Paint to match face finish.

470 STRUCTURAL MOVEMENT JOINTS
- Type: Cover flashing fixed on one side over gap between sheets.
- Location: Coincident with structural movement joint.
- Width of gap: To match structural movement joint requirements.
- Requirement: Weathertight.

490 FLASHINGS/ TRIMS
To be provided with integral turned-down front edges/sides and to be lapped at joints as follows, unless specified otherwise:
- 'Open' sections i.e. lappable flashings and trims: End laps to be 150 mm and sealed, or sealed onto 150 mm butt straps (see clause 550).
- 'Closed' section flashings and trims: End laps to be sealed onto 150 mm butt straps (see clause 550).
- Corner flashings, units, etc. to be factory fabricated.

491 FIXING FLASHINGS/ TRIMS

Where possible fix flashings/trims to structure in conjunction with adjacent sheeting. Otherwise fix to every SpeedDeck rib across slope and elsewhere at maximum 450 mm centres with SFS Bulbtite rivets having integral seals and colour matched caps.

- Fixings for ridge and top abutment flashings should be approximately 25 mm from front of flashing and pass through the profile foam filler.
- Check watertight flashings on completion and adjust as necessary to ensure they are watertight and flashings are secure but not buckled or distorted.

492 JOINTING FLASHINGS/ TRIMS

Butt joint and seal flashings/trims on 150 mm wide butt straps made from sheet of the same material and finish, with four sealant strips positioned under the edges of the flashings/butt strap Rivet one side of joint only, leaving minimum 3mm allowance between ends of flashings for thermal movement.

493 APRON FLASHINGS

To be provided with integral turned-down edges and fixed with 150 mm laps running across slope with two rows of sealant strips positioned under the edges of the sheets.

- Join laps with sealed rivets at 75-100 mm centres.
- Provide sealant strips and fix aprons at maximum 450 mm centres to SpeedDeck side ribs and alternate intermediate ribs with SFS Bulbtite Aluminium sealed rivets with colour matched cap.

494 VERGE FLASHINGS

- Material: Aluminium
  Gauge/Thickness: 3mm thick
  Size(s): Profile as shown on drawings.
  External finish: Polyester powder coated finish
- Method of jointing: Butt joint with butt strap, sealed with silicone sealant. Provide movement joints within runs of flashing as clause 470.
- Method of fixing: Verge support structure and timber battens to structural engineers requirements.
- Special features: Provide shop-welded corners and junctions to integrate with ridge and eaves flashings.

495 EAVES & RIDGE FLASHINGS

- Material: Aluminium
  Gauge/Thickness: 3mm thick
  Size(s): Bullnose profile as shown on drawings.
  External finish: Polyester powder coated finish
- Method of jointing: Butt joint with butt strap, sealed with silicone sealant. Provide movement joints within runs of flashing as clause 470.
- Method of fixing: Eaves and ridge support structure and timber battens to structural engineer's requirements.
- Special features: Provide shop-welded corners and junctions to integrate with verge flash

496 SEALING LAPS OF FLASHINGS

- Sealant: Type(s) recommended for the purpose by sheet manufacturer.
- Position in straight, unbroken lines immediately below fixing positions and parallel to edges of sheets. Place into corrugations. Do not allow to stretch or sag into position.
- Ensure continuity and effectiveness of seal, especially at corners of sheets. Do not over-compress.

540 ABUTMENTS

- Junctions with flashings: Weathertight and neatly dressed down.

550 SEALING LAPS ON EXTERNAL SHEETS

- Sealant tape: Types recommended by sheet manufacturer.
  - Position: Below fixing positions in straight unbroken lines, parallel to and slightly back from edge of sheet.
- Seal quality: Effective, continuous and not overcompressed.
- End laps: Sealant tape positions:
  - Single line tape: Immediately below line of fasteners.
  - Second line tape (where specified): Slightly set back from edge of external sheet.
- Side laps: Sealant tape positions:
  - Single line tape: Outside line of fasteners.
  - Second line tape (where specified): On other side of fasteners.

H71 Lead sheet coverings/ flashings

To be read with Preliminaries/ General conditions.

TYPES OF LEADWORK

420 COVER FLASHINGS TO CAVITY TRAYS GENERALLY

- Lead:
  - Thickness: 1.75 or 1.80 mm (Code 4).
- Dimensions:
  - Lengths: Not more than 1500 mm.
  - End to end joints: Laps of not less than 100 mm.
  - Cover: Overlap to upstand of not less than 75 mm.
- Fixing: Head fixed with lead wedges into brick joint as clause 830. Tail fixed with code 4 lead clips at 500 centres as clause 720. .

452 SINGLE STEP AND COVER FLASHINGS AT ABUTMENT

- Lead:
  - Thickness: 1.75 or 1.80 mm (Code 4).
- Single step flashings:
  - Dimensions:
    End to end joints: Laps of not less than 50 mm.
    Cover: Overlap to cover flashing upstands of not less than 65 mm.
  - Fixing: Lead wedges at every step.
- Cover flashings:
  - Dimensions:
    Lengths: Not more than 1500 mm.
    End to end joints: Laps of not less than 100 mm.
    Upstand: Not less than 85 mm.
    Cover to roof: Not less than 150 mm and over first full tile corrugation.
  - Fixing: Turn over head of tile and clip (clause 715) at not more than 500 mm centres along free edge. At pitches over 30°, plug and screw upstand to abutment in top third of each length only.

497 LEAD DAMP PROOF COURSE/ CAVITY TRAY AT RAKING ABUTMENTS

- Lead:
  - Thickness: 1.75 or 1.80 mm (Code 4).
  - Finish: Fully coated on both sides with high-build, bitumen based paint on the surfaces which are to be embedded.
- Joints:
  - Generally: Lap not less than 50 mm.
  - Where the lead spans a cavity: Leadwelded.
- Laying: On a thin even bed of wet mortar.
  - Next layer of overlying construction: Bed on mortar without delay and finish joint neatly.
  - Chase in bedding mortar under damp proof course: Rake out to a depth of 25 mm before fully set, for subsequent fitting of flashing.

498 COMBINED LEAD DAMP PROOF COURSE/ CAVITY TRAY AND COVER FLASHING AT HORIZONTAL ABUTMENTS

- Lead:
  - Thickness: 1.75 or 1.80 mm (Code 4).
  - Finish: Fully coated on both sides with high-build, bitumen based paint on the surfaces which are to be embedded.
- Length: Not more than 1500 mm.
- Cover of flashing: Not less than 150 mm.
- Joints: Leadweld gusset upstand not less than 100 mm from end of each length, coinciding with vertical mortar joint in wall. Lap adjoining length over gusset upstand.
- Laying: On a thin even bed of wet mortar.
  - Next layer of overlying construction: Bed on mortar without delay and finish joint neatly.
- Fixing cover flashing: With clips at laps and at 500 mm centres..

GENERAL REQUIREMENTS/ PREPARATORY WORK

510 WORKMANSHIP GENERALLY

- Standard: To BS 6915 and latest edition of 'Rolled lead sheet. The complete manual' published by the Lead Sheet Association.
- Fabrication and fixing: To provide a secure, free draining and completely weathertight installation.
- Operatives: Trained in the application of lead coverings/ flashings. Submit records of experience on request.
- Preforming: Measure, mark, cut and form lead prior to assembly wherever possible.
- Marking out: With pencil, chalk of crayon. Do no use scribers or other sharp instruments without approval.
- Bossing and forming: Straight and regular bends, leaving sheets free from ripples, kinks, buckling and cracks.
- Solder: Use only where specified.
- Sharp metal edges: Fold under or remove as work proceeds.
- Finished work: Fully supported, adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress.
  - Protection: Prevent staining, discolouration and damage by subsequent works.

515 LEADWELDING

- In situ leadwelding: Not permitted.

520 LEAD SHEET

- Production method:
  - Rolled, to BS EN 12588, or
  - Machine cast, Agrément certified and to code thicknesses with a tolerance (by weight) of ±5%, or
  - Sand cast, from lead free from bitumen, solder, other impurities, inclusions, laminations, cracks, air, pinholes and blowholes; to code thicknesses but with a tolerance (by weight) of ±10%.
- Identification: Labelled to show thickness/ code, weight and type.

550 LIGHTNING PROTECTION

- Lead coverings: Attach the following to a lightning protection system: see electrical engineers spec .
  - Electrical continuity: Provide between lead sheets. Discontinuous sections must be separately bonded.

610 SUITABILITY OF SUBSTRATES

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

620 PREPARATION OF EXISTING TIMBER SUBSTRATES
- Remedial work: Adjust boards to level and securely fix. Punch in protruding fasteners and plane or sand to achieve an even surface.
- Defective boards: Give notice.
- Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.

630 PLYWOOD UNDERLAY
- Standard: Manufactured to an approved national standard and to BS EN 636, section 7 (plywood for use in humid conditions).
- Sheet size: 2400 or 1200 x 1200 mm and 6 mm thick.
- Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.
- Laying: Cross joints staggered and a 0.5 to 1 mm gap between boards.
- Fixing: With 25 mm annular ringed shank copper or stainless steel nails, at 300 mm grid centres over the area of each sheet and at 150 mm centres along edges, set in 10 mm from perimeter edges.
  - Nail heads: Set flush or just below the surface.

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

FIXING LEAD

705 HEAD FIXING LEAD SHEET
- Top edge: Secured with two rows of fixings, 25 mm and 50 mm from top edge of sheet, at 75 mm centres in each row, evenly spaced and staggered.
- Sheets less than 500 mm deep: May be secured with one row of fixings, 25 mm from top edge of sheet and evenly spaced at 50 mm centres.

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

715A CLIPS
- Manufacturer: Contractor's choice.
- Material:
  - Lead clips: Cut from sheets of same thickness/ code as sheet being secured.
    Dimensions:
  - Width: 50 mm where not continuous.
  - Length: To suit detail.
- Fixing clips: Secure each to substrate with either two screw or three nail fixings not more than 50 mm from edge of lead sheet. Use additional fixings where lead downstands exceed 75 mm.
- Fixing lead sheet: Welt clips around edges and turn over 25 mm.

780 WEDGE FIXING INTO DAMP PROOF COURSE JOINTS
- Joint: Rake/ cut out under damp proof course to a depth of not less than 25 mm.
- Lead: Dress lead into joint.
  - Fixing: Lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead.
- Sealant: Contractor's choice.
  - Application: As section Z22.

JOINTING LEAD

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

970 PATINATION OIL
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Location: to all new lead flashings.
- Application: As soon as practical, apply a smear coating to lead, evenly in one direction and in dry conditions.

J
Waterproofing

J42 Single layer polymeric sheet roof coverings

To be read with Preliminaries/ General conditions.

TYPES OF ROOF COVERING

110A WARM DECK ROOF COVERING MECHANICALLY FASTENED To Flat Roof Between Existing Sports Hall and New Hydrotherapy Pool
" Drawing reference(s): see roof plan & details
" Substrate: refer to Structural Engineers drawings
" Insulated Roof covering system: TO CONTRACTOR DESIGN

210 ROOF PERFORMANCE
General: Secure, free draining and weathertight.

PRODUCTS

330 TIMBER TRIMS, ETC
- Quality: Planed. Free from wane, pitch pockets, decay and insect attack except ambrosia beetle damage.
- Moisture content at time of covering (maximum): 22%.
- Preservative treatment: As recommended for purpose by waterproof covering manufacturer.

EXECUTION GENERALLY

506 STORAGE OF WARM ROOF INSULATION
" Insulation should be stored inside a building. If outside storage is unavoidable, insulation should be off the ground and covered with a waterproof sheet.
" Packaging alone cannot under any circumstances be relied upon to provide protection from moisture.
" Do not stack more than 2.5 metres in height. Ensure stability of stack and provide adequate aisle space for access between stacks.

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

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

SUBSTRATES/ VAPOUR CONTROL LAYERS/ WARM DECK ROOF INSULATION

610 SUITABILITY OF SUBSTRATES
- Surfaces to be covered: Secure, clean, dry, smooth, free from frost, contaminants, voids and protrusions.
- Preliminary work: Complete, including:
  - Grading to correct falls.
  - Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
  - Fixing of battens, fillets and anchoring plugs/ strips.
- Moisture content and stability of substrate: Must not impair integrity of roof.

640 FIXING TIMBER TRIMS
- Fasteners: sheradized steel screws.
- Fixing centres (maximum): As recommendations.

660 JOINTS IN RIGID BOARD SUBSTRATES

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

670C LAYING VAPOUR CONTROL LAYER

" Attachment: Securely bond to substrate.
" Side and end laps (minimum): 150mm.
- Laps and perimeters: Sealed with Monobond LT sealant tape.
" Penetrations: Fully seal using bonding methods recommended by manufacturer.
" Edges of insulation at roof edges, abutments, upstands, kerbs, penetrations and the like: Enclosed with vapour control layer:
- Dressed up sufficiently, providing 50 mm (minimum) seal when overlapped by the roof covering; or
Turned back 150 mm (minimum) over the insulation and sealed down.

680B LAYING WARM DECK ROOF INSULATION (MECHANICALLY FASTENED)

" Setting out:
- Long edges: Fully supported and running at right angles to troughs in metal deck / structure.
- End edges: Adequately supported.
- Joints: Butted together.
- End joints: Staggered.
" Attachment: Mechanical fixing:
- Mechanically fix the insulation boards using appropriate type and length of fasteners in accordance with BS 6339: Part 2, an Icopal wind uplift calculation or current BRUFMA guidelines, whichever is the greater.
- In no circumstances less than a minimum of 11 fixings per 2400x1200mm board; or
- In no circumstances less than a minimum of 5 fixings per 1200x600mm board.
- All fixings and washers should be located within the individual board area and not overlap board joints. Fixings should be sited >50mm and <150mm from the edges and corners of the board. Fixings positioned along the centre line of the insulation board should be offset with those at the board edge.
- The pitches / centres of the crown flats of metal decking sheets may influence the location of the fixings along the edges of the boards
" Completion: Boards must be in good condition, well fitting and secure.

WATERPROOF MEMBRANES/ ACCESSORIES

710A MECHANICAL FIXING OF WATERPROOF MEMBRANE

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

730B WELDED JOINTING
" Laying: Do not wrinkle or stretch.
" Side and end joints:
- Laps (minimum): 50mm. Overlaps to be 110mm in presence of mechanical fixings.
- Preparation: Clean and dry surfaces for full width of joint.
- If the membrane has been exposed for more than seven days: Clean and dry the joint surfaces for the whole length of the lap prior to welding;
- Sealing: Weld together. Ensure water will drain over, and not into, the lap.
" Condition at completion: Fully sealed, smooth, weatherproof and free draining.
- All laps must be checked after the completion of welding and the membrane has cooled by drawing a metal scribe along the joint in a firm but non-destructive way.

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

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

786C RAINWATER OUTLETS
" Icopal Roofgard Roof Outlet together with stainless steel outlet grate and expanding clamp. Fixed in accordance with manufacturer's instructions.
" Recess into the roof and firmly secure with no lip preventing the free flow of water.
" Install suitablly sized Sure-Weld roof outlet in accordance with the current fixing instructions.
" The outlet FPO flange to be fully supported and mechanically fixed before welding of the field membrane is complete

SURFACING

810 LAYING INVERTED ROOF INSULATION
- Condition of substrate: Clean.
- Setting out: Loose lay with staggered joints.
  - Cutting: Minimize.
  - Small cut pieces: Avoid at perimeters and penetrations.
  - Joints: Butt together.
- Projections, upstands, rainwater outlets, etc: Cut insulation cleanly and fit closely around.
- Completion:
  - Insulation boards to be in good condition, well fitting and stable.
  - Cover to prevent wind uplift and flotation as soon as practicable.

840 LAYING PRECAST CONCRETE PAVING SLABS
- Condition of substrate: Clean.
- Setting out: Minimize cutting.
- Joints: Open.
  - Width: As drawing.
  - Perimeter/ Upstand margins: As drawing.
- Completion: Slabs must be level and stable.

851c MEMBRANE WALKWAYS
" Material: Sure-Weld Walkway roll
" Width: 750mm
" Colour: White
" Method of securement: Heat welded to field sheet
" Reinforcement: N/A

COMPLETION

910 INSPECTION
- Interim and final roof inspections: Submit reports.

911 INSPECTION
" For 'Icopal Insured System Plus', and 'Icopal Insured Product Plus & Workmanship' warranties:
- Upon completion, Icopal Limited should be notified to make a final inspection of the work.
- Roof area should be clean with all outlets clear and running free.
- All work by third parties necessary to provide a watertight finish should be completed.
" The approved applicator should ensure attendance at the final inspection.
" Any defects where possible should be completed whilst the Icopal Quality Inspector is on site.
" Warranties will only be issued when the completed roofing system has been deemed to be in compliance with the specification and working details applicable for the waterproofing system.

920A ELECTRONIC ROOF INTEGRITY TEST
- This is a requirement under the terms of the Icopal 'Insured System Plus' Guarantee, or where the waterproofing
system is to be buried, eg beneath a green roof.
" Testing authority: UKAS approved laboratory.
" Timing of test: Prior to covering over or/and on completion of waterproofing system.
" Condition of roof prior to testing:
- Complete to a stage where integrity can be tested.
- Surface: Clean.
" Test results and warranty: Submit on completion of testing.

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

941 COMPLETION
" Upon completion Icopal should be notified to make a final inspection of the works. Roof areas are left clean with all outlets clear.
" All work (including by others) necessary to provide a weathertight finish is satisfactorily completed.
" Warranties will be issued when the completed roofing system is deemed to be in complicance with the specification and working details.
" Defects are repaired without delay to minimise damage and nuisance
" Storage of materials on finished surface: Not permitted
" Completed membrane: Do not damage. Protect from traffic and adjacent or high level working.

K
Linings/Sheathing/Dry partitioning

K10 Plasterboard dry linings/ partitions/ ceilings

To be read with Preliminaries/ General conditions.

TYPES OF DRY LINING

125A METAL STUD PARTITION SYSTEM (positions as denoted on drawings)
- Manufacturer: British Gypsum.
  - Web: www.british-gypsum.com.
  - Email: bgtechnical.enquiries@bpb.com.
  - Product reference: GypWall Classic
- Studs:
  - Type: 92 mm Gypframe 92 AS 50 Acoustuds.
  - Centres: 600 mm
- Head condition: Gypframe 92 C 50 Floor and Ceiling Channels, fixed to concrete.
  - Deflection allowance: -.
- Insulation: Isover APR 1200.
  - Thickness: 25 mm.
- Linings: 2 x 12.5 mm Gyproc SoundBloc to each side – tapered edge.
  - Edge: Tapered edge.
- Finishing: Skim coat plaster finish.
  - Primer/ Sealer: 1 coat of Gyproc Drywall Prime.
- Accessories: Rigid beads/ stops.
- Other requirements: None.

205A LINING ON TIMBER TO STUD PARITIONS WHERE REQUIRED
- Background: Ex 75x50mm softwood studs at 400mm centres & noggins at 600mmm centres.
  " Manufacturer:
  British Gypsum.
  - Web: www.british-gypsum.com.
  - Email: bgtechnical.enquiries@bpb.com.
- Insulation: 75mm Rocksilk Flexible Slab (with ECOSETM Technology)
  Knauf Insulation Ltd, PO Box 10, Stafford Road, St Helens,
  Merseyside, WA10 3NS, Tel: 01744 766600, Web: www.knaufinsulation.co.uk
  E-mail: tech@knaufinsulation.com
  Metal resilient (acoustic) bars: Not required.
- Linings: Gyproc Duraline severe heavy duty plasterboard 13mm thick with tapered edges., .
  - Fixing: Gyproc drywall timber screws.
- Finishing: Skim coat plaster.
  - Primer/ Sealer: Not required.
  - Accessories: Metal beads/ stops recommended by board manufacturer .
- Other requirements: Fire stopping around service penetrations as section P12.

245 CEILING LINING ON TIMBER refer to relevant drawing for positions.
- Background: framework of ex50x38mm softwood battens at max 600mm centres.
- Metal resilient (acoustic) bars: Not required.
- Linings: 12.5 mm Gyproc Fireline Duplex plasterboard.
  - Fixings: Contractor's choice.
- Finishing: Skim coat plaster.
  - Primer/ Sealer: Primer to painted areas.
  - Accessories: Metal beads/ stops recommended by board manufacturer .
- Other requirements: Fire stopping around service penetrations as section P12.

GENERAL/ PREPARATION

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

395 CONTROL SAMPLES
- General: Complete areas of finished work and obtain approval of appearance before proceeding.
- Type of dry lining: Partition K10/205.
  - Location/ Size: Submit proposals.

COMPONENTS

401 GYPSUM PLASTERBOARD
- Type: To BS 1230-1, type 1.
  - Core density (minimum): 650 kg/m³.
- Exposed surface and edge profiles: Suitable to receive specified finish.

408 GYPSUM PLASTERBOARD (IMPACT RESISTANT)
- Type: To BS 1230-1, type 5.
  - Core density (minimum): 900 kg/m³.
  - Paper facings: Heavy duty.
- Exposed surface and edge profiles: Suitable to receive specified finish.

430 ACCESS PANELS where noted
- Type: 60 minutes fire protection, to BS 476-22 .
  - Sizes: 1200 mm x 1200 mm .
- Frame: Exposed picture frame type .
- Panel: Metal with powder coated factory finish .
- Lock: Tamper proof and operated by castellated key .

INSTALLATION

435 DRY LININGS GENERALLY
- General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.
- Cutting 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.

485 SUSPENDED CEILING GRIDS
- Setting out: Accurately aligned and level.
  - Grid members and hangers: Centres to suit specified linings and imposed loads.
  - Additional grid members: Provide bracing and stiffening at upstands, partition heads, access hatches, etc.
- Fixing: Securely at perimeters, grid joints, top and bottom hanger fixings.

505 INSTALLING MINERAL WOOL INSULATION
- Fitting insulation: Closely butted joints and no gaps. Use fasteners to prevent slumping or displacement.
- Services:
  - Electrical cables overlaid by insulation: Sized accordingly.
  - Ceilings: Cut insulation around electrical fittings, etc.

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.

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.

565 VERTICAL JOINTS
- Joints: Centre on studs.
  - Partitions: Stagger joints on opposite sides of studs.
  - Two layer boarding: Stagger joints between layers.

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

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

FINISHING

650 LEVEL OF DRY LINING ACROSS JOINTS
- Sudden irregularities: Not permitted.
- Joint deviations: Measure from faces of adjacent boards using methods and straightedges (450 mm long with feet/ pads) to BS 8212, clause 3.3.5.
  - Tapered edge joints:
    Permissible deviation (maximum) across joints when measured with feet resting on boards: 3 mm.
  - External angles:
    Permissible deviation (maximum) for both faces: 4 mm.
  - Internal angles:
    Permissible deviation (maximum) for both faces: 5 mm.

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

680 SKIM COAT PLASTER FINISH

- Plaster type
  Manufacturer:
  British Gypsum.
  - Web: www.british-gypsum.com.
  - Email: bgtechnical.enquiries@bpb.com.
  - Product reference: Thistle Board Finish. .
  - Thickness: 2-3 mm.
- Joints: Fill and tape except where coincident with metal beads.
- Finish: Tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.

692 RIGID BEADS/STOPS

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

695 INSTALLING BEADS/ STOPS

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

K40 Demountable suspended ceilings

To be read with Preliminaries/General conditions.

TYPES OF CEILING SYSTEM

105A CEILING TILES NEW CEILING TYPE C1 - Refer to relevant drawing for locations
- Manufacturer: Armstrong Ceilings Ltd.
  - Web: www.armstrong-ceilings.co.uk.
  - Email: sales-support@armstrong.com.
  - Product reference: Dune eVo Mineral Tile
- Modular size: 600 x 600 mm.
- Edge profile: Tegular.
- Surface: Microperforated.
  Suspension System: Prelude 24 TLS

105B CEILING TILES NEW CEILING TYPE C2 - Refer to relevant drawing for locations
- Manufacturer: Armstrong Ceilings Ltd.
  - Web: www.armstrong-ceilings.co.uk.
  - Email: sales-support@armstrong.com.
  - Product reference: Ceramaguard Mineral Tile
- Modular size: 600 x 600 mm.
  Suspension System: Prelude 24CR TLX

105C CEILING TILE SYSTEM NEW CEILINGS TYPE C3 - Refer to relevant drawing for locations
- Manufacturer: Armstrong Ceilings Ltd.
  - Web: www.armstrong-ceilings.co.uk.
  - Email: sales-support@armstrong.com.
  - Product reference: Hydroboard
- Arrangement: 600x600.
- Panel Type: Tegular 90.
  Suspension System: Prelude 24CR

GENERAL/ PERFORMANCE

205 COMPLIANCE WITH PERFORMANCE REQUIREMENTS
- Testing/ assessment: Submit UKAS accredited laboratory reports for the following: Fire performance.
- Materials, components and details: Use those used in the test and identified in the assessment reports. If discrepancies arise, give notice.

COMPONENTS

245 STANDARDS
- Components: To BS 8290-2.
  - 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 PERIMETER OF ALL NEW CEILINGS
- Material: Planed softwood to BS EN 942, class J10; moisture content at time of fixing: 15% ± 2%.
  - Finished size: 44x25mm.
  - Finish (apply before ceiling grid is installed): Prime, undercoat and final coat of matt black to visible surfaces.

EXECUTION

302 CONTROL SAMPLES
- General: Complete areas as part of the finished work in the following locations: TBC.
- Approval: Obtain before completing areas of similar work.

305 SETTING OUT
- 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 units size (minimum): Half standard width or length.
- Corner infill units 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.

320 TOP FIXING
- Building structure: Verify suitability.
- Structural soffit: refer to SE drawings.
  - Suitability to receive specified fixings: Evaluate and confirm.
- Fixing to:
  - Concrete: Drill and insert suitable expanding anchors.
  - Aerated concrete: Fix through from the top of concrete units and provide a system of primary support channels.
  - Structural steel: Drill, or use suitable proprietary clips/ adaptors.
  - Metal roof decking: Fix to sides of liner tray corrugations.
  - Timber: Fix to side of joists at least 50 mm from bottom edge. If ceiling system is intended for fire protection, fix into top third of joists.
  - Hollow structural members: Submit fixing proposals.
- Cartridge or powder activated methods: Do not use.

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: as manufacturers recommendations.

330 INSTALLING TIMBER EDGE BATTENS
- Fixing: Firmly to perimeter wall or other building structure.
  - Fasteners: Plugged and screwed to walls.
  - Fixing centres (maximum): 450 mm.

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 manufacturers recommendations.
  - 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.

385 UPSTANDS AND BULKHEADS

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

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: independant refer to electrical engineers specification .
  - Independently supported luminaires: Suspension adjusted to line and level of ceiling.
  - Ceiling supported luminaires: Modifications and/ or extra support required: refer to electrical engineers specification.
- 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.

406 TRUNKING

- Recessed trunking: Provide flanges for support of grid and infill units, unless mounted above grid flanges. Retain in position with lateral restraint.

411 MECHANICAL SERVICES

- Fan coil units:
  - Inlet/ Outlet grilles: Trim ceiling grid and infill units to suit.
  - Space beneath: Sufficient for ceiling system components.
  - Suspension and connections: Permit accurate setting out and levelling of fan coil units.
- Air grilles and diffusers:
  - Setting out: Accurate and level.
  - Linear air diffusers: Retain in place with lateral restraint. Provide flanges for support of grid and infill units.
  - Grille/ Diffuser ceiling joints: Provide smudge rings and edge seals.
- Smoke detectors and PA speakers:
  - Ceiling infill units: Scribe and trim to suit.
  - Independent suspension: Required.
  - Flexible connections: Required.
- Sprinkler heads: Carefully set out and level.

500 ELECTRICAL CONTINUITY AND EARTH BONDING

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

COMPLETION

505 TOOLS

- Access tools: At Completion, supply one set of the following: as necessary .

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.

L
Windows/Doors/Stairs

L10 Windows/ Rooflights/ Screens/ Louvres

To be read with Preliminaries/ General conditions.

GENERAL

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

120A SITE DIMENSIONS
- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.

PRODUCTS

330A ALUMINIUM WINDOWS
- Manufacturer: Kawneer UK Ltd. Astmoor Industrial Estate, Runcorn, Cheshire WA7 1QQ Tel. 01928 502 500 Fax 01928 502 509
- Product reference: AA® 541 Top Hung Casement Window
  Finish: Powder coating as Section Z 31
  Colour/ texture:RAL 9016 – Brilliant White
  Minimum film thickness:40 microns.
- Glazing details: Windows to be internally glazed with EPDM gaskets. External gasket to be flush with the top of the rebate.
  Windows to be double glazed to Kawneer UK Ltd specification to comply with Building regulation L2A Table 4 (2.2 W/m2.K Area-Weighted Average).
- Ironmongery/ Accessories: Windows to be fitted with 'Highline' remote mechanical winding system to opening casements.. Trickle vents to be installed compliant with Document F of the Building regulations.
- Fixing: The AA® 541 Aluminium Casement Window shall be fabricated and installed in complete accordance with the information published by Kawneer, exclusively by authorised dealers.
- REF: Drawing 17301a10

332 ALUMINIUM SWING DOORS AND FANLIGHT Ref: ED01
- Drawing reference: 17301a10
- Manufacturer: Kawneer UK Ltd, Astmoor Industrial Estate, Runcorn, Cheshire WA7 1QQ (Tel 01928 502 500 Fax 01928 502 509)
- Product reference: 190 aluminium welded door
- Finish as delivered: Powder coating as BS 6496 min film thickness 40 microns
- Glazing details: Doors to be glazed with EPDM gaskets. Double glazed to Kawneer UK Ltd specification to comply with Part L2A
- To be fitted with Adams-Rite combination maximum security hook lock
  To be fitted with Europrofile cylinders
  To be fitted with top & bottom shoot bolts to slave leaf
  To be fitted with overhead concealed closers AXIM (30 KN max force with hold open option) with bottom pivot
  To be fitted with threshold to comply with Document M Building Regulations.
  To include as drawn and rounded jamb stile Finger Guard
  To be fitted with Semi-curcular Handles
  To have unequal leaf sizes as drawn

332A ALUMINIUM SWING DOORS AND FANLIGHT Ref: ED03
- Drawing reference: 17301a10
- Manufacturer: Kawneer UK Ltd, Astmoor Industrial Estate, Runcorn, Cheshire WA7 1QQ (Tel 01928 502 500 Fax 01928 502 509)
- Product reference: 190 aluminium welded door
- Finish as delivered: Powder coating as BS 6496 min film thickness 40 microns
- Glazing details: Doors to be glazed with EPDM gaskets. Double glazed to Kawneer UK Ltd specification to comply with Part L2A
- To be fitted with Adams-Rite combination maximum security hook lock

To be fitted with Europrofile cylinders
To be fitted with top & bottom shoot bolts to slave leaf
Bottom pivot and to be fitted with 'Besam' heavy duty electro-mechanical automatic door operator Ref: SW300-1
To be fitted with threshold to comply with Document M Building Regulations.
To include as drawn and rounded jamb stile Finger Guard
To be fitted with Semi-curcular Handles
To have unequal leaf sizes as drawn

332B ALUMINIUM SWING DOORS AND FANLIGHT Ref: ED02, ED04
- Drawing reference: 17301a10
- Manufacturer: Kawneer UK Ltd, Astmoor Industrial Estate, Runcorn, Cheshire WA7 1QQ (Tel 01928 502 500 Fax 01928 502 509)
- Product reference: 190 aluminium welded door
- Finish as delivered: Powder coating as BS 6496 min film thickness 40 microns
- Panel details: Doors to be fitted with aluminium louvres for air-intake to Plant Rooms complete with fly screens
- To be fitted with Adams-Rite combination maximum security hook lock

To be fitted with heavy-duty lever latch set and Europrofile cylinder deadlock
To be fitted with top & bottom shoot bolts to slave leaf
To be fitted with overhead concealed closers AXIM (30 KN max force with hold open option) with bottom pivot
To be fitted with threshold to comply with Document M Building Regulations.
To have unequal leaf sizes as drawn

510A GLAZED WOOD SCREENS (INTERNAL)
" Location: as indicated on plans note:most screens are mdf frame refer to drawing 17301a11
" Timber: Generally to BS EN 942.
- Species:softwood as table NA1.
- Appearance class:selected from BS EN 942.
- Moisture content on delivery: 6 – 10%.

" Joinery workmanship: As section Z10.
" Finish as delivered: prepared & primed.
" Glazing details: Pilkington Pyroshield laminated safety glass with h/w glazing beads
" Special features/ Other requirements: bedding alround in Gyproc sound sealant.
" Fixing: screwed.

EXECUTION

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

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

740 CORROSION PROTECTION
- Surfaces to be protected: surfaces of aluminium components, which will come into contact with mortar, concrete or plaster, or treated timber..
- Protective coating: Two coats of bitumen solution to BS 6949 or an approved mastic impregnated tape.
  - Timing of application: Before fixing components.

750 BUILDING IN
- General: Not permitted unless indicated on drawings.
  - Brace and protect components to prevent distortion and damage during construction of adjacent structure.

765 WINDOW INSTALLATION GENERALLY
- Installation: Into prepared openings.
- Gap between frame edge and surrounding construction:
  - Minimum: As recommended by manufacturer.
  - Maximum: As recommended by manufacturer.
- Distortion: Install windows without twist or diagonal racking.

770 DAMP PROOF COURSES IN PREPARED OPENINGS
- Location: Ensure correct positioning in relation to window frames. Do not displace during fixing operations.

780 FIXING OF WOOD FRAMES
- Standard: As section Z20.
- Fasteners: TBC .
  - Spacing: When not predrilled or specified otherwise, position fasteners not more than 150 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 450 mm centres.

782 FIXING OF ALUMINIUM FRAMES
- Standard: As section Z20.
- Fasteners: TBC.
  - Spacing: When not predrilled or specified otherwise, position fasteners not more than 250 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 600 mm centres.

790 FIRE RESISTING FRAMES
- Gap between back of frame and reveal: Completely fill with tightly packed mineral wool.

810 SEALANT JOINTS
- Sealant:
  - Manufacturer: Adshead Radcliffe .
    Product reference: Arbo 2650 primer and Arbosil LM..
  - Colour: white.
  - Application: As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.

820 IRONMONGERY
- Fixing: Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Do not damage ironmongery and adjacent surfaces.
- Checking/ Adjusting/ Lubricating: Carry out at Completion and ensure correct functioning.

L20 Doors/ shutters/ hatches

To be read with Preliminaries/ General conditions.

GENERAL

110 EVIDENCE OF PERFORMANCE
- Certification: Provide independently certified evidence that all incorporated components comply with specified performance requirements. TBC

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

115 FIRE RESISTING DOORS/ DOORSETS/ ASSEMBLIES
- Evidence of fire performance: Provide certified evidence, in the form of a product conformity certificate, directly relevant fire test report or engineering assessment, that each door/ doorset/ assembly supplied will comply with the specified requirements for fire resistance if tested to BS 476-22, BS EN 1634-1 or BS EN 1634-3. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.

150A SITE DIMENSIONS
- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.

170A CONTROL SAMPLES
- Procedure:
  - Finalize component details.
  - Fabricate one of each of the following designated items as part of the quantity required for the project.
  - Obtain approval of appearance and quality before proceeding with manufacture of the remaining quantity.

PRODUCTS

410A INTERNAL TIMBER DOORSETS
- Drawing reference(s): 17301a11
- Manufacturer and reference: Lloyd Worrall 'Interspec' Range
- Door leaf:
  Core: Solid, composite, Solidcor (NR, 30 or 60 as appropriate for fire rating)
  Facings: MDF or plywood substrate. Book matched veneer facings, matched to existing.
  Lippings: Concealed lippings to all 4 edges in selected hardwood to match facings, 3mm round to vertical edges.
  Glazing details: Detail 21 vision panels as scheduled.. All with cloak (bolection) beads in selected hardwood to match facings. 6mm Fire-resistant safety glazing and seals to all vision panels All glazing factory installed.
  Finish as delivered: Full factory finish with Hyalux Natural polishing system.
- Frame and architraves:
  Material: MDF
  Profile: Frameset as manufacturer design.
  Finish as delivered: Full factory finish.
  Fixing: Plug and screw to masonry, via factory-predrilled, counterbored and pelleted holes. Allow for thickness of plaster to masonry walls when designing fixing positions. Stops and architraves secret fixed.
- Moisture content on delivery: 9% to 13%
- Ironmongery: As scheduled
- Perimeter seals: Fire and smoke sealing strips to FD30S and FD60S doors. Acoustic seal as schedule. Buffer strips to door stops on all doors.
- Other requirements: Allow for temporary linings to openings during plastering/plasterboarding. FD30S and FD60S doorsets to be BWF Certifire approved. Double doors to have square meeting stiles (not rebated).

480A EXTERNAL GLAZED DOORSETS ALUMINIUM
Please refer to section L10

EXECUTION

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

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

740A CORROSION PROTECTION
- Protective coating: Two coats of bitumen solution to BS 6949 or an approved mastic impregnated tape.
  - Timing of application: Before fixing components.

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

760 BUILDING IN
- General: Not permitted unless indicated on drawings.

780 DAMP PROOF COURSES IN PREPARED OPENINGS
- Location: Correctly positioned in relation to door frames. Do not displace during fixing operations.

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

800 FIXING OF LOOSE THRESHOLDS
- Spacing of fixings: Maximum 150 mm from each end and at 600 mm maximum centres.

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

810 FIRE RESISTING SMOKE CONTROL DOORS/ DOORSETS
- Gaps between frames and supporting construction: Filled as necessary in accordance with requirements for certification and/ or door/ doorset manufacturer's instructions.

820A SEALANT JOINTS
- Sealant: 2-part polysulphide or low-modulus silicone-based sealant to BS5889, Type A Colour: To be confirmed.
- Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.

830 FIXING IRONMONGERY GENERALLY
- Fasteners: Supplied by ironmongery manufacturer.
  - Finish/ Corrosion resistance: To match ironmongery.
- Holes for components: No larger than required for satisfactory fit/ operation.
- Adjacent surfaces: Undamaged.
- Moving parts: Adjusted, lubricated and functioning correctly at completion.

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

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

860 INSTALLATION OF EMERGENCY EXIT DEVICES
- Standard: Unless specified otherwise, install panic bolts/ latches in accordance with BS EN 1125.

L40 General glazing

To be read with Preliminaries/ General conditions.

GENERAL REQUIREMENTS

111 PREGLAZING
- Preglazing of components: Permitted.
- Prevention of displacement: Submit details of precautions to be taken to protect glazing and compound/ seals during delivery and installation.
- Defective/ displaced glazing/ compound/ seals: Reglaze components in situ.

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 ± 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.

152 PREPARATION
- Surrounds, rebates, grooves and beads: Clean and prepare before installing glazing.

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

160 LINEAR PATTERNED/ WIRED GLASS
- Alignment: Vertical/ Horizontal as appropriate, and pattern matched across adjacent panes in close proximity.

180 BEAD FIXING WITH PINS
- Pin spacing: Regular at maximum 150 mm centres, and within 50 mm of each corner.
- Exposed pin heads: Punched just below wood surface.

181 BEAD FIXING WITH SCREWS
- Screw spacing: Regular at maximum 225 mm centres, and within 75 mm of each corner.

TYPES OF GLAZING

520 FIRE RATING

- Assessment of capability: Submit proposed construction details of designated items to a UKAS/ NAMAS accredited laboratory or other approved authority for assessment of capability of achieving specified fire ratings.
  - Test standard: To BS 476-22.
- Assessment/ test results and reports: Submit immediately they are available, and before installing glazing.
- Designated items: TBC.

550A GLASS MIRRORS Generally above WHB'S Refer to Drawing Schedule for positions

- Mirror material: Float glass, silvered to give maximum reflection, free from tarnishing, discoloration, scratches and other defects visible in the designed viewing conditions.
  - Thickness: 6 mm .
  - Backing: copper .
  - Edge treatment: Polished bevel .
- Background: Plastered masonry .
- Fixing method: Dome top wood screws with polyethylene sleeves and washers at 600 mm centres .
- Installation: Fixed accurately and securely without overtightening fasteners, to provide a flat surface giving a distortion free reflection.
  Refer to drawing E08338 A19

630 MANIFESTATION to new glazed doors

- Design: As drawing TBC.
  - Art work: To be prepared by contractor and submitted for approval.
  - Media: Scale drawings.
- Technique: Applied film.

M
Surface finishes

M10 Cement based levelling/ wearing screeds

To be read with Preliminaries/General conditions.

TYPES OF SCREED

130 PROPRIETARY QUICK DRYING LEVELLING SCREEDS TO NEW FLOOR AREAS
- Substrate: pre-cast beam & block.
- Screed manufacturer: Flowcrete UK Ltd.
  - Product reference: Isocrete Fast-K Screed..
- Screed construction: Unbonded, as clause 280.
  - Reinforcement for crack control: as clause 392.
- Thickness:
  - Nominal: 75mm.
  - Minimum: 65 mm.
- Mix:
  - Cement: As clause 302..
  - Proportions: To manufacturer's recommendations.
- In situ crushing resistance (ISCR) category: A (3 mm maximum indentation).
  - Mass of test weight: 4 kg.
- Flatness/ Surface regularity: Maximum permissible deviation: SR2.
- Finish: Trowelled, as clause 540.
  - To receive: Varies, as schedule generally vinyl or carpet.
- Other requirements: where thin finishes require a smoothing agent, smooth with Isocrete Isotex underlayment.

160A PROPRIETARY SELF SMOOTHING LEVELLING SCREEDS TO EXISTING AREAS RECEIVING NEW FLOOR FINISHES
- Substrate: IExisting screed.
- Screed manufacturer: Flowcrete Uk Ltd.
  - Product reference: Isocrete Isotex.
- Screed construction: Manufacturer's standard.
- Thickness:
  - Minimum: 3 mm.
  - Maximum: [10 mm].

  Standards: Comply with BS 8204-7 'Pumpable self levelling screeds. Code of practice'.
- In situ crushing resistance (ISCR) category: A (3 mm maximum indentation).
  - Mass of test weight: 4 kg.
- Flatness/ Surface regularity: Maximum permissible deviation: SR1.
- Finish to receive: Varies, as schedule generally vinyl or carpet .
- Other requirements: primer as manufacturers recommendations.

GENERALLY/PREPARATION

205 DESIGN LIFE OF SCREEDS
- Duration: 50 years .
  - Subject to reasonable wear and tear.
- Location: Throughout new areas .
- Condition of use: Subject to correct loading and traffic usage throughout duration.

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

221A PROPRIETARY LEVELLING/WEARING SCREEDS
- General: Materials, mix proportions, mixing methods, minimum/maximum thicknesses and workmanship must be in accordance with recommendations of screed manufacturer.
  Standard: To BS 8204-3.
  FLOWCRETE PROPRIETARY SCREEDS are to be laid in accordance with the instructions of Flowcrete UK Ltd, The Flooring Technology Centre, Booth Lane, Moston, Sandbach, Cheshire, CW11 3QF (tel 01270 753 753) by one of their Approved Licensees.

230 CONTROL SAMPLES
- General: Complete areas of finished work and obtain approval of appearance before proceeding.
- Screed type: As clause 130 / 160A.
  - Location/ Size: TBA.

251 CONDUITS CAST INTO OR UNDER SCREEDS
- Reinforcement: Overlay with reinforcement selected from:
  - 500 mm wide strip of steel fabric to BS 4483, reference D49, or
  - Welded mesh manufactured in rolls from mild steel wire minimum 1.5 mm diameter to BS 1052, mesh size 50 x 50 mm.
- Placing reinforcement: Mid depth between top of conduit and the screed surface.
  - Screed cover over conduit (minimum): 25 mm.

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

280 UNBONDED CONSTRUCTION
- Separation: Lay screed over a suitable sheet dpm or a separating layer.
  - Type: Polyethylene sheet, minimum 125 micrometres thick (500 gauge).
- Installation of separating layer: Lay on clean substrate. Turn up for full depth of screed at abutments with walls, columns, etc. Lap 100 mm at joints.

BATCHING/MIXING

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

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

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

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

331 SCREED ADDITIVE
The screed is to include a proprietary additive complying with the following:
The screed system is to have a current Agrément certificate from the British Board of Agrément.
The additive is to be a powder, of black colour to enable easy confirmation of its use.
The additive is to be factory blended and batched into individual sachets of accurate weight to suit the size of screed batch.

335 IN SITU CRUSHING RESISTANCE (ISCR)
- Standards and category: To BS 8204-1, table 4.
  - Testing of bonded and unbonded screeds: To Annex D.
  - Testing of floating levelling screeds: To Annex E.

340 ADVERSE WEATHER
- Screeds surface temperature: Maintain above 5°C for a minimum of four days after laying.
- Hot weather: Prevent premature setting or drying out.

LAYING

345 LEVEL OF SCREED SURFACES
- Permissible deviation: (allowing for thickness of coverings) ±10 mm from datum.

350 SCREEDING TO FALLS
- Minimum screed cover: Maintain at the lowest point.
- Falls: Gradual and consistent.
  - Gradient (minimum): As drawing if required to shower bed area .

355 FLATNESS/ SURFACE REGULARITY OF FLOOR SCREEDS
- Standard: To BS 8204-1, Table 5.
- Test: To BS 8204-1, Annex C.
- Sudden irregularities: Not permitted.

365 FLATNESS/SURFACE REGULARITY OF ROOF SCREEDS
- Sudden irregularities: Not permitted.
- Deviation of surface: Measure from underside of a 2 m straightedge (between points of contact), placed anywhere on surface.
  - Permissible deviation (maximum): 6 mm.

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

392 GENERAL REINFORCEMENT
- Steel fabric: To BS 4483.
  - Type: Isocrete PP Fibres.
- Installation: In accordance with BS 8204-1.

395 STRIP REINFORCEMENT
- Location: Across day joints .
- Steel fabric: To BS 4483.
  - Type D49 .
  - Width of strips: 500 mm .
- Installation: In accordance with BS 8204-1.

405 JOINTS IN LEVELLING SCREEDS GENERALLY
- Laying screeds: Lay continuously using 'wet screeds' between strips or bays. Minimize defined joints.
- Daywork joints: Form with vertical edge.

406 BAY JOINTS IN LEVELLING SCREEDS
- Screed type: As clause 130 / 160A.
- Bay sizes:
  - Area (maximum): 20 m².
- Length (maximum): 6 m.
- Location of bay joints: Coordinate with those required for substrate slab and floor covering.

440 CRACK INDUCING GROOVES IN LEVELLING SCREEDS
- Groove depth: At least half the depth of screed.
- Cutting grooves: Straight, vertical and accurately positioned. Select from the following:
  - Trowel cut as screed is laid.
  - Saw cut sufficiently early after laying to prevent random cracking.

FINISHING/CURING

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

520 WOOD FLOATED FINISH
- Finish: Slightly coarse, even texture with no ridges or steps.

530 SMOOTH FLOATED FINISH
- Finish: Even texture with no ridges or steps.

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

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

670 ROOF SCREEDS

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

M20 Plastered/ Rendered/ Roughcast coatings

To be read with Preliminaries/ General conditions.

TYPES OF COATING

210A LIGHTWEIGHT GYPSUM PLASTER TO ALL NEW & VARIOUS EXISTING WALLS AS DENOTED ON PLANS
- Substrate: new concrete block or existing brick.
  - Preparation: Bonding agent as recommended by plaster manufacturer.
- Manufacturer: British Gypsum.
- Undercoats: To BS EN 13279-1.
  - Product reference: British Gypsum Thistle Hardwall.
  - Thickness (excluding dubbing out and keys): 11mm.
- Final coat: Finish plaster to BS EN 13279-1.
  - Product reference: British Gypsum Thistle Multi-Finish.
  - Thickness: 2mm.
  - Finish: Smooth.
- Accessories: Expamet Ltd galvanised beads and stops as recommended by manufacturer .

280 GYPSUM PLASTER SKIM COAT ON PLASTERBOARD
- Plasterboard: Gyproc Duraline severe heavy duty or Soundbloc plasterboard 13mm thick with tapered edges .
  - Preparation: as recommended by plaster manufacturer .
- Plaster: Board finish/ finish plaster to BS EN 13279-1.
  - Manufacturer: British Gypsum .
    Product reference: Thistle Board Finish .
  - Thickness: 2mm .
  - Finish: Smooth.
- Accessories: Beads and stops .

GENERAL

421 SCAFFOLDING
- General: Prevent putlog holes and other breaks in coatings.

MATERIALS AND MARKING OF MORTAR

438 CEMENTS FOR MORTARS
- Cement: To BS EN 197-1 and CE marked.
  - Types: Portland cement, CEM I.
    Portland slag cement, CEM II.
    Portland fly ash cement, CEM II.
  - Strength class: 32.5, 42.5 or 52.5.
- White cement: To BS EN 197-1 and CE marked.
  - Type: Portland cement, CEM1.
  - Strength class: 52.5.
- Sulfate resisting Portland cement: To BS 4027 and Kitemarked.
  - Strength class: 42.5.
- Masonry cement: To BS EN 998-1 and Kitemarked.

449 ADMIXTURES FOR CEMENT GAUGED MORTARS
- Suitable admixtures: Select from:
  - Air entraining (plasticizing) admixtures: To BS EN 934-2 and compatible with other mortar constituents.
  - Other admixtures: Submit proposals.
- Prohibited admixtures: Calcium chloride and any admixture containing calcium chloride.

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

497 COLD WEATHER
- General: Do not use frozen materials or apply coatings on frozen or frost bound substrates.
- External work: Avoid when air temperature is at or below 5°C and falling or below 3°C and rising. Maintain temperature of work above freezing until coatings have fully hardened.
- Internal work: Take precautions to enable internal coating work to proceed without detriment when air temperature is below 3°C.

PREPARING SUBSTRATES

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

520 PREVIOUSLY PAINTED SURFACES
Remove all paint by needle hammering or other suitable method.

527 RAKING OUT FOR KEY
- Joints in existing masonry: Rake out to a depth of 13 mm (minimum).
  - Dust and debris: Remove from joints.

531 ROUGHENING FOR KEY
- Substrates: Roughen thoroughly and evenly.
  - Depth of surface removal: Minimum necessary to provide an effective key.

541 BONDING AGENT APPLICATION
- General: Apply evenly to substrate to achieve effective bond of plaster/ render coat. Protect adjacent joinery and other surfaces.

BACKINGS/ BEADS/ JOINTS

605 GYPSUM PLASTERBOARD BACKINGS
- Type: To BS EN 520 Type A.
  - Core density (minimum): 650 kg/m³.
- Exposed surface and edge profiles: Suitable to receive specified plaster finish.

612 JOINTS IN PLASTERBOARD BACKINGS
- Ceilings:
  - Bound edges: At right angles to supports and with ends staggered in adjacent rows.
  - Two layer boarding: Stagger joints between layers.
- Partitions/ walls:
  - Vertical joints: Centre on studs. Stagger joints on opposite sides of studs.
    Two layer boarding: Stagger joints between layers.
  - Horizontal joints:
    Two layer boarding: Stagger joints between layers by at least 600 mm. Support edges of outer layer.
- Joint widths (maximum): 3 mm.

630 BEADS/ STOPS FOR INTERNAL USE TO NEW PLASTER FINISH
- Material: Galvanized steel to BS EN 13658-1.

640 BEADS/ STOPS GENERALLY
- Location: External angles and stop ends except where specified otherwise.
- Corners: Neat mitres at return angles.
- Fixing: Secure, using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
  - Beads/ stops for external render: Fix mechanically.
- Finishing: After coatings have been applied, remove surplus material while still wet, from surfaces of beads/ stops exposed to view.

645 DISSIMILAR SOLID BACKGROUNDS
Where not shown on drawings, continue coatings without break across joints between dissimilar solid backgrounds. Reinforce with double layer of Sto reinforcing mesh.

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

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

650A MOVEMENT JOINTS AS REQ'D
Form joints in coatings to coincide with movement joints in background using:
Back-to-back Thistle stop beads with 6mm spacers.
Seal joints on completion with acrylic sealant.
- Ensure that joints extend through coating to background.

659 PLASTERBOARD JOINTS
- Joints and angles (except where coincident with metal beads). Reinforce with continuous lengths of jointing tape.

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

INTERNAL PLASTERING

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

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

718 JUNCTION OF NEW PLASTERWORK WITH EXISTING
- New plasterwork: Finish flush with original face of existing plasterwork to form a seamless junction.

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

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

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

900 GUARANTEE
Rendering materials and workmanship guarantees should be submitted to the CA prior to work commencing on site.

M40 Stone/ concrete/ quarry/ ceramic tiling/ mosaic

To be read with Preliminaries/ General conditions.

TYPES OF TILING/ MOSAIC

110A TILING TO SPLASHBACKS TO SINKS, ETC
REFER TO DRAWINGS FOR POSITIONS/ ROWS
- Tiles: H & R Johnson Tiles Ltd, plain colour glazed wall tiles, bright white, ref. BRTWH or similar
- Size: 152 x 152 x 5.5 mm
- Background/Base: New plaster.
  Preparation: As clause 380
- Bedding: Thin bed adhesive: Ribbed as clause 650
  Adhesive: PCI Construction Systems Ltd, Tilefast 6
- Grouting material: PCI Construction Systems Ltd, Groutfast 8
  Joint width: 2 mm
- Movement joints: not required

GENERAL

210 SUITABILITY OF BACKGROUNDS/ BASES
- Background/ base tolerances: To permit specified flatness/ regularity of finished surfaces given the permissible minimum and maximum thickness of bedding.
- New background drying times (minimum):
  - Concrete walls: 6 weeks.
  - Brick/ block walls: 6 weeks.
  - Rendering: 2 weeks.
  - Gypsum plaster: 4 weeks.
- New base drying times (minimum):
  - Concrete slabs: 6 weeks.
  - Cement:sand screeds: 3 weeks.

PREPARATION

310 EXISTING BACKGROUNDS/BASES GENERALLY
- Efflorescence, laitance, dirt and other loose material: Remove.
- Deposits of oil, grease and other materials incompatible with the bedding: Remove.
- Tile, paint and other nonporous surfaces: Clean.
- Wet backgrounds: Dry before tiling.

330 EXISTING PLASTER
- Defective areas: Remove plaster that is loose, soft, friable, badly cracked or affected by efflorescence. Cut back to straight horizontal and vertical edges.
- Making good: Use plaster or nonshrinking filler.

355 OLD ADHESIVE RESIDUES ON CONCRETE/SCREED BASES
- Soft or unsound adhesive residues: Remove without damaging base.

360 EXISTING PAINT
- Paint with unsatisfactory adhesion: Remove so as not to impair bedding adhesion.

380 NEW PLASTER
- Plaster: Dry, solidly bedded, free from dust and friable matter.
- Plaster primer: Apply if recommended by adhesive manufacturer.

390 PLASTERBOARD BACKGROUNDS
- Boards: Dry, securely fixed and rigid with no protruding fixings and face to receive decorative finish exposed.

410 HACKING FOR KEY
- Keying: Roughen backgrounds thoroughly and evenly to a depth of 3 mm.
- Backgrounds to be keyed: existing brick / block etc as necessary.

420 RAKING OUT FOR KEY
- Soft joints in existing masonry: Rake out to a depth of 13 mm (minimum).

FIXING

510 FIXING GENERALLY
- Colour/shade: Unintended variations within tiles for use in each area/room are not permitted.
  - Variegated tiles: Mix thoroughly.
- Adhesive: Compatible with background/base. Prime if recommended by adhesive manufacturer.
- Cut tiles: Neat and accurate.
- Fixing: Provide adhesion over entire background/base and tile backs.
- Final appearance: Before bedding material sets, make adjustments necessary to give true, regular appearance to tiles and joints when viewed under final lighting conditions.
- Surplus bedding material: Clean from joints and face of tiles without disturbing tiles.

530A SETTING OUT
- Joints: True to line, continuous and without steps.
  - Joints on walls: Horizontal, vertical and aligned round corners.
  - Joints in floors: Parallel to the main axis of the space or specified features.
- Cut tiles: Minimize number, maximize size and locate unobtrusively.
- Joints in adjoining floors and walls: Align.
- Joints in adjoining floors and skirtings: Align.
- Movement joints: Where locations are not indicated, submit proposals.

550 FLATNESS/ REGULARITY OF TILING
- Sudden irregularities: Not permitted.
- Deviation of surface: Measure from underside of a 2 m straightedge placed anywhere on surface. The straightedge should not be obstructed by the tiles and no gap should be greater than 3 mm.

560 LEVEL OF TILING ACROSS JOINTS
- Deviation (maximum) between tile surfaces either side of any type of joint:
  - 1 mm for joints less than 6 mm wide.
  - 2 mm for joints 6 mm or greater in width.

651 THIN BED ADHESIVE - SOLID (WALLS)
- Application: Apply floated coat of adhesive to dry background in areas of about 1 m². Comb surface.
- Tiling: Apply thin even coat of adhesive to backs of dry tiles. Press tiles firmly onto float coat.
- Finished adhesive thickness (maximum): 3 mm.

MOVEMENT JOINTS/ GROUTING/ COMPLETION

875A GROUTING
- Sequence: Grout when bed/adhesive has set sufficient to prevent disturbance of tiles.
- Joints: 6 mm deep (or depth of tile if less). Free from dust and debris.
- Grouting: Fill joints completely, tool to profile, clean off surface. Leave free from blemishes.
- Polishing: When grout is hard, polish tiling with a dry cloth.

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

To be read with Preliminaries/ General conditions.

TYPES OF COVERING

151 PVC VINYL SHEETING (type F2)
- Location:refer to plans
- Base: floor screed with latex levelling screed
- Preparation: as manufacturers recommendations
- Flooring roll: homogeneous PVC
- Manufacturer: Polyflor Ltd, PO Box 3, Radcliffe New Road, Whitefield, Manchester M45 7NR.
  Tel:0161 767 1111. UK sales fax: 0161 767 1128 Email: info@polyflor.com Web: www.polyflor.com
- Product reference: **Pearlazzo PUR Sheet**
- BS EN 685 class: 23 /34 / 43.
- Width: 2000mm.
- Thickness: 2mm
- Colour/ pattern: TBA
- Adhesive (and primer if recommended by manufacturer): as recommended by manufacturer
- Seam welding: thermo welded joints with complimentary coloured rod
- Accessories: edging trim for thresholds as clause 740.
- Finishing: To clause 821C seal around skirtings with Silicone sealant

151A PVC VINYL SHEETING (type F4)
- Location:refer to plans
- Base: floor screed with latex levelling screed
- Preparation: as manufacturers recommendations
- Flooring roll: homogeneous PVC
- Manufacturer: Polyflor Ltd, PO Box 3, Radcliffe New Road, Whitefield, Manchester M45 7NR.
  Tel:0161 767 1111. UK sales fax: 0161 767 1128 Email: info@polyflor.com Web: www.polyflor.com
- Product reference: **Polysafe Hydro Evolve Sheet**
- BS EN 685 class: 23 /34 / 43.
- Width: 2000mm.
- Thickness: 2mm
- Colour/ pattern: TBA
- Adhesive (and primer if recommended by manufacturer): as recommended by manufacturer
- Seam welding: thermo welded joints with complimentary coloured rod
- Accessories: edging trim for thresholds as clause 740.
- Finishing: Sheet dressed up wall as skirting with cove former

151B PVC VINYL SHEETING (type F5)
- Location:refer to plans
- Base: floor screed with latex levelling screed
- Preparation: as manufacturers recommendations
- Flooring roll: homogeneous PVC
- Manufacturer: Polyflor Ltd, PO Box 3, Radcliffe New Road, Whitefield, Manchester M45 7NR.
  Tel:0161 767 1111. UK sales fax: 0161 767 1128 Email: info@polyflor.com Web: www.polyflor.com
- Product reference: **Polysafe Quattro PUR Sheet**
- BS EN 685 class: 23 /34 / 43.
- Width: 2000mm.
- Thickness: 2mm
- Colour/ pattern: TBA
- Adhesive (and primer if recommended by manufacturer): as recommended by manufacturer
- Seam welding: thermo welded joints with complimentary coloured rod
- Accessories: edging trim for thresholds as clause 740.
- Finishing: Sheet dressed up wall as skirting with cove former

152 PVC SAFETY VINYL SHEETING (type F6)
- Location: refer to plans
- Base: floor screed with latex levelling screed.
- Preparation: as manufacturers recommendations
- Flooring roll: Heterogeneous PVC
- Manufacturer: Polyflor Ltd, PO Box 3, Radcliffe New Road, Whitefield, Manchester M45 7NR.
  Tel:0161 767 1111. UK sales fax: 0161 767 1128 Email: info@polyflor.com Web: www.polyflor.com
- Product reference: **Polysafe Astral PUR (Superatec+)**
- BS EN 685 class: 23 /34 / 43.
- Width: 2000mm.
- Thickness: 2mm
- Colour/ pattern: TBA
- Adhesive (and primer if recommended by manufacturer): as recommended by manufacturer
- Seam welding: thermo welded joints with complimentary coloured rod
- Accessories: edging trim for thresholds as clause 740.
- Finishing: To clause 821C seal around skirtings with Silicone sealant

153 PVC SAFETY VINYL SHEETING (type F5)
- Location:refer to plans
- Base: floor screed with latex levelling screed.
- Preparation: as manufacturers recommendations
- Flooring roll: Heterogeneous PVC
- Manufacturer: Polyflor Ltd, PO Box 3, Radcliffe New Road, Whitefield, Manchester M45 7NR.
  Tel:0161 767 1111. UK sales fax: 0161 767 1128 Email: info@polyflor.com Web: www.polyflor.com
- Product reference: **Polysafe Corona (Superatec+)**
- BS EN 685 class: 23 /34 / 43.
- Width: 2000mm.
- Thickness: 2.5mm
- Colour/ pattern: TBA
- Adhesive (and primer if recommended by manufacturer): as recommended by manufacturer
- Seam welding: thermo welded joints with complimentary coloured rod
- Accessories: edging trim for thresholds as clause 740.
- Finishing: To clause 821C seal around skirtings with Silicone sealant

154 PVC SPECIAL VINYL SHEETING (type F6)
- Location:refer to plans
- Base: floor screed with latex levelling screed.
- Preparation: as manufacturers recommendations
- Flooring roll: Heterogeneous PVC
- Manufacturer: Polyflor Ltd, PO Box 3, Radcliffe New Road, Whitefield, Manchester M45 7NR.
  Tel:0161 767 1111. UK sales fax: 0161 767 1128 Email: info@polyflor.com Web: www.polyflor.com
- Product reference: **Polysafe Sport 67**
- BS EN 685 class: 23 /34 / 43.
- Width: 2000mm.
- Thickness: 6.7mm
- Colour/ pattern: TBA
- Adhesive (and primer if recommended by manufacturer): as recommended by manufacturer
- Seam welding: thermo welded joints with complimentary coloured rod
- Accessories: edging trim for thresholds as clause 740.
- Finishing: To clause 821C seal around skirtings with Silicone sealant

171 HEAVY CONTRACT BROADLOOM CARPETING (type F3)
- Location: refer to plans
- Base: Existing and new screeded floors
- Underlayment: Smoothing underlayment as clause 460
- Carpet:
  Manufacturer: Heckmondwike FB, Div of National Floorcoverings Ltd.
  - Web: www.heckmondwike-fb.co.uk.
  - Email: sales@heckmondwike-fb.co.uk.

  Product reference: **Montage**
  Sheet width: 4000mm
  Thickness: 8mm
  Colour/pattern: To be confirmed
- Installation: In accordance with Heckmondwike FB printed installation instructions
- Adhesive (and primer if recommended by manufacturer):
  As recommended by the flooring manufacturer
- Accessories: Edging strips as clause 740.

172 BARRIER CARPETING (type F1)
- Location: refer to plans
- Base: Existing and new screeded floors
- Underlayment: Smoothing underlayment as clause 460
- Carpet:
  Manufacturer: Heckmondwike FB, Div of National Floorcoverings Ltd.
  - Web: www.heckmondwike-fb.co.uk.
  - Email: sales@heckmondwike-fb.co.uk.

  Product reference: **Diamond Barrier Carpet**
  Sheet width: 2000mm
  Thickness: 11mm
  Colour/pattern: To be confirmed
- Installation: In accordance with Heckmondwike FB printed installation instructions
- Adhesive (and primer if recommended by manufacturer):
  As recommended by the flooring manufacturer
- Accessories: Edging strips as clause 740.

GENERAL REQUIREMENTS

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

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

250A LAYOUT - ROLL MATERIALS
- Setting out of seams: Agree setting out for sheeting types M50.

251A LAYOUT - SEAMS IN ROLL MATERIALS
- Setting out: Minimise occurrences of seams and cross seams.

252A LAYOUT - PATTERNS
- Setting out: Agree setting out for covering types M50

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

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

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

PREPARING BASES

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

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

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: Protein free.
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.

470 BASES FROM WHICH EXISTING FLOOR COVERINGS HAVE BEEN REMOVED
- Substrate: Clear of covering and as much adhesive as possible. Skim with smoothing underlayment compound to give smooth, even surface.

LAYING COVERINGS

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

640 ADHESIVE FIXING GENERALLY
- Adhesive type: As specified, as recommended by covering/ underlay, manufacturer or as approved.
- Primer: Type and usage as recommended by adhesive manufacturer.
- Application: As necessary to achieve good bond.
- Finished surface: Free from trowel ridges, high spots caused by particles on the substrate, and other irregularities.

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

670 BORDERS/ AND FEATURE STRIPS IN SHEET MATERIAL
- Curl: Not acceptable.
- Corners: Mitre joints.

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

690 SEAM BONDING CARPET
- Carpet types: M50/ 171 & 172 .
- Seaming adhesive application: Continuous bead to edges.
- Joints: Securely bonded, free of air bubbles.

720 DOORWAYS
- Joint location: On centre line of door leaf.

740 EDGINGS AND COVER STRIPS
- Manufacturer:
  Gradus.
  - Web: www.gradusworld.com.
  - Email: sales@gradusworld.com. .
  - Product reference: clip-top .
- Material/ finish: PVC .
- Fixing: Secure with edge of covering gripped. Use matching fasteners where exposed to view

780 TRAFFICKING AFTER LAYING
- Covering types: all flooring.
- Traffic free period: as manufacturers recommendations.

COMPLETION

820 FINISHING PVC 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.

825 FINISHING NON-TEXTILE ANTISTATIC 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 for not less than 24 hours before testing.

860A TESTING ANTISTATIC FLOORING
- Flooring to be tested: M50/ 170.
- Test methods: In accordance with BS 2050, clause A.4.1.
- Electrical resistivity: Submit and agree date and time of test. Record and submit results.
- Flooring details sign: Before fixing, agree location and submit details of a brass plate, size 50 x 75 mm, engraved with the following details:
  The words 'ANTISTATIC FLOOR'.
  Manufacturer and reference of flooring.
  Name of flooring contractor.
  Date when laid.

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

M60 Painting/clear finishing

To be read with Preliminaries/General conditions.

COATING SYSTEMS

130 GLOSS PAINT TO NEW & EXISTING INTERNAL TIMBER AS DENOTED ON DRAWING 17301a17
- Manufacturer: Crown .
  - Product reference: trade interior gloss .
- Surfaces: Previously decorated & new joinery .
  - Preparation: As recommended by manufacturer
    - As clauses 400, 440;
    - Degrease and provide key; and
    - Remove existing gloss paint .
- Initial coats: As recommended by manufacturer .
  - Number of coats: one .
- Undercoats: As recommended by manufacturer .
  - Number of coats: two .
- Finishing coats: Full gloss .
  - Number of coats: two .

150 EGGSHELL/ SATIN PAINT Ref: W1 - TO NEW & EXISTING INTERNAL WALLS AS DENOTED ON DRAWINGS .
- Manufacturer: Crown Paints .
  - Product reference: Clean Extreme durable acrylic eggshell (or equivalent) .
- Surfaces: New and existing plaster/ plasterboard & skim.
  Ensure that the surface is fully dry in depth. .
  - Preparation: As clauses 400, 440 & as recommended by manufacturer .
- Initial coats: As recommended by manufacturer .
  - Number of coats: one .
- Undercoats: As recommended by manufacturer .
  - Number of coats: As recommended by manufacturer .
- Finishing coats: roller or As recommended by manufacturer .
  - Number of coats: two .

150A SPECIAL COATING PAINT Ref: W2 - TO NEW & EXISTING INTERNAL WALLS AS DENOTED ON DRAWINGS .
- Manufacturer: Crown Paints .
  - Product reference: Crown Steracryl mould-inhibiting acrylic eggshell (or equivalent) .
- Surfaces: New and existing plaster/ plasterboard & skim.
  Ensure that the surface is fully dry in depth. .
  - Preparation: As clauses 400, 440 & as recommended by manufacturer .
- Initial coats: As recommended by manufacturer .
  - Number of coats: one .
- Undercoats: As recommended by manufacturer .
  - Number of coats: As recommended by manufacturer .
- Finishing coats: roller or As recommended by manufacturer .
  - Number of coats: two .

GENERALLY

210 COATING MATERIALS
- Manufacturers: Obtain materials from any of the following:
  Crown Paints Ltd, www.crownpaint.co.uk
  Dulux Trade, product of ICI AkzoNobel, www.duluxtrade.co.uk
  Johnstone's (PPG Architectural Coatings UK Ltd) www.johnstonestrade.com .
- Selected manufacturers: Submit names before commencement of coating work.

215 HANDLING AND STORAGE

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

220 COMPATIBILITY

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

230 ANCILLARY SURFACES

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

270 OFF SITE WORK

- All off site preparation and coating to be carried out under cover in a suitable environment with adequate lighting.
- Store all items, both before and after coating, in a clean, dry area protected from the weather and mechanical damage, properly stacked with spaces to permit air circulation and prevent sticking of surfaces.

280 PROTECTION

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

300 CONTROL SAMPLES

- Sample areas of finished work: Carry out, including preparation, as follows:
  Types of coating Nature of sample
  M60/ 130, 150 & 165 . one room .
- Approval of appearance: Obtain before commencement of general coating work.

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.

410 SUITABILITY OF SURFACES AND CONDITIONS

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

420 FIXTURES AND FITTINGS

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

425 IRONMONGERY

- Removal: Before commencing work: Remove ironmongery from surfaces to be coated.
- Hinges: Do not remove.
- Replacement: Refurbishment as necessary; refit when coating is dry.

430 EXISTING IRONMONGERY

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

440 PREVIOUSLY COATED SURFACES GENERALLY

- Preparation: In accordance with BS 6150, clause 11.5.
- Contaminated or hazardous surfaces: Give notice of:
  - Coatings suspected of containing lead.
  - Substrates suspected of containing asbestos.
  - 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.

456 PREVIOUSLY COATED SURFACE - BURNING OFF

- Risk assessment and method statement: Prepare, and obtain approval before commencing work.
- Adjacent areas: Protect from excessive heat and falling scrapings.
- Exposed resinous areas and knots: Apply two coats of knotting.
- Removed coatings: Dispose of safely.

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 reprime.

481 UNCOATED WOOD

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

490 PREVIOUSLY COATED STEEL
- Defective paintwork: Remove to leave a firm edge and clean bright metal.
- Sound paintwork: Provide key for subsequent coats.
- Corrosion and loose scale: Take back to bare metal.
- Residual rust: Treat with a proprietary removal solution.
- Bare metal: Apply primer as soon as possible.
- Remaining areas: Degrease.

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

511 GALVANIZED, SHERARDIZED AND ELECTROPLATED STEEL
- White rust: Remove.
- Pretreatment: Apply one of the following:
  - 'T wash'/ mordant solution to blacken whole surface.
  - Etching primer recommended by coating system manufacturer.

521 UNCOATED STEEL - MANUAL CLEANING
- Oil and grease: Remove.
- Corrosion, loose scale, welding slag and spatter: Remove.
- Residual rust: Treat with a proprietary removal solution.
- Primer: Apply as soon as possible.

541 UNCOATED ALUMINIUM/ COPPER/ LEAD
- Surface corrosion: Remove and lightly key surface.
- Pretreatment: Etching primer if recommended by coating system manufacturer.

552 UNCOATED PVC-U
- Dirt and grease: Remove. Do not abrade surface.

560 UNCOATED CONCRETE
- Release agents: Remove.

570 UNCOATED MASONRY/ RENDERING
- Loose and flaking material: remove.

580 UNCOATED PLASTER
- Nibs, trowel marks and plaster splashes: Scrape off.
- Overtrowelled 'polished' areas: Key lightly.

590 UNCOATED PLASTERBOARD
- Depressions around fixings: Fill with stoppers/ fillers

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

631 PREVIOUSLY PAINTED WINDOWS FRAMES
- Paint encroaching beyond glass sight line: Remove.
- Loose and defective putty: Remove.
- Putty cavities and junctions between previously painted surfaces and glass: Clean thoroughly.
- Finishing:
  - Patch prime, reputty as necessary, and allow to harden.
  - Seal and coat as soon as sufficiently hard.

APPLICATION

700 UNSUITABLE CONDITIONS

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

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.

731A SITE COATING OF CONCEALED JOINERY SURFACES

- General: After priming, apply additional coatings to surfaces that will be concealed when fixed in place.

740A CONCEALED METAL SURFACES

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

760 VARNISHING WOOD

- First coat: Thin with white spirit .
  - Brush well in and lay off avoiding aeration.
- Subsequent coats: Rub down lightly along the grain between coats.

780 BEAD GLAZING TO COATED WOOD

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

810 WATER REPELLENT

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

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

N
Furniture/Equipment

N10 General fixtures/ furnishings/ equipment

To be read with Preliminaries/General conditions.

PRODUCTS

160A SHELVING SYSTEM as specified
- Manufacturer: Laidlaw Solutions Ltd.
  - Web: www.laidlaw.net.
  - Email: info.willenhall@laidlaw.net. .
- Product reference: spur steel adjustable shelving system.
- Shelves:
  - Material: MDF.
  - Finish/ Colour: refer M60 – gloss lacquer.
- Other components: uprights & brackets.
  Refer to drawings for exact positions.

195A NOTICEBOARDS TO NEW BUILD & REFURBISHED AREAS
- Refer to drawings for exact locations.

200A WORKTOPS As Specified
- Refer to drawings for exact locations.

210A COAT RACKS As Specified
- Refer to drawings for exact locations.

220A LOCKERS TBC)
- Manufacturer: Venesta Washroom Systems Ltd.- Web: www.venesta.co.uk.- Email: marketing@venesta.co.uk..
  - Product reference: Active Lockers, Model: 3.
- Width: 310 mm.
  - Test level: General.
- Doors:
  - Colour: TBC from the standard colour range. .
  - Fittings: Cylinder lock.Standard: To BS 4680.

270A MIRRORS TO NEW TOILET AREAS
- Refer to sanitaryware drawings for exact locations.

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: As Engineering Services specification.

760A SEALANT BEDDING AND POINTING
- Application: As section Z22.

770 TRIMS

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

COMPLETION

910 GENERAL

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

920 APPLIANCES

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

N13 Sanitary appliances and fittings

To be read with Preliminaries/ General conditions.

PRODUCTS

300A WCS AND CISTERNS -
- Refer to sanitaryware schedule drawings for exact locations/details.

311A DOCUMENT M PACKAGES -
- Refer to sanitaryware schedule drawings for exact locations/details

331A SINKS -
- Refer to schedule schedule and drawings for exact locations/details

335A WASH BASINS TO ALL TOILET AREAS GENERALLY
- Refer to sanitaryware schedule drawings for exact locations/details

375A SHOWER UNITS As Indicated
- refer to sanitaryware shedule/drawings for exact location and detailsk .

436A HANDRAILS AND GRAB BARS NEW TOILET AREAS
- Refer to sanitaryware schedule drawing for positions/details

438A MIRRORS TO NEW TOILET AREAS
- Refer to sanitaryware schedule drawing for positions/details

442A PAPER TOWEL DISPENSERS
Refer to sanitaryware schedule drawing for positions/details

458A SOAP DISPENSERS NEW TOILET AREAS
Refer to sanitaryware schedule drawing for positions/details

462A TOILET PAPER HOLDERS NEW TOILET AREAS
Refer to sanitaryware schedule drawing for positions/details

472 HAND DRIERS TO NEW TOILET AREAS
- Type: refer to electrical engineers specification.
- Manufacturer: refer to electrical engineers specification.
  - Product reference: refer to electrical engineers specification.
- Electrical supply: refer to electrical engineers specification.

580A SEALANT
- Manufacturer: Adshead Ratcliffe & Co Ltd.
  - Web: www.arbo.co.uk.
  - Email: arbo@arbo.co.uk.
  - Product reference: Arbosil 1081
- Code: SL8130CWH.
- Accessories: None.

EXECUTION

610 INSTALLATION GENERALLY
- Assembly and fixing: Surfaces designed to falls to drain as intended.
- Fasteners: Nonferrous or stainless steel.
- Supply and discharge pipework: Fix before appliances.
- Fixing: Fix appliances securely to structure. Do not support on pipework.
- Jointing and bedding compounds: Recommended by manufacturers of appliances, accessories and pipes being jointed or bedded.
- Appliances: Do not use. Do not stand on appliances.
- On completion: Components and accessories working correctly with no leaks.
- Labels and stickers: Remove.

613 COMPATIBILITY OF COMPONENTS
- General: Each sanitary assembly must consist of functionally compatible components, preferably obtained from a single manufacturer.
  - Exceptions: -.

620 NOGGINGS AND BEARERS
- Noggings, bearers, etc. to support sanitary appliances and fittings: Position accurately. Fix securely.

625 FRAMING FOR PREPLUMBED PANEL SYSTEM
- General: Position accurately. Fix securely.

630 TILED BACKGROUNDS OTHER THAN SPLASHBACKS
- Timing: Complete before fixing appliances.
- Fixing appliances: Do not overstress tiles.

650 INSTALLING WC PANS
- Floor mounted pans: Screw fix and fit cover caps over screw heads. Do not use mortar or other beddings.
- Seat and cover: Stable when raised.

670 INSTALLING CISTERNS
- Cistern operating components: Obtain from cistern manufacturer.
  - Float operated valve: Matched to pressure of water supply.
- Overflow pipe: Fixed to falls and located to give visible warning of discharge.
  - Location: Agreed, where not shown on drawings.

710 INSTALLING TAPS
- Fixing: Secure against twisting.
- Seal with appliance: Watertight.
- Positioning: Hot tap to left of cold tap as viewed by user of appliance.

720 INSTALLING WASTES AND OVERFLOWS
- Bedding: Waterproof jointing compound.
- Fixing: With resilient washer between appliance and backnut.

N15 Fire and safety signage systems

To be read with Preliminaries/ General Conditions.

GENERAL

110A FIRE SIGNAGE SYSTEMS NEW BUILD & REFURBISHED AREAS
- To be supplied by Client & installed by Contractor as required.
  Refer to fire strategy drawing

120A SAFETY SIGNAGE SYSTEMS NEW BUILD & REFURBISHED AREAS
- To be supplied by Client & installed by Contractor as required.
  Refer to fire strategy drawing.

SYSTEM PERFORMANCE

210 GENERAL REQUIREMENTS
- Signage system design:
  - Complete to: BS 559 and BS ISO 16069.
  - Comply with the requirements of: Fire Strategy Report .
- Proposals: Submit drawings, schedules, technical information, calculations and manufacturer's literature.

240 SIGNAGE SYSTEM SPECIFICATION
- Content: Signs including facing information, components, inserts, accessories and fixings necessary to complete the system.
- Geometric shapes, colours and layout: To BS 5499-1.
  - Font: Helvetica medium.
- Escape route: In accordance with BS 5499-4 and BS ISO 16069
- Safety meaning: In accordance with BS 5499-5.
- Water safety: In accordance with BS 5499-11.

270 FIRE REACTION OF FIRE SIGNAGE SYSTEM
- Non flammable surface:
  - Standard: Class 1 to BS 476-7 .

271 FIRE REACTION OF SAFETY SIGNAGE SYSTEM
- Non flammable surface:
  - Standard: Class 1 to BS 476-7 .

290 SIGNAGE SAMPLES
- Sign type: Fire .
  - Action: Submit labelled samples.
  - Conformity: Retain samples on site for the duration of the contract or until instructed to remove.
  - Delivered products: To conform with labelled samples

291 SIGNAGE SAMPLES
- Sign type: Safety .
  - Action: Submit labelled samples.
  - Conformity: Retain samples on site for the duration of the contract or until instructed to remove.
  - Delivered products: To conform with labelled samples

PRODUCTS

305A SIGNAGE PRODUCTS GENERALLY
- Standard: To BS 559.
- Colorimetric and photometric properties: To BS 5378-2.
  Refer to Fire Strategy drawing E08338 A & ironmongery schedule.

EXECUTION

610 FIXING SIGNS GENERALLY
- Installation: To BS 559.
  - Secure, plumb and level.
- Fasteners and adhesives: As section Z20.
- Strength of fasteners: Sufficient to support live and dead loads.
- Fasteners for external signs: Corrosion resistant material or with a corrosion resistant finish.
  Isolate dissimilar metals to avoid electrolytic corrosion.
- Fixings showing on surface of sign: Must not detract from the message being displayed.

COMPLETION

910 DOCUMENTATION
- Submit:
  - Manufacturer's maintenance instructions.
  - Guarantees, warranties, test certificates, record schedules and logbooks.

N17 Portable fire fighting systems

To be read with Preliminaries/ General Conditions.

GENERAL

110A PORTABLE FIRE EXTINGUISHER SYSTEM NEW BUILD & REFURBISHED AREAS
- To be supplied & installed by Contractor as required eg in Fire equipment cabinet (surface mounted), fixing bracket or mounted on fire trolley or floor stand.
  Refer to fire strategy drawing.

150A FIRE BLANKET SYSTEM NEW BUILD & REFURBISHED AREAS
- To be supplied by Client & installed by Contractor as required.
  Refer to fire strategy drawing.

160A FIRE BUCKET SYSTEM NEW BUILD & REFURBISHED AREAS
- To be supplied by Client & installed by Contractor as required.
  Refer to fire strategy drawing E08338 A .

SYSTEM PERFORMANCE

220 COLOUR CODING
- Portable fire extinguishers: Colour code in accordance with BS 7863.

EXECUTION

610 INSTALLING PORTABLE FIRE EXTINGUISHERS
- Mounting height above finished floor level: as Chubb recommendations & current legislation.

650 INSTALLING FIRE BLANKETS
- Mounting height above finished floor level: as Chubb recommendations & current legislation.

670 INSTALLING FIRE BUCKETS
- Mounting height above finished floor level: as Chubb recommendations & current legislation.
- Contents: Fill bucket with clean sand.

COMPLETION

910 CLEANING
- Protective wrappings: Remove.
- Cleaning: Clean off and wipe down container finishes.

920 TESTING
- Test standard: To BS 5603-0.
- Test times: At completion.
- Notice for testing (minimum): 5 days.

930 TRAINING
- Training: Submit instruction manuals or supply other appropriate resources to train the users of the building in the safe and appropriate use of the fire extinguishers and fire blankets.
- Fire brigade: Submit contact details.

N25 Permanent access and safety equipment

To be read with Preliminaries/ General conditions.

TYPES OF SYSTEM/ EQUIPMENT

210A GUIDED TYPE FALL ARREST SYSTEM TO NEW ROOF AREAS (CONTRACTOR DESIGN)
- Manufacturer: Latchways plc.
  - Web: www.latchways.com.
  - Email: info@latchways.com.
  - Product reference: Mansafe Constant Force Fall Arrest System
- System arrangement: Perimeter.
- Components:
  - End set: as manufacturers recommendations.
  - Intermediate set: as manufacturers recommendations.
  - Corner set (90°): as manufacturers recommendations.
  - Variable set: as manufacturers recommendations.
  - Cable length: as manufacturers recommendations.
  - Transfastener (one per user): as manufacturers recommendations.
- System attachment: To suit standing seam roofing system.
  - Roofing manufacturer's system reference: as manufacturers recommendations.
- CF post finish: Polyester powder coated.
  - Colour: To match roofing panels.
- System installation: By contractor trained and approved by Latchways
- Other requirements: None.

DESIGN/ PERFORMANCE REQUIREMENTS

420 WIND LOADING
- General: Design the access/ safety system to withstand specified wind loads with equipment in position of maximum exposure and in parked position.
- Wind loads:
  TBC.

430 SAFETY
- General: The equipment as installed must have no irregularities/ projections capable of inflicting personal injury.
- Finished surfaces and edges of all accessible parts: Regular and smooth.

440 DESIGN LIFE/ MAINTENANCE PROGRAMME
- Design life of access/ safety system: Not less than 20 years.
- Schedule for maintenance and for replacement of components: Submit.

450 TESTING OF PERMANENT SUSPENDED ACCESS EQUIPMENT
- Pre-installation testing: Test roof rig at manufacturer's/ supplier's works. The rig must be capable of lifting and sustaining a proof load of 125% of the specified rated load without suffering damage or permanent deformation.
- Post-installation testing: Immediately on completion of installation, or when otherwise agreed, examine and test the complete installation in accordance with recommendations given in BS 6037-1, clause 14. Give adequate notice of testing arrangements.
- Certificates for works and site testing: Submit within 7 days of completion of satisfactory acceptance tests.

460 ASSESSMENT/ TESTING OF FIXING POINTS FOR ANCHOR DEVICES
- Design and installation of fixings in steelwork or timber: Verified by calculation to be capable of sustaining the relevant static and dynamic test forces specified in BS EN 795, clause 4.3.
- Fixings in other materials: Verify suitability by carrying out a test in a sample of the material. The sample must be capable of sustaining the relevant static and dynamic test forces specified in BS EN 795, clause 4.3. Thereafter, each structural anchor installed in that material must be subjected to an axial pull out force of 5 kN to confirm the soundness of the fixing. The structural anchor must sustain the force for a minimum of 15 seconds.

FABRICATION, ASSEMBLY AND INSTALLATION

510 FABRICATION AND ASSEMBLY GENERALLY
- Machine cutting, drilling and assembly: Carry out as much as possible in the workshop. Obtain approval for any reassembly on site.
- Dissimilar metal surfaces of assembly components/ supports/ fixings: Isolate to prevent electrolytic corrosion.

520 PROTECTION
- General: Do not deliver to site any components or assemblies that cannot be installed immediately or unloaded into a suitable well protected storage area.

530 SUITABILITY OF STRUCTURE/ FABRIC
- Visual and geometric survey of supporting structure and fabric: Carry out before commencing installation of access/ safety system. Report immediately if structure/ fabric will not allow required accuracy/ security of erection/ fixing.

535 EXECUTION GENERALLY
- Structural members: Do not modify, cut notch or make holes in structural members without permission.
- Frameworks: Assemble and brace, including temporary members required for installation.
  - Temporary support: Do not use access systems as temporary support or strutting for other work.
- Bolted joints:
  - Contact between dissimilar metals: Avoid.
  - Bolts and washers: Select types, sizes and quantities of fasteners or packings and spacings to retain supported components without distortion or loss of support.
- Welded joints: Comply with latest edition of National Structural Steelwork Specification (NSSS), Section 5.
- Finished components: Smooth, free from distortion, cracks, burrs and sharp arrises.

540 MECHANICAL FIXINGS
- Materials: Unless otherwise recommended by equipment manufacturer:
  - Connecting bolts and other fixings fully accessible for inspection: Mild steel hot dip galvanized to BS 7371-6.
    Nuts: Tapped after galvanizing.
  - Cast-in anchors and other fixings not accessible for routine inspection: Austenitic stainless steel, grade 1.4401 (316) to BS EN 10088-1.

550 FASTENERS, INSERTS AND BOLTS FOR BUILDING IN
- Supplier: Equipment manufacturer/ supplier.

560 FIXINGS FOR SECURING EQUIPMENT
- Adjustment capability: Adequate three dimensional adjustment to accommodate building structure/ fabric irregularities.

570 FIXING ANCHOR INSTALLATION
- Site drilling or cutting into structure/ fabric: Permitted only in approved locations.
- Distance between all fixing devices and edges of supporting material: Not less than recommended by fixing manufacturer.

640 MARKING OF ANCHOR DEVICES

- Provision: Provide on or near each anchor device a label or other clear marking giving:
  - Manufacturer's name and telephone number.
  - Serial number and year of manufacture of device.
  - Maximum number of personnel that may be attached to the device at any one time.
  - Requirements for energy absorbers, ground clearance, etc.
- Anchor devices intended solely for use with personal protective equipment: Indicate restriction of use by pictogram or other suitable marking on or near the device.

810 SERVICE/ MAINTENANCE of Mansafe Constant Force Fall Arrest System

- General: Following acceptance of the completed installation, service and maintain the equipment for the period stated below as and at intervals recommended by the manufacturer. Such maintenance to include a 'call-out' service during normal working hours to maintain the equipment in an acceptable and safe condition.
- Service/ Maintenance period: as manufacturers recommendation.

820 OPERATING INSTRUCTIONS

- Equipment and accessories: Where appropriate, mark in such a way that it is possible to identify the correct mode of operation for their safe use.

830 OPERATING AND MAINTENANCE MANUAL

- General: Provide, for inclusion in the Building Manual, printed instructions and recommended procedures to be established by the Employer for operating and routinely maintaining the equipment. Provide diagrams where appropriate.
- Content:
  - Instructions for assembling/ erecting equipment for use.
  - Comprehensive operating instructions, including safety and emergency procedures, for all motions including upward, downward and lateral travel, and slew.
  - Servicing and planned maintenance procedures, including assembly instructions where maintenance necessitates dismantling of machinery parts.
  - List of replacement parts, with references.
  - Recommended procedures for testing equipment.

840 AS INSTALLED DRAWINGS

- General: After commissioning/ testing of the equipment provide as installed drawings for inclusion in the Building Manual.
  - Number of sets: 1.
- Drawing content:
  - Contractor's name and contract number.
  - Location and date of installation.
  - Manufacturer's name, model and type numbers.
  - General arrangement of the complete installation.
  - Electrical circuit wiring diagrams complete with details and ratings of all items of equipment.

P
Building fabric sundries

P10 Sundry insulation/ proofing work

SUNDRY INSULATION/ PROOFING WORK

To be read with Preliminaries/ General conditions

TYPES OF INSULATION

250A UNDERSLAB INSULATION position as indicated on drawings above beam & block flooring

- Manufacturer: Kingspan Insulation Ltd.- Web: www.kingspaninsulation.co.uk.- Email: technical@kingspaninsulation.co.uk..
  - Product reference: Kooltherm® K3 Floorboard.
- Material: Rigid boards.
- Thickness: 80mm.
- Supports: as recommended.
- Installation requirements:
  - Joints: Boards butted, no gaps.

320 BREATHER MEMBRANE

- Manufacturer: Kingspan Insulation Ltd.- Web: www.kingspaninsulation.co.uk.- Email: technical@kingspaninsulation.co.uk.n.
  - Product reference: Kingspan Nilvent®.
- Installation requirements:
  - Setting out: Joints minimized. Membrane to form a continuous barrier to prevent water, snow and wind blown dust reaching the substrate.
  - Method of fixing: as manufacturers recommendations.
  - Joints: Lapped 100 mm minimum horizontally and 150 mm minimum vertically.
  - Openings: Membrane fixed to reveals.
  - Bottom edges: Membrane lapped over flashings, sills, etc. to allow free drainage to the exterior.
- Penetrations: Sealed.

370B CAVI240 TYPE CFIS CAVITY FIRE STOP

- Manufacturer: Cavity Trays Ltd.
  - Web: www.cavitytrays.com.
  - Email: enquiries@cavitytrays.co.uk.
  - Product reference: Cavi240 Type CFIS
- Size: 100 mm x 50 mm.

P20 Unframed isolated trims/ skirtings/ sundry items

To be read with Preliminaries/ General conditions

112 SOFTWOOD PINBOARD FRAMES - TBC
- Quality of wood and fixing: To BS 1186-3.
  - Species: European redwood.
  - Class: CSH.
- Moisture content at time of fixing: 13-17%.
- Profile: rebated & twice rounded with mitred corners as drawing.
  - Finished size: 32 x 19 mm as drawing.
- Finish as delivered: quick drying clear satin varnish, as section M60.
- Fixing: brass cups and screws and plugged to wall at 300mm centres.

170 PROPRIETARY PIPE CASINGS
- Manufacturer:
  Alumasc Interior Building Products Ltd
  - Web: www.pendock.co.uk.
  - Email: sales@alumascinteriors.com ..
  - Product reference: Pendock.
- Size: refer to mechanical engineers drawings & specification.
- Finish/ Colour: white.
- Accessories: as recommended by manufacturer.
- Fixing: as recommended by manufacturer.
  - Jointing: as recommended by manufacturer.

205 MEDIUM DENSITY FIBREBOARD WINDOW SILL BOARDS
- Standard: To BS EN 622-5.
  - Type: MDF.
  - Formaldehyde class: To BS EN 622-1, Class E1.
- - Profile: Bullnose to leading edge.
  - Thickness: 25 mm
  - Width: 245 mm (check required width on site after installation of windows and plaster, but before fabrication of cill boards)
  - Finish: Gloss paint finish as M60/120
  - Fixing: Plug and screw to masonry, paired fixings at 450 centres (min. 6 fixings per window board).
  - Jointing: In unjointed sections where possible. Otherwise joints to be glued and filleted.

210 MEDIUM DENSITY FIBREBOARD SKIRTING BOARDS
- Refer to drawing for positions.
  Standard: To BS EN 622-5.
  - Type: MDF.
  - Formaldehyde class: To BS EN 622-1, Class E1.
  - Profile: chamfered & rounded.
  - Thickness: 18 mm
  - Width: 119 mm
  - Finish: Gloss paint finish as M60/120
  - Fixing: Plug and screw to masonry.

215A MEDIUM DENSITY FIBREBOARD SHELVING - TBC
- Standard: To BS EN 622-5.
  - Type: MDF.
  - Formaldehyde class: To BS EN 622-1, Class E1.
- - Profile: Bullnose to leading edge.
  - Thickness: 25 mm
  - Width: 500mm (check required width on drawings)
  - Finish: Gloss paint finish as M60/120
  - Fixing: Spur shelving as N10/160A.
  - Jointing: In unjointed sections where possible. Otherwise joints to be glued and filleted.

360A PINBOARD TBC
- Manufacturer: Sundeala Ltd, Middle Mill, Cam, Dursley, Glos. GL11 5LQ Tel: 01453 542286 Fax: 01453 549085
  E-mail: sales@sundeala.co.uk.
  - Product reference: Sundeala Quality FRB eco board .
- Fire rating: One face to BS 476-7, Class 1.
- Thickness: 9 mm.
- Size: generally 1220 x 2440 mm.
- Edges: square.
- Fixing: evostick 613 contact adhesive and plugged & screwed to wall @ 300mm centres as manufacturer's recommendations.
- Decorative facing: colour to be determined.

425A BRACKET SUPPORTS SHELVING - TBC
- Manufacturer: [
  Laidlaw Solutions Ltd.
  - Web: www.laidlaw.net.
  - Email: info.willenhall@laidlaw.net.].
  - Product reference: [spur steel adjustable shelving system].
  Refer to drawing E08338 A __.

EXECUTION

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

P21 Door/ window ironmongery

To be read with Preliminaries/ General conditions.

PRE-TENDER

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

GENERAL

121 IRONMONGERY FROM SINGLE PROPRIETARY RANGE
- Manufacturer: Lloyd Worrall Architectural Ironmongery
  - Web: www.lloydworrall.co.uk.
  - Email: mark.davies@lloydworrall.co.uk.

  Tel: 0161 886 2740 .
  - Product reference: REFER TO LLOYD WORRALL SCHEDULE .
- Principal material/ finish: REFER TO SCHEDULE .
- Items unavailable within selected range: Submit proposals.

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

141 SAMPLE BOARDS
- General: Before placing orders with suppliers submit a sample board, containing labelled samples of ironmongery and showing methods of fixing.
- Range: Include TBC .
  - Conformity: Retain board on site in an approved location for the duration of the contract. Ensure conformity of ironmongery as delivered with labelled samples.

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

180 CATEGORY OF DUTY FOR DOOR IRONMONGERY
- Standard: To DD 171.
  - Category of duty of doors: Heavy duty .
- General: Durability of ironmongery components to be compatible with stated category of duty of each door leaf.
  - Exclusions: Ironmongery with specific duty or 'category of use' defined elsewhere. Documentation: Before placing orders with suppliers submit documentation showing product compliance with stated category of duty.

DOOR HANGING DEVICES

REFER TO IRONMONGERY & DOOR SCHEDULE

DOOR OPERATING DEVICES

REFER TO IRONMONGERY SCHEDULE

DOOR SECURING DEVICES

REFER TO IRONMONGERY SCHEDULE

DOOR FURNITURE

REFER TO IROMONGERY SCHEDULE

P31 Holes, chases, covers and supports for services

To be read with Preliminaries/ General conditions.

PRODUCTS

EXECUTION

610 COORDINATION
- Locations and dimensions of holes and chases for services: Submit details where requested

620 HOLES AND CHASES IN IN SITU CONCRETE
- Cast in: Holes larger than 10 mm diameter and chases.
- Cutting and drilling:
  - Permitted for holes not larger than 10 mm diameter.
  - Not permitted for holes larger than 10 mm diameter except as indicated on drawings.

630 HOLES AND CHASES IN PRECAST CONCRETE
- Cutting and drilling: Not permitted except as indicated on drawings.

640 HOLES IN STRUCTURAL STEELWORK
- Cutting and drilling: Not permitted except as indicated on drawings.

650 HOLES, RECESSES AND CHASES IN MASONRY
- Locations: To maintain integrity of strength, stability and sound resistance of construction.
- Sizes: Minimum needed to accommodate services.
  - Holes (maximum): 300 x 300 mm.
- Walls of hollow or cellular blocks: Do not chase.
- Walls of other materials:
  - Vertical chases: No deeper than one third of single leaf thickness, excluding finishes.
  - Horizontal or raking chases: No longer than 1 m. No deeper than one sixth of the single leaf thickness, excluding finishes.
- Chases and recesses: Do not set back to back. Offset by a clear distance at least equal to the wall thickness.
- Cutting: Do not cut until mortar is fully set. Cut carefully and neatly. Avoid spalling, cracking and other damage to surrounding structure.

660 PREFORMED HOLES IN MASONRY
- Width of holes without bridging over (maximum): 300 mm.
  - Holes requiring bridging: Submit proposals.

670 NOTCHES AND HOLES IN STRUCTURAL TIMBER
- General: Avoid if possible.
- Sizes: Minimum needed to accommodate services.
- Position: Do not locate near knots or other defects.
- Notches and holes in same joist: Minimum 100 mm apart horizontally.
- Notches in joists: Locate at top. Form by sawing down to a drilled hole.
  - Depth (maximum): 0.125 x joist depth.
  - Distance from supports: Between 0.07 and 0.25 x span.
- Holes in joists: Locate on neutral axis.
  - Diameter (maximum): 0.25 x joist depth.
  - Centres (minimum): 3 x diameter of largest hole.
  - Distance from supports: Between 0.25 and 0.4 of span.
- Notches in roof rafters, struts and truss members: Not permitted.
- Holes in struts and columns: Locate on neutral axis.
  - Diameter (maximum): 0.25 x minimum width of member.
  - Centres (minimum): 3 x diameter of largest hole.
  - Distance from ends: Between 0.25 and 0.4 of span

690 INSTALLING PIPE SLEEVES

- Sleeves: Fit to pipes passing through building fabric.
- Material: Match pipeline.
- Size: One or two sizes larger than pipe to allow clearance.
- Finish: Install sleeves flush with building finish. In areas where floors are washed down, install protruding 100 mm above floor finish.
- Masking plates: Fit at visible penetrations, including through false ceilings of occupied rooms.

Q
Paving/Planting/Fencing/Site furniture

Q10 Kerbs/ edgings/ channels/ paving accessories

To be read with Preliminaries/General conditions.

TYPES OF KERBS/EDGINGS AND CHANNELS

110A PROPRIETARY PRECAST CONCRETE EDGINGS TO NEW TARMAC PATHS, GRASSED AREAS as denoted on drawings
- Standard: To BS EN 1340.
- Manufacturer: Marshalls, Landscape House Premier Way, Lowfields Business Park, Elland, HX5 9HT. Tel.: 01422 312000. .
- Designations: EF Edging, flat top.
- Size (width x height x length): 50 x 250 x 915 mm.
- Finish: As cast.
- Colour: Natural.
- Joints generally: Dry, 2-3 mm gap.
- Refer to site plan / external works drawings

112A PRECAST CONCRETE TO NEW TARMAC ROADWAYS, GRASSED AREAS as denoted on drawings
- Standard: To BS EN 1340.
- Manufacturer: Marshalls plc.
  - Web: www.marshalls.co.uk.
  - Email: MarshallsWM@web-response.co.uk.
  - Product reference: Half Battered Kerb
    " Size: HB2 – 125 x 255 mm.
    " Radius kerbs: Radius, convex (external) .
  - Size: HB2, 125 x 255 mm.
  - Radius: to suit.
    " Special shapes: drop kerbs.

ROADS/PAVING ACCESSORIES/MARKING

395 ROAD MARKING (THERMOPLASTIC)
- Standard: Road Safety Markings Association standard specification document for road marking and road studs (StanSpec).
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Colour: White / yellow.
- Retroreflectivity to BS EN 1436: Class R2.

LAYING

510 LAYING KERBS, EDGINGS AND CHANNELS
- Cutting: Neat, accurate and without spalling. Form neat junctions.
  - Long units (450 mm and over) minimum length after cutting: 300 mm.
  - Short units minimum length after cutting: The lower of one third of their original length or 50 mm.
- Bedding of units: Positioned true to line and levelled along top and front faces, in a mortar bed on accurately cast foundations or on a race of fresh concrete.
- Securing of units: After bedding has set, secured with a continuous haunching of concrete or on a race of fresh concrete with backing concrete cast monolithically.

520 ADVERSE WEATHER
- Conditions: Do not construct if the temperature is below 3°C on a falling thermometer or 1°C on a rising thermometer. Adequately protect foundations, bedding and haunching against frost and rapid drying by sun and wind.

530 CONCRETE FOR FOUNDATIONS, RACES AND HAUNCHING
- Standard: To BS 8500-2.
- Designated mix: Not less than GEN0 or Standard mix ST1.
- Workability: Very low.

540 CEMENT MORTAR BEDDING
- General: To section Z21.
- Mix (Portland cement:sand): 1:3.
  - Portland cement: Class CEM I 42.5 to BS EN 197-1.
  - Sand: to BS EN 12620, grade 0/4 or 0/2 (MP).
- Bed thickness: 12-40 mm.

544 MORTAR BEDDING
- General: To section Z21.
- Mix: 1:3 Portland cement, Class 42.5: BS 882 sand, grading M or F..
- Bed thickness: 12-40 mm.

560 HAUNCHING DOWELS
- Dowels: Steel bar to BS 4482.
  - Size: 12 mm diameter, 150 mm long.
- Installation of dowels: Vertically into foundation while concrete is plastic.
  - Centres: 450 mm.
  - Distance from back face of kerb: 50 mm.
  - Projection: 75 mm.
- Haunching: Rectangular cross section, cast against formwork, fully enclosing and protecting dowels.

600 RADIUS KERBS/CHANNELS
- Usage: Radii of 15 m or less.

610 ANGLE KERBS
- Usage: Internal and external 90° changes of direction.
- Cutting of mitres: Not permitted.

620 ACCURACY
- Deviations (maximum):
  - Level: ± 6 mm.
  - Horizontal and vertical alignment: 3 mm in 3 m.

630 NARROW MORTAR JOINTS
- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled, tightly butted and surplus mortar removed immediately.
  - Joint width: 3 mm.

640 TOOLED MORTAR JOINTS
- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled and tooled to a neat flush profile.
  - Joint width: 6 mm.

Q20 Granular sub-bases to roads/ pavings

To be read with Preliminaries/ General conditions.

110 THICKNESSES OF SUB-BASE/ SUBGRADE IMPROVEMENT LAYERS
- Thicknesses: See sections:
  - Q22 Coated macadam/asphalt roads/pavings and Q25 Slab/brick/sett/cobble pavings.

120 CHECKING CALIFORNIA BEARING RATIO (CBR) OF SUBGRADES
- Subgrade variation: If material appears to vary from that stated in the site investigation report, or if there are extensive soft spots, test subgrade CBR to BS 1377-4 or BS 1377-9. Submit results and obtain instructions before proceeding.

130 HERBICIDES
- Type:
  Apply an approved type of herbicide in accordance with manufacturer's recommendations .
- Application: To subgrade of pavings.

140 EXCAVATION OF SUBGRADES
- Final excavation to formation or subformation level: Carry out immediately before compaction of subgrade.
- Soft spots and voids: Give notice.
- Old drainage and service trenches: Give notice.
- Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilized.

145 PREPARATION AND COMPACTION OF SUBGRADES
- Timing: Immediately before placing sub-base.
- Soft or damaged areas: Obtain instructions.
- Compaction: Thoroughly, by roller or other suitable means, adequate to resist subsidence or deformation of the subgrade during construction and of the completed roads/ pavings when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

150 SUBGRADES FOR VEHICULAR AREAS
- Preparation and treatment: To Highways Agency 'Specification for highway works', clauses 616 and 617.

170 GEOTEXTILE FILTER/ SEPARATOR MEMBRANES
- Manufacturer: Submit proposals .
  - Product reference: submit proposals .
- Jointing: 300 mm overlap .
- Protect from:
  - Exposure to light, except during laying (maximum five hours).
  - Contaminants.
  - Materials listed as potentially deleterious by geotextile manufacturer.
  - Damage, until fully covered by fill.
  - Wind uplift, by laying not more than 15 m before covering with fill.
- Preparation: Remove humps and sharp projections and fill hollows before laying.

210 HIGHWAYS AGENCY TYPE 1 GRANULAR MATERIAL
- Material: Type 1 unbound mixture to Highways Agency 'Specification for highway works', clause 801.
  - Recycled aggregate: Not permitted.

230 PLACING GRANULAR MATERIAL GENERALLY

- Preparation: Loose soil, rubbish and standing water removed.
- Structures, membranes and buried services: Ensure stability and avoid damage.

240 LAYING GRANULAR SUB-BASES FOR VEHICULAR AREAS

- General: Spread and levelled in layers. As soon as possible thereafter compact each layer.
- Standard: To Highways Agency 'Specification for highway works' clause 802.
- At drainage fittings, inspection covers, perimeters and where local excavation and backfilling has taken place: Take particular care to compact fully.

241 LAYING GRANULAR SUB-BASES FOR VEHICULAR AREAS

- Proposals: Well in advance of starting work submit details of:
  - Maximum depth of each compacted layer.
  - Type of plant.
  - Minimum number of passes per layer.
- General: Spread and levelled in layers. As soon as possible thereafter compact each layer.
- At drainage fittings, inspection covers, perimeters and where local excavation and backfilling has taken place: Take particular care to compact fully.
- Sub-base surface after compaction and immediately before overlaying: Uniformly well closed and free from loose material, cracks, ruts or hollows.

250 LAYING GRANULAR SUB-BASES FOR PEDESTRIAN AREAS

- General: Spread and levelled.
- Compaction:
  - Timing: As soon as possible after laying.
  - Method: By roller or other suitable means, adequate to resist subsidence or deformation of the sub-base during construction and of the completed paving when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

310A ACCURACY

- Permissible deviation from required levels, falls and cambers (maximum):
  - Subgrades:
    Footways and recreation areas: ± 20 mm.
  - Sub-bases:
    Footways and recreation areas: ± 12 mm .

320 BLINDING

- Locations: Surfaces to receive sand bedded interlocking brick or block paving to sections Q24 and Q25.
- Material: Sand, fine gravel or PFA.
- Finish: Close, smooth, compacted surface.

330 COLD WEATHER WORKING

- Frozen materials: Do not use.
- Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.

340 PROTECTION

- Sub-bases: As soon as practicable, cover with subsequent layers, specified elsewhere.
- Subgrades and sub-bases: Prevent degradation by construction traffic, construction operations and inclement weather.

Q22 Asphalt roads/ pavings

To be read with Preliminaries/ General conditions.

TYPES OF PAVING

120 COATED MACADAM PAVING TO FOOTPATHS / HARD PLAY AREAS
- Materials and workmanship: To BS 4987.
- Granular sub-base: As section Q20 clause 210
  Thickness 230 mm.
- Basecourse: 20mm size open graded macadam
  Thickness 40 mm
- Wearing course: 6mm size medium graded macadam
  Thickness 20 mm
- Surface treatment: None

120A COATED MACADAM PAVING TO ROADWAYS
- Materials and workmanship: To BS 4987.
- Granular sub-base: As section Q20 clause 210
  Thickness 250 mm.
- Basecourse: 20mm size open graded macadam
  Thickness 60 mm
- Wearing course: 6mm size medium graded macadam
  Thickness 40 mm
- Surface treatment: None

PREPARATORY WORK/ REQUIREMENTS

220 BITUMINOUS MATERIALS GENERALLY
- Suppliers names: Submit.
  - Timing (minimum): 2 weeks before starting work.
- Test certificates: At the time of delivery for each manufacturing batch submit certificate:
  - Confirming compliance with this specification and the relevant standard.
  - Stating full details of composition of mix.

240 ACCEPTANCE OF SURFACES
- Surface: Sound, clean and suitably close textured.
- Level tolerances: To BS 594987.
- Kerbs and edgings: Complete, adequately bedded and haunched and to the required levels.

250 ABUTMENTS
- Vertical edges of manholes, gullies, kerbs and other abutments: Clean and paint with a thin uniform coating of hot applied 40/60 paving grade bitumen.
- Finishing: Tamp surface around projections.
  - Level: Flush or not more than 3 mm above projections.

LAYING

310 LAYING GENERALLY

- Preparation: Remove all loose material, rubbish and standing water.
- Adjacent work: Form neat junctions. Do not damage.
- Channels, kerbs, inspection covers etc: Keep clean.
- New paving:
  - Keep traffic free until it has cooled to prevailing atmospheric temperature.
  - Do not allow rollers to stand at any time.
  - Prevent damage.
  - Lines and levels: With regular falls to prevent ponding.
  - Overall texture: Smooth, even and free from dragging, tearing or segregation.
  - State on completion: Clean.

320 ADVERSE WEATHER

- Frozen materials: Do not use.
- Suspend laying:
  - During freezing conditions
  - If the air temperature reaches 0°C, or in calm dry conditions -3°C, on a falling thermometer.
  - Hot rolled asphalt: During periods of continuous or heavy rain or if there is standing water on the base.

330 LEVELS

- Permissible deviation from the required levels, falls and cambers (maximum): In accordance with BS 594987, Table 7.

340 FLATNESS/ SURFACE REGULARITY

- Deviation of surface: Where appropriate in relation to the geometry of the surface, the variation in gap under a 3 m straightedge placed anywhere on the surface to be not more than:
  - Base: 25 mm.
  - Binder course: 13 mm.
  - Surface course: 7 mm.
  - Where a straightedge cannot be used the surface must be of a comparable standard of accuracy when judged by eye.

351 CONTRACTOR'S USE OF PAVEMENTS

- Preparation for final surfacing:
  - Timing: Defer laying until as late as practicable.
  - Immediately before laying final surfacing: Clean and make good the base/ binder course. Allow to dry.
  - Adhesion: Tack coat to BS 434-1 or BS EN 13808.
    Application rate: As manufacturer's recommendation.
    Accuracy: Uniform, without puddles.
  - Finishing: Allow emulsion to break completely before applying surface.

Q25 Slab/ brick/ sett/ cobble pavings

To be read with Preliminaries/ General conditions.

PRODUCTS

315A CONCRETE FLAGS .
- Refer to external works drawings.
  Manufacturer: Marshalls, Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire, HX5 9HT. Tel: 01422 312 000. Fax: 01422 312 999. Web: http://www.marshalls.co.uk.
  Granular sub-base: As section Q20, thickness:100mm.
  Bedding: Course Sand (Zone 2) as clause 245
  Flags: To BS 7263-1
  Product reference: Marshalls standard precast concrete pavings.
  Colour/ Finish: Natural
  Nominal sizes: 600 x 600 x 50.
  Jointing / Pointing: lime:sand (1:2)
  Bond: See drawing

320A TACTILE FLAGS -
- Refer to external works drawings.
  Manufacturer: [Marshalls, Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire, HX5 9HT. Tel: 01422 312 000. Fax: 01422 312 999. Web: http://www.marshalls.co.uk].
  Granular sub-base: As section Q20, thickness:100mm.
  Bedding: Course Sand (Zone 2) as clause 245
  Flags: To BS 7263-1
  Product reference: Marshalls Hazard Warning Pavings.
  Colour/ Finish: To be confirmed (either red or buff)
  Nominal sizes: 400 x 400 x 50.
  Jointing / Pointing: lime:sand (1:2)
  Bond: See drawing

EXECUTION

620 ADVERSE WEATHER
- General:
  - Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 1°C on a rising thermometer.
  - Frozen materials: Do not use. Do not lay bedding on frozen or frost covered bases.
- Paving with mortar joints and/ or bedding:
  - Protect from frost damage, rapid drying out and saturation until mortar has hardened.
- Paving laid and jointed in sand:
  - Stockpiled bedding sand: Protect from saturation.
  - Exposed areas of sand bedding and uncompacted areas of sand bedded paving: Protect from heavy rainfall.
  - Saturated sand bedding: Remove and replace, or allow to dry before proceeding.
  - Laying dry-sand jointed paving in damp conditions: Brush in as much jointing sand as possible. Minimize site traffic over paving. As soon as paving is dry, top up joints and complete compaction.

625 LAYING PAVINGS - GENERAL

- Appearance: Smooth and even with regular joints and accurate to line, level and profile.
- Falls: To prevent ponding.
- Bedding of paving units: Firm so that rocking or subsidence does not occur or develop.
  - Bedding/ Laying course: Consistently and accurately graded, spread and compacted to produce uniform thickness and support for paving units.
- Slopes: Lay paving units upwards from the bottom of slopes.
- Paving units: Free of mortar and sand stains.
- Cutting: Cut units cleanly and accurately, without spalling, to give neat junctions with edgings and adjoining finishes.

630 LEVELS OF PAVING

- Permissible deviation from specified levels:
  - Generally: ± 6 mm.
- Height of finished paving above features:
  - At gullies: +6 to +10 mm.
  - At drainage channels and kerbs: +3 to +6 mm.

635 REGULARITY

- Maximum variation in gap under a 3 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface): 10 mm.
- Sudden irregularities: Not permitted.
- Difference in level between adjacent blocks/ pavers/ setts (maximum): 2 mm.

645 PROTECTION

- Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
- Materials storage: Do not overload pavings with stacks of materials.
- Handling: Do not damage paving unit corners, arrises, or previously laid paving.
- Mortar bedded pavings: Keep free from traffic after laying:
  - Pedestrian traffic (minimum): 4 days.
  - Vehicular traffic (minimum): 10 days.
- Access: Restrict access to paved areas to prevent damage from site traffic and plant.

650 CEMENTITIOUS BASES AND SUB-BASES

- General: Protect from moisture loss, if not covered by another pavement course within 2 hours of completion.

655 CONDITION OF SUB-BASES/ BASES BEFORE SPREADING LAYING COURSE

- Trenches and excavation of soft or loose spots in subgrade: Fill and thoroughly compact.
- Granular surfaces: Lay and compact so as to be sound, clean, smooth and close-textured enough to prevent migration of bedding/ laying course materials into the sub-base during compaction and use, free from movement under compaction plant and free from compaction ridges, cracks and loose material.
- Prepared existing and new bound bases (roadbases): Sound, clean, free from rutting or major cracking. Remove sharp stones, projections and debris.
- Sub-base/ Roadbase level tolerances: To BS 7533-7, Annex A.
- Levels and falls: Accurate and within the specified tolerances.
- Drainage outlets: Within 0-10 mm of the required finished level.
- Features in sand bedded paving (including mortar bedded restraints and drainage ironwork): Complete to required levels; adequately bed and haunch in mortar.
- Sub-bases containing cement/ hydraulic binder: Cure for minimum times specified in BS 7533-4.

760A LAYING PRECAST CONCRETE PAVING

- Laying: Tamp down into lightly compacted laying course.
  - Nominal thickness of laying course after compaction: 25 mm.
- Filling: Allow to settle and refill level with surface.

785 TOOLED JOINTS IN MORTAR BEDDED UNITS

- Joints: Completely filled with bedding mortar as work proceeds.
  - Joint width: 6-10 mm.
  - Finish: Neat flush profile.

Q28 Topsoil and growing media

To be read with Preliminaries/ General conditions.

REFER TO EXTERNAL WORKS DRAWINGS

200 GRADING SUBSOIL
- General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
- Areas of thicker topsoil: Excavate locally.

660 SAMPLE LOAD OF IMPORTED TOPSOIL
- General: Deliver to site a sample load of not less than 5 m³.
- Give notice: Allow inspection before making further deliveries to site. Retain for comparison with subsequent loads.
  - Notice period: 5 days.

670 CONTAMINATION
- General: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
  - Corrosive, explosive or flammable.
  - Hazardous to human or animal life.
  - Detrimental to healthy plant growth.
- Subsoil: In areas to receive topsoil, do not use subsoil contaminated with the above materials.
- Give notice: If any evidence or symptoms of soil contamination are discovered on the site, or in topsoil to be imported.

690 HANDLING TOPSOIL
- Aggressive weeds: Give notice and obtain instructions before moving topsoil.
- Plant: Select and use plant to minimize disturbance, trafficking and compaction.
- Contamination: Do not mix topsoil with:
  - Subsoil, stone, hardcore, rubbish or material from demolition work.
  - Other grades of topsoil.
- Multiple handling: Keep to a minimum. Use or stockpile topsoil immediately after stripping.
- Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall or when it is wetter than the plastic limit less 3%, to BS 1377-2.

700 SPREADING TOPSOIL
- Temporary roads/surfacing: Remove before spreading topsoil.
- Layers:
  - Depth (maximum): 150 mm.
  - Gently firm each layer before spreading the next.
- Depths after firming and settlement (minimum): 150 mm.
- Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

710 LOOSE TIPPING OF TOPSOIL
- General: Do not firm, consolidate or compact topsoil when laying. Tip and grade to approximate levels in one operation with minimum of trafficking by plant.
- Depths after settlement (minimum): 150 mm.

910 FINISHED LEVELS OF TOPSOIL AFTER SETTLEMENT
- Above adjoining paving or kerbs: 25 mm.
- Below dpc of adjoining buildings: Not less than 150 mm.
- Shrub areas: Higher than adjoining grass areas by 25 mm.
- Within root spread of existing trees: Unchanged.
- Adjoining soil areas: Marry in.
- Thickness of turf or mulch: Included.

920 DOCUMENTATION

- Timing: Submit at handover.
- Contents:
  - Full description of all soil components.
  - Record of source for all soil components.
  - Analyst's report for each test carried out.
  - Record drawings showing the location and depth of all soils by type and grade.
  - Supplier's declaration of compliance with BS 3882.
- Number of copies: 1.

Q30 Seeding/ turfing

To be read with Preliminaries/General conditions.

GENERAL INFORMATION/REQUIREMENTS

REFER TO EXTERNAL WORKS DRAWINGS

115 SEEDED AND TURFED AREAS
- Growth and development: Healthy, vigorous grass sward, free from the visible effects of pests, weeds and disease.
- Appearance: A closely knit, continuous ground cover of even density, height and colour.

120 CLIMATIC CONDITIONS
- General: Carry out the work while soil and weather conditions are suitable.

145 WATERING
- Quantity: Wet full depth of topsoil.
- Application: Even and without displacing seed, seedlings or soil.
- Frequency: As necessary to ensure the establishment and continued thriving of all seeding/turfing.

150 WATER RESTRICTIONS
- Timing: If water supply is or is likely to be restricted by emergency legislation do not carry out seeding/turfing until instructed. If seeding/turfing has been carried out, obtain instructions on watering.

160 NOTICE
- Give notice before:
  - Setting out.
  - Applying herbicide.
  - Applying fertilizer.
  - Preparing seed bed.
  - Seeding or turfing.
  - Visiting site during maintenance period.
- Period of notice: 1 week.

170 SETTING OUT
- Boundaries: Mark clearly.
- Delineation: In straight lines or smoothly flowing curves as shown on drawings.

PREPARATION

205A PREPARATION MATERIALS
- General: Free from toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
- Certification of source, analysis, suitability for purpose and absence of harmful substances:

210 HERBICIDE FOR ALL GRASSED AREAS
- Type: Suitable for suppressing perennial weeds.
- Timing: Allow fallow period before cultivation.
  - Duration: As manufacturer's recommendation.

250 CULTIVATION

- Compacted topsoil: Break up to full depth.
- Soil ameliorant/ Conditioner/ Fertilizer: Fully incorporate into topsoil to a depth of 100 mm.
- Tilth: Reduce topsoil to a tilth suitable for blade grading.
  - Depth: 100 mm.
  - Particle size (maximum): 10 mm.
- Material brought to the surface: Remove stones and clay balls larger than 50 mm in any dimension, roots, tufts of grass, rubbish and debris.

260 GRADING

- Topsoil condition: Reasonably dry and workable.
- Contours: Smooth and flowing, with falls for adequate drainage.
  - Hollows and ridges: Not permitted.
- Finished levels after settlement: 25 mm above adjoining paving, kerbs, manholes etc.
- Blade grading: May be used to adjust topsoil levels provided depth of topsoil is nowhere less than 150 mm .
- Give notice: If required levels cannot be achieved by movement of existing soil.

270 FERTILIZER FOR ALL GRASSED AREAS

- Types: Apply both:
  - Superphosphate with a minimum of 18% water soluble phosphoric acid.
  - A sulfate of ammonia with a minimum of 20% nitrogen.
- Application: Before final cultivation and three to five days before seeding/turfing.
- Coverage: Spread evenly, each type at 70 g/m², in transverse directions.

280 FINAL CULTIVATION

- Timing: After grading and fertilizing.
- Seed bed: Reduce to fine, firm tilth with good crumb structure.
  - Depth: 25 mm.
  - Surface preparation: Rake to a true, even surface, friable and lightly firmed but not over compacted.
  - Remove surface stones/earth clods exceeding:
    General areas: 20 mm.
    Fine lawn areas: 10 mm.
- Adjacent levels: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.

TURFING

410A TURF TO BS 3969 FOR ALL GRASSED AREAS

Supply & lay new turf to BS3969, cut size 900x300x25mm thick. The Contractor shall roll and chain harrow or rake the site to produce a suitable turf bed preparation. Any surplus vegetable matter, rubbish, etc to be removed by the Contractor. Pre-turf fertiliser shall be applied seven days before turfing. The finished levels of turf abutting paving, mowing margins or tops of kerbs must not be less than 25mm. Topsoil shall be spread to a min. depth of 75mm in areas to be turfed.

420 DELIVERY AND STORAGE

- Timing: Lay turf with minimum possible delay after lifting. If delay occurs, lay turf out on topsoil and keep moist.
- Frosty weather or waterlogged ground: Do not lift turf.
- Delivery: Arrange to avoid need for excessive stacking.
- Stacking height (maximum): 1 m.
- Dried out or deteriorated turf: Do not use.

430 TURFING GENERALLY

- Time of year: To be agreed.
- Timing of laying:
  - Spring and summer: Within 18 hours of delivery.
  - Autumn and winter: Within 24 hours of delivery.
- Weather conditions: Do not lay turf when persistent cold or drying winds are likely to occur or soil is frost bound, waterlogged or excessively dry.
- Working access: Planks laid on previously laid turf. Do not walk on prepared bed or newly laid turf.
- Jointing: Laid with broken joints, well butted up. Do not stretch turf.
- Edges: Whole turfs, trimmed to a true line.
- Adjusting levels: Remove high spots and fill hollows with fine soil.
- Consolidating: Lightly and evenly firm as laying proceeds to ensure full contact with substrate. Do not use rollers.
- Dressing, brushed well in to completely fill all joints: - .
- Watering: Thoroughly water completed turf immediately after laying. Check that water has penetrated into the soil below.

PROTECTING/CUTTING

510 PROTECTIVE FENCING

- Fencing type: suitable for purpose.
  - Height: suitable for purpose.
- Erection: On completion of seeding/ turfing.
- Removal: After grass is well established. Fencing will remain the property of the Contractor .

530 FIRST CUT OF GRASSED AREAS

- Timing: When grass is reasonably dry.
  - Height of initial growth: 40-75 mm.
- Preparation:
  - Debris and litter: Remove.
  - Stones and earth clods larger than 25 mm in any dimension: Remove
- Height of first cut: 40 mm.
- Mower type: Contractor's choice.
- Arisings: Remove from site.

590 CLEANLINESS

- Soil and arisings: Remove from hard surfaces.
- General: Leave the works in a clean, tidy condition at Completion and after any maintenance operations.

MAINTENANCE

605 MAINTENANCE

- Duration: Carry out the following operations from completion of seeding/ turfing until the end of the defects liability period.

610 FAILURES OF SEEDING/TURFING

- Defective materials or workmanship: Areas that have failed to thrive.
  - Exclusions: Theft or malicious damage.
- Method of making good: Recultivation and reseeding/ returfing.
- Timing of making good: The next suitable planting season.

620 MAINTAINING GENERAL GRASSED AREAS

- Maximum height of growth at any time: 75 mm.
- Preparation: Before each cut remove all litter and debris.
- Cutting: As and when necessary to a height of 50 mm.
  - Arisings: Remove.
- Bulb planting areas: Do not cut until bulb foliage has died down.
- Trimming: All edges.
  - Arisings: Remove.
- Weed control: Substantially free of broad leaved weeds.
  - Method: Application of a suitable selective herbicide.
- Stones brought to the surface: Remove regularly.
  - Size: Exceeding 25 mm in any dimension.
- Areas of settlement: Make good.
- Watering: During establishment of grass areas ensure that sufficient water is applied using a fine sprinkler or oscillating spray to maintain healthy growth. .

680 MAINTENANCE FERTILIZER FOR ALL GRASSED AREAS

- March application: 15:10:10 Spring turf fertilizer at 35 g/m².
- September application: 5:10:10 Autumn turf fertilizer at 50 g/m².

690 EDGES FOR ALL GRASSED AREAS

When grassed areas are well established, form edges to planting beds and around newly planted trees with a suitable edging tool, to clean straight lines or smooth curves. Draw back soil from edges to permit use of edging shears and remove all arisings.

Q40 Fencing

To be read with Preliminaries/ General conditions.

FENCING SYSTEMS

REFER TO EXTERNAL WORKS DRAWINGS REINSTATE EXISTING FENCING AND GATES AS INDICATED

GATES, POSTS AND STILES

EXECUTION

710 INSTALLATION GENERALLY
- Set out and erect:
  - Alignment: Straight lines or smoothly flowing curves.
  - Tops of posts: Following profile of the ground.
  - Setting posts: Rigid, plumb and to specified depth, or greater where necessary to ensure adequate support.
  - Fixings: All components securely fixed.

715A COMPETENCE
- Operatives: Contractors must employ competent operatives.

720 SETTING POSTS IN CONCRETE
- Standard: To BS 8500-2.
- Mix: Designated concrete not less than GEN1 or Standard prescribed concrete not less than ST2.
- Alternative mix for small quantities: 50 kg Portland cement to 150 kg fine aggregate to 250 kg 20 mm nominal maximum size coarse aggregate, medium workability.
- Admixtures: Do not use.
- Holes: Excavate neatly and with vertical sides.
- Filling: Position post/ strut and fill hole with concrete to not less than the specified depth, well rammed as filling proceeds and consolidated.
- Backfilling of holes not completely filled with concrete: Excavated material, well rammed and consolidated.

730 EXPOSED CONCRETE FOUNDATIONS
- Filling: Compact until air bubbles cease to appear on the upper surface.
- Finishing: Weathered to shed water and trowelled smooth.

740 SETTING POSTS IN EARTH
- Holes: Excavated neatly, with vertical sides and as small as practicable to allow refilling.
- Filling: Position posts/ struts and replace excavated material, well rammed as filling proceeds.

780 DAMAGE TO GALVANIZED SURFACES
- Treatment of minor damage (including on fasteners and fittings): Low melting point zinc alloy repair rods or powders made for this purpose, or at least two coats of zinc-rich paint to BS 4652.
- Thickness: Apply sufficient material to provide a zinc coating at least equal in thickness to the original layer.

790 SITE PAINTING
- Timing: Prepare surfaces and apply finishes as soon as possible after fixing.

COMPLETION

910 CLEANING
- General: Leave the works in a clean, tidy condition.
- Surfaces: Clean immediately before handover.

920 FIXINGS
- All components: Tighten.
  - Timing: Before handover.

930 GATES
- Hinges, latches and closers: Adjust to provide smooth operation. Lubricate where necessary.
  - Timing: Before handover.

Q41 Barriers/ guardrails

To be read with Preliminaries/ General conditions.

TYPES OF BARRIERS/ GUARDRAILS

REFER TO EXTERNAL WORKS DRAWINGS FOR DETAILS

135 PROTECTIVE BARRIERS TO ENTRANCE DOORS
- Standard: To BS 6180.
- Manufacturer: Besam.
  - Product reference: Submit proposals.
- Height above datum: 900 mm min.
- Design load: To BS 6180
  - Applied horizontally at: Design height .
- Material/ Protection: Aluminium alloy.
- Surface finish: Powder coating as section Z31.
  - Colour/ Texture: RAL 9010/ matt.
  - Minimum film thickness: 25 micrometres.
- Fixings/ Foundations: 300 x 300 x 600 mm deep concrete foundation.
- Other requirements: None.

INSTALLATION

420 ALIGNMENT
- Erection: Fences/ barriers to present a flowing alignment. Tops of posts to follow ground profile.
- Tolerance: ±30 mm of prescribed alignment and, within any 10 m length, ±15 mm from the straight or required radius.

430 ERECTION GENERALLY
- Protection: Coat all internal and external surfaces of aluminium and steel posts below and up to 150 mm above ground level, with two coats of bituminous paint to BS 6949 type 2, unless other applied surface finish is specified.
- Prevention of electrolytic corrosion: Isolate dissimilar metals.
- Steel components: Do not drill, cut or weld after galvanizing.

480 CONCRETE FOUNDATIONS FOR POSTS
- Excavations: To have vertical sides. Dispose of all arisings. Blind excavation bottoms with a 50 mm layer of concrete.
- Concrete mix: To BS 8500-2, Designated mix not less than GEN 4 or Standard mix not less than ST5. Do not use admixtures.
- Placing concrete: Fill holes to the specified depth and fully compact. Do not backfill for at least four days.
- Temporary support to posts: Provide for a at least four days after placing concrete.

490 DAMAGE REPAIR TO GALVANIZED SURFACES
- Areas of repair: Minor damage, including fixings and fittings.
  - Total area of repair not to exceed 0.5% of total surface area.
  - Each area not to exceed 1000 mm².
- Renovation: Use low melting point zinc alloy repair rods or powders or at least two coats of zinc-rich paint to BS 4652.

R
Disposal systems

R10 Rainwater drainage systems

To be read with Preliminaries/ General conditions.

GENERAL

SYSTEM PERFORMANCE

210 DESIGN
- Design: Complete the design of the rainwater drainage system.
- Standard: To BS EN 12056-3, clauses 3-7 and National Annexes.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

221 COLLECTION AND DISTRIBUTION OF RAINWATER
- General: Complete, and without leakage or noise nuisance.

PRODUCTS

311A ALUMINIUM GUTTERS TO NEW ROOF AREAS - CONTRACTOR DESIGN
Refer to drawings

360A SEALANT FOR GUTTERS
- Spread jointing compound evenly over jointing face of socket.
- For gutters with bolted joints, tighten joints in the gutter sole before any other bolts. Fit suitable washers, and spacers to prevent overtightening, unless specified otherwise.
- Tighten fixing to squeeze out some compound.
- Remove surplus, squeezed out compound and neatly clean off.

365A DOWNPIPES TO NEW ROOF AREAS - CONTRACTOR DESIGN

FABRICATION

EXECUTION

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

605A INSTALLATION GENERALLY
- Install pipework/gutters to ensure the complete discharge of rainwater from the building without leaking.
- Obtain all components for each type of pipework/guttering from the same manufacturer unless specified otherwise.
- Provide access fittings and rodding eyes as necessary in convenient locations to permit adequate cleaning and testing of pipework.
- Avoid contact between dissimilar metals and other materials which would result in electrolytic corrosion.
- Do not bend plastics or galvanized steel pipes.
- Adequately protect pipework/gutters from damage and distortion during construction. Fit purpose made temporary caps to prevent ingress of debris. Fit all access covers, cleaning eyes and blanking plates as the work proceeds.
- Where not specified otherwise use plated, sherardized, galvanized or nonferrous fastenings, suitable for the purpose and background, and compatible with the material being fixed.

610 FIXING AND JOINTING GUTTERS

- Joints: Watertight.
- Brackets: Securely fixed.
  - Fixings: Plugged and screwed into masonry.
    Fixing centres: as recommended.
  - Additional brackets: Where necessary to maintain support and stability, provide at joints in gutters and near angles and outlets.
- Roofing underlay: Dressed into gutter.

615A SETTING OUT EAVES GUTTERS - TO FALLS

- Set out to a true line and even gradient to ensure no ponding or backfall. Position high points of gutters as close as practical to the roof and low points not more than 50 mm below the roof.
- Position outlets to align with connections to below ground drainage, unless shown otherwise on drawings.
- Provide for thermal and building movement when fixing and jointing, and ensure that clearances are not reduced as fixing proceeds.
- Seal as specified to make watertight.
- Ensure that roofing underlay is dressed into gutter.

630 INSTALLING RAINWATER OUTLETS

- Fixing: Secure. Fix before connecting pipework.
  - Method: as recommended by manufacturer.
- Junctions between outlets and pipework: Accommodate movement in structure and pipework.

635 FIXING PIPEWORK

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

640 FIXING VERTICAL PIPEWORK

- Bracket fixings: Plugged and screwed into masonry.
- Distance between bracket fixing centres (maximum): 1200 mm.

645 FIXING LOW GRADIENT PIPEWORK

- Bracket fixings: Plugged and screwed into masonry.
- Distance between bracket fixing centres (maximum): 900 mm.

650 JOINTING PIPEWORK AND GUTTERS

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

651 PIPEWORK WITH UNSEALED JOINTS
- Ensure that pipes are firmly secured to prevent rattling at joints and fixings.

675 CUTTING COATED PIPEWORK AND GUTTERS
- Cutting: Recoat bare metal.

680 FIXING INSULATION TO INTERNAL PIPELINES AND GUTTERS
- Fixing: Secure and neat. Provide continuity at supports and leave no gaps. Fix split pipe insulation with the split on 'blind' side of pipeline.
  - Method: Contractor's choice.
- Timing: Do not fit insulation until completion of pipe airtightness or leakage testing.

685 IDENTIFICATION OF INTERNAL RAINWATER PIPEWORK
- Markings: To BS 1710.
  - Type: Black bands, with arrows to indicate direction of flow.
- Wording: White lettering 'RAINWATER DRAINAGE' on a black background.
- Type: Permanent; integral or painted pipe colour, self-adhesive bands or identification clips.
- Locations: Junctions, both sides of slabs, bulkheads and wall penetrations.

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

695 ELECTRICAL CONTINUITY - GUTTERS
- Joints in metal gutters: Purpose made links supplied by the gutter manufacturer to ensure electrical continuity.

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

COMPLETION

900 TESTING GENERALLY
- Dates for testing: Give notice.
  - Period of notice (minimum): 5 working days.
- Preparation:
  - Pipework: Complete, securely fixed, free from defects, obstruction and debris before testing.
- Testing:
  - Supply clean water, assistance and apparatus.
  - Do not use smoke to trace leaks.
- Records: Submit a record of tests.

905 INTERNAL PIPEWORK TEST - ENGLAND, WALES, IRELAND AND NORTHERN IRELAND
- Preparation: Temporarily seal open ends of pipework with plugs.
- Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug.
- Testing: Pump air into pipework until gauge registers 38 mm.
- Required performance:
  - Allow a period for temperature stabilization, after which the pressure of 38 mm is to be maintained without loss for at least 3 minutes.

910 GUTTER TEST
- Preparation: Temporarily block all outlets.
- Testing: Fill gutters to overflow level and after 5 minutes closely inspect for leakage.

915 MAINTENANCE INSTRUCTIONS

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

920 IMMEDIATELY BEFORE HANDOVER

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

R11 Above ground foul drainage systems

To be read with Preliminaries/ General conditions.

GENERAL

115 ABOVE GROUND FOUL DRAINAGE SYSTEM
- Sanitary and floor drainage outlets: As drawing.
- Waste pipework: Polypropylene.
- Discharge stack and branch pipework: Polypropylene.
- Separate ventilating pipework: None required.
- Accessories: Air admittance valves.
- Disposal: To below ground drainage as section R12.

116 PLASTICS PIPEWORK FOR [WASTES VENT PIPEWORK]
(Refer to drawing – above ground drainage)
" Pipes, fittings and accessories: MUPVC to BS 5255, Kitemark certified.
" Manufacturer and reference: Marley Plumbing &Drainage Limited Customer Service Department, Station road, Delamore, Northwich Cheshire CW8 2 JF Tel; 01606 889 809, Fax 01622 858 725 e: marketing@marleyext.com w: www.marley.co.uk Marley soil and waste systems
" Size(s): DN 32, 40 & 50mm diameter
" Colour: white
" Accessories:couplers; bends; branches; access caps; reducers
" Method of jointing: Solvent welding
" Method of fixing: standard pipe clips screwed to 100 x 75 2 x 25 mm softwood blocks glued to back of partition with contact adhesive in partition cavities

SYSTEM PERFORMANCE

210 DESIGN
- Design: Complete the design of the above ground foul drainage system.
- Standards: To BS EN 12056-1 and BS EN 12056-2, and in accordance with BS EN 12056-2 National Annexes NA-NG.
  - System type to BS EN 12056-2: System III.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

220 COLLECTION AND DISTRIBUTION OF FOUL WATER
- General: Quick, quiet and complete, self-cleansing in normal use, without blockage, crossflow, backfall, leakage, odours, noise nuisance or risk to health.
- Pressure fluctuations in pipework (maximum): ±38 mm water gauge.
- Water seal retained in traps (minimum): 25 mm.

PRODUCTS

316 FLOOR DRAINS as above ground drainage drawings
- Manufacturer: ACO Technologies plc. - Web: www.aco.co.uk. Tel: +44 (0)1462 816666.
  Product reference: Shower Gully.
  Body: Circular gully top for sheet vinyl floor.
  Outlet orientation: Vertical outlet spigot 50 mm.
  Grating: Perforated circular for vinyl.
  Accessories: [Not required].

350 MUPVC OR PVC-C PIPEWORK FOR WASTES/VENT PIPEWORK

- Material and standard:
  - MUPVC: To BS 5255 and Kitemark certified; or
  - PVC-C: To BS EN 1566-1, and Kitemark certified.
    Application area code: B.
    Opening dimensions of access fittings, design of swept fittings, stand off dimensions of pipe and fitting brackets and requirements for adaptors and plugs: To BS 4514.
- Manufacturer: Marley Plumbing & Drainage
  - Web: www.marley.co.uk.
  - Email: marketing@marleyext.com. .
  - Product reference: MUPVC Solvent Weld Waste System..
- Nominal sizes: DN 32, 40 & 100mm diameter generally.
- Colour: White where exposed to view internally, black where exposed on outside of building; grey where concealed..
- Brackets: Plastics pipe clips, colour to match pipes.
  - Fixings: standard pipe clips screwed to 100 x 75 2 x 25 mm softwood blocks glued to back of partition with contact adhesive in partition cavities.
    Size: as recommended by manufacturer.
- Accessories: Access fittings and as drawing.

375 AIR ADMITTANCE VALVES

- Standard: To BS EN 12380 or Agrément certified.
- Minimum air flow rate: To BS EN 12056-2.
- Manufacturer: Marley Plumbing & Drainage
  - Web: www.marley.co.uk.
  - Email: marketing@marleyext.com.
  - Product reference: SVD4 durgo valve.

380 GREASE TRAPS AND CONVERTERS

- Standards: In accordance with BS EN 1825-1 and to BS EN 1825-2 and Kitemark or Agrément certified.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Accessories:
  - Enzyme dosing control unit;
  - Filters; and
  - Lid.

EXECUTION

601 INSTALLATION GENERALLY

- Standard: To BS EN 12056-5.
- Components: From the same manufacturer for each type of pipework.
- Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
- Plastics and galvanized steel pipes: Do not bend.
- Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
- Concealed or inaccessible surfaces: Decorate before starting work specified in this section.
- Protection:
  - Purpose made temporary caps: Fit to prevent ingress of debris.
  - Access covers, cleaning eyes and blanking plates: Fit as the work proceeds.

605 PIPE ROUTES

- General: The shortest practical, with as few bends as possible.
  - Bends in wet portion of soil stacks: Not permitted.
  - Routes not shown on drawings: Submit proposals before commencing work.

610 FIXING PIPEWORK

- Pipework: Fix securely plumb and/ or true to line. Fix discharge stack pipes at or close below socket collar or coupling.
- Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.
- Externally socketed pipes and fittings: Fix with sockets facing upstream.
- Additional supports: Provide as necessary to support junctions and changes in direction.
- Vertical pipes: Provide a load bearing support not less than every storey level. Tighten fixings as work proceeds so that every storey is self supporting.
- Wall and floor penetrations: Isolate pipework from structure, e.g. with pipe sleeves.
  - Masking plates: Fix at penetrations if visible in the finished work.
- Expansion joint sockets: Fix rigidly to the building.
- Fixings: Allow the pipe to slide.

630 JOINTING PIPEWORK - GENERALLY

- General: Joint with materials, fittings and techniques that will make effective and durable connections.
- Jointing differing pipework systems: With adaptors intended for the purpose.
- Cut ends of pipes: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.
- Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
- Junctions: Form with fittings intended for the purpose.
- Jointing material: Do not allow it to project into bore of pipes and fittings.
- Surplus flux, solvent jointing materials and cement: Remove from joints.

660 JOINTING PIPEWORK - ABS, MUPVC, PVC-C AND PVC-U

- Jointing: Solvent welded with lubricated ring seal joints at maximum 1800 mm spacing.

675 COATED PIPES

- Cutting: Recoat bare metal.

680 ELECTRICAL CONTINUITY

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

685 IDENTIFICATION OF INTERNAL FOUL DRAINAGE PIPEWORK

- Markings: To BS 1710.
  - Type: Black, with arrows to indicate direction of flow.
  - Wording: White lettering 'FOUL DRAINAGE' on a black background.
- Type: Integral lettering on pipe wall, self-adhesive bands or identification clips.
- Locations: At 500 mm centres, junctions and both sides of slabs, valves, appliances, bulkheads and wall penetrations.

690 IDENTIFICATION OF INTERNAL GREY WATER DRAINAGE PIPEWORK

- Grey water: As defined in BS EN 12056-1, clause 3.1.
- Markings: To BS 1710:
  - Type: Black bands, with arrows to indicate direction of flow.
  - Wording: Black lettering 'GREY WATER' on a light grey background..
- Type: Integral lettering on pipe wall, self-adhesive bands or identification clips.
- Locations: At 500 mm centres, junctions, and both sides of slabs, valves, appliances, bulkheads and wall penetrations.

695 DISCHARGE AND VENTILATING STACKS

- Terminations: Perforated cover or cage that does not restrict airflow.
  - Material: Plastics, as discharge stack.

700 INSTALLING AIR ADMITTANCE VALVES
- Position: Vertical, above flood level of highest appliance served and clear of insulation materials (other than the manufacturer's insulating cover).
- Connection to discharge stack: Allow removal for rodding, e.g. ring seal.
- Roof spaces and other unheated locations: Fit manufacturer's insulating cover.

705 ACCESS FOR TESTING AND MAINTENANCE
- General: Install pipework with adequate clearance to permit testing, cleaning and maintenance, including painting where necessary.
- Access fittings and rodding eyes: Position to avoid obstruction.

COMPLETION

900 TESTING GENERALLY
- Dates for testing: Give notice.
  - Period of notice (minimum): 5 working days.
- Preparation:
  - Pipework: Securely fixed and free from obstruction and debris.
  - Traps: Filled with clean water.
- Testing:
  - Supply clean water, assistance and apparatus.
  - Do not use smoke to trace leaks.
- Records: Submit a record of tests.

905 PIPEWORK AIRTIGHTNESS TEST
- Preparation:
  - Open ends of pipework: Temporarily seal using plugs.
  - Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug or through trap of an appliance.
- Testing: Pump air into pipework until gauge registers 38 mm.
- Required performance: Pressure of 38 mm is to be maintained without loss for at least three minutes.

910 SIPHONAGE AND BACK PRESSURE TESTS
- Method:
  - WC pans: Test by flushing.
  - Other appliances: Test by filling to overflow level, then removing the plug.
- Number of tests: Test each appliance three times. Recharge traps before each test.
- Self siphonage testing: Test each appliance individually.
- Induced siphonage and back pressure testing: Test by discharging the following numbers of appliances simultaneously on each stack:
  - WCs: 3.
  - Washbasins: 3.
  - Sinks: 1.
  - Selection of appliances: Submit proposals.

915 PREHANDOVER CHECKS
- Temporary caps: Remove.
- Permanent blanking caps, access covers, rodding eyes, floor gratings and the like: Secure complete with fixings.

920 SUBMITTALS
- Manufacturer's instructions for grease traps: Handover at completion.

Z
Building fabric reference specification

Z10 Purpose made joinery

To be read with Preliminaries/ General conditions.

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

120 CROSS SECTION DIMENSIONS OF TIMBER
- General: Dimensions on drawings are finished sizes.
- Maximum permitted deviations from finished sizes:
  - Softwood sections: To BS EN 1313-1:-
    Clause 6 for sawn sections.
    Clause NA.2 for further processed 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, thicknessed, planed, ploughed, etc.
- Surfaces exposed by minor cutting and/ or drilling: Treat as recommended by main treatment solution manufacturer.

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

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

220 WOOD VENEERED BOARDS/ PANELS

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

250 FINISHING

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

Z11 Purpose made metalwork

To be read with Preliminaries/ General conditions.

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

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

330 STEEL PLATE, SHEET AND STRIP
- Plates and wide flats, high yield strength steel: To BS EN 10025-6.

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

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

360 COATED STEEL FLAT PRODUCTS
- Hot dip zinc coated carbon steel sheet and strip for cold forming: To BS EN 10327 and BS EN 10143.
- Hot dip zinc coated structural steel sheet and strip: To BS EN 10143 and BS EN 10326.
- Hot dip zinc-aluminium (za) coated sheet and strip: To BS EN 10326 and 10327.
- Hot dip aluminium-zinc (az) coated sheet and strip: To BS EN 10327.
- Organic coated flat products: To BS EN 10169-1.

370 STEEL STRUCTURAL HOLLOW SECTIONS (SHS)
- Non alloy and fine grain steels, hot finished: To BS EN 10210-1 and -2.
- Non-alloy and fine grain steels, cold formed welded: To BS EN 10219-2.
- Weather resistant steels, hot finished: To BS 7668.

380 OTHER STEEL SECTIONS
- Equal flange tees: To BS EN 10055.
- Equal and unequal angles: To BS EN 10056-1 and -2.
- Wire, carbon steel for general engineering purposes: To BS 1052.
- Wire and wire products, general: To BS EN 10218-2.
- Tubes:
  - Seamless circular: To BS EN 10297-1.
  - Seamless cold drawn: To BS EN 10305-1.
  - Welded and cold sized square and rectangular: To BS EN 10305-5.
  - Welded circular: To BS EN 10296-1.
  - Welded cold drawn: To BS EN 10305-2.
  - Welded cold sized: To BS EN 10305-3.

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

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

FABRICATION

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

520 COLD FORMED WORK
- Profiles: Accurate, with straight arrises.

525 ADHESIVE BONDING
- Preparation of surfaces of metals to receive adhesives:
  - Degrease.
  - Abrade mechanically or chemically etch.
  - Prime: To suit adhesive.
- Adhesive bond: Form under pressure.

527 WELDING STEEL IF APPLICABLE - REFER TO STRUCTURAL ENGINEERS SPECIFICATION.
- Welding procedures:
  - Method and standard: Metal arc welding to BS EN 1011-1 and -2..
  - Welding Procedure Specification (WPS): Submit copies before commencement of welding.
- Preparation:
  - Joint preparation: Clean thoroughly.
  - Surfaces of materials that will be self-finished and visible in the completed work: protect from weld splatter.
- Jointing:
  - Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
  - Dissimilar metals: Not applicable.
  - Strength requirements: Welds to achieve design loads.
  - Heat straightening: Obtain approval.
  - Complex assemblies: Agree priority for welding members to minimize distortion caused by subsequent welds
  - Tack welds: Use only for temporary attachment.
  - Jigs: Provide to support and restrain members during welding.
  - Filler plates: Obtain approval.
  - Lap joints: Minimum 5 x metal thickness or 25 mm, which ever is greater.
  - Weld terminations: Clean and sound.

530 STAINLESS STEEL FABRICATION
- Guillotining or punching: Do not use for metal thicknesses greater that 10 mm.
- Thermal cutting:
  - Carbonation in the heat affected zone: Remove, after cutting.
- Bending:
  - Plates or bars: Cold ending radius not less than material thickness.
  - Tubes: Cold bending radius not less than 2 x tube diameter.
- Welding: In addition to general welding requirements:
  - Protect adjacent surfaces from weld spatter.
  - Pickle all welds before post fabrication treatments.
- Protection: Provide protection to fabricated components during transit and on site.

555 BRAZING
- Standard: To BS EN 14324.
- Testing:
  - Destructive testing: To BS EN 12797.
  - Nondestructive testing: To BS EN 12799.

FINISHING

710 FINISHING WELDED AND BRAZED JOINTS VISIBLE IN COMPLETE WORK
- Standard: To BS EN ISO 8501-3.
  - Preparation grade: TBC.
- Butt joints: Smooth, and flush with adjacent surfaces.
- Fillet joints: Neat.
- Grinding: Grind smooth where indicated on drawings.

745 PREPARATION FOR APPLICATION OF COATINGS
- General: Complete fabrication, and drill fixing holes before applying coatings.
- Paint, grease, flux, rust, burrs and sharp arrises: Remove.

750 LIQUID ORGANIC COATING FOR ALUMINIUM ALLOY COMPONENTS
- Standard: To BS 4842.

760 ZINC AND CADMIUM PLATING OF IRON AND STEEL SURFACES
- Zinc plating: To BS EN 12329.
- Cadmium plating: To BS EN 12330.

770 CHROMIUM PLATING
- Standard: To BS EN 12540.

780 GALVANIZING
- Standard: To BS EN ISO 1461.
- Preparation:
  - Vent and drain holes: Provide in accordance with BS EN ISO 14713. Seal after sections have been drained and cooled.
  - Components subjected to cold working stresses: Heat treat to relieve stresses before galvanizing.
  - Welding slag: Remove.
  - Component cleaning: To BS EN ISO 8501-1.
    Grade: TBC.

790 VITREOUS ENAMELLING
- Standard: To BS EN 14431.
- Substrate metal: Carbon steel or cast iron.

COMPLETION

910 DOCUMENTATION
- Submit:
  - Manufacturer's maintenance instructions.
  - Guarantees, warranties, test certificates, record schedules and log books.

920 COMPLETION
- Protection: Remove.
- Cleaning and maintenance: Carry out in accordance with procedures detailed in fabricators' guarantees.

Z12 Preservative/ fire retardant treatment

To be read with Preliminaries/ General conditions.

110 TREATMENT APPLICATION
- Timing: After cutting and machining timber, and before assembling components.
- Processor: Licensed by manufacturer of specified treatment solution.
- Certification: For each batch of timber provide a certificate of assurance that treatment has been carried out as specified.

120 COMMODITY SPECIFICATIONS
- Standard: Current edition of the British Wood Preserving and Damp-proofing Association (BWPDA) Manual.

130 PRESERVATIVE TREATMENT SOLUTION STRENGTHS/ TREATMENT CYCLES
- General: Select to achieve specified service life and to suit treatability of specified wood species.

150 COPPER CHROMIUM BASED PRESERVATIVE TREATMENT
- Solution:
  - Manufacturer: TBC .
    Product reference: TBC .
  - Application: High pressure impregnation.
- Moisture content of wood at time of treatment: Not more than 28%. After treatment, allow timber to dry for at least 14 days before using.

160 ORGANIC SOLVENT PRESERVATIVE TREATMENT
- Solution:
  - Manufacturer: TBC .
    Product reference: TBC .
  - Application: Double vacuum + low pressure impregnation, or immersion.
- Moisture content of wood at time of treatment: As specified for the timber/ component at time of fixing. After treatment, timber to be surface dry before use.

165 WATER BASED MICROEMULSION PRESERVATIVE TREATMENT
- Solution:
  - Manufacturer: TBC .
    Product reference: TBC .
  - Application: Double vacuum + low pressure impregnation.
- Moisture content of wood at time of treatment: As specified for the timber/ component at time of fixing. After treatment, timber to be surface dry before use.

167 BORON COMPOUND PRESERVATIVE TREATMENT
- Solution:
  - Manufacturer: TBC.
    Product manager: TBC.
  - Application: High pressure impregnation.
- Moisture content of wood at time of treatment: Not more than 28%. After treatment allow timber to dry before using.

170 CREOSOTE PRESERVATIVE TREATMENT
- Solution:
  - Manufacturer: TBC .
    Product reference: TBC .
  - Application: High pressure impregnation, or immersion.
- Moisture content of wood at time of treatment: Not more than 28%. After treatment, allow timber to dry before using.

210 FIRE RETARDANT TREATMENT

- Solution type: TBC.
  - Manufacturer: TBC.
    Product reference: TBC.
  - Application: Vacuum + pressure impregnation.
- Moisture content of wood at time of treatment: As specified for the timber/ component at time of fixing. After treatment, timber to be redried slowly at temperatures not exceeding 65°C to minimize distortion and degradation.

Z20 Fixings and adhesives

To be read with Preliminaries/ General conditions.

PRODUCTS

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

320 PACKINGS
- Materials: Noncompressible, corrosion proof.
- Area of packings: Sufficient to transfer loads.

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

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

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

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

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

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

390 ADHESIVES GENERALLY
- Standards:
  - Hot-setting phenolic and aminoplastic: To BS 1203.
  - Thermosetting wood adhesives: To BS EN 12765.
  - Polyvinyl acetate thermoplastic adhesive: To BS 4071.

410 POWDER ACTUATED FIXING SYSTEMS
- Types of fastener, accessories and consumables: As recommended by tool manufacturer.

EXECUTION

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

620 FIXING THROUGH FINISHES
- Penetration of fasteners and plugs into substrate: To achieve a secure fixing.

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

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

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

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

670 PELLETED COUNTERSUNK SCREW FIXING
- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Pellets: Cut from matching timber, match grain and glue in to full depth of hole.
- Finished level of pellets: Flush with surface.

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

690 USING POWDER ACTUATED FIXING SYSTEMS
- Powder actuated fixing tools: To BS 4078-2 and Kitemark certified.
- Operatives: Trained and certified as competent by tool manufacturer.

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

Z21 Mortars

To be read with Preliminaries/ General conditions.

CEMENT GAUGED MORTARS

110 CEMENT GAUGED MORTAR MIXES
- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

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

131 READY-MIXED LIME:SAND FOR CEMENT GAUGED MASONRY MORTARS
- Standard: To BS EN 998-2.
- Lime: Nonhydraulic to BS EN 459-1.
  - Type: CL 90S.
- Pigments for coloured mortars: To BS EN 12878.

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

160 CEMENTS FOR MORTARS
- Cement: To BS EN 197-1 and CE marked.
  - Types: Portland cement, CEM I.
    Portland limestone cement, CEM II/A-L or CEM II/A-LL.
    Portland slag cement, CEM II/B-S.
    Portland fly ash cement, CEM II/B-V.
  - Strength class: 32.5, 42.5 or 52.5.
- White cement: To BS EN 197-1 and CE marked.
  - Type: Portland cement, CEM I.
  - Strength class: 52.5.
- Sulfate resisting Portland cement:
  - Types: To BS 4027 and Kitemarked.
    To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.
  - Strength class: 32.5, 42.5 or 52.5.
- Masonry cement: To BS EN 413-1 and CE marked.
  - Class: MC 12.5.

180 ADMIXTURES FOR SITE MADE CEMENT GAUGED MORTARS
- Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
- Other admixtures: Submit proposals.
- Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

190 RETARDED READY TO USE CEMENT GAUGED MORTAR

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

200 STORAGE OF CEMENT GAUGED MORTAR MATERIALS

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

210 MAKING CEMENT GAUGED MORTARS

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

Z22 Sealants

To be read with Preliminaries/General conditions.

EXECUTION

610 SUITABILITY OF JOINTS

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

620 PREPARING JOINTS

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

630 APPLYING SEALANTS

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

Z31 Powder coatings

To be read with Preliminaries/ General conditions.

120 POWDER COATING MATERIALS

- Manufacturer: Obtain from one only of the following: Azko Nobel, Interpon D or similar approved .

- Selected manufacturer: Submit details before commencement of powder coating including:
  - Name and contact details.
  - Details of accreditation schemes.
  - Technical data of product including current Agrément certificates.

210 WORKING PROCEDURES

- Comply with the follow following standards.
  - Aluminium components: To BS 6496 or BS EN 12206-1.
  - Steel components: To BS EN 13438.
  - Safety standards: To British Coatings Federation 'Code of safe practice - Application of thermosetting powder coatings by electrostatic spraying'.

220 POWDER COATING APPLICATORS

- Applicator requirements:
  - Approved by powder coating manufacturer.
  - Currently certified to BS EN ISO 9001.
  - Comply with quality procedures, guarantee conditions, standards and tests required by powder coating manufacturer.
  - Applicator to use only one plant.
  - Selected applicator: Submit details before commencement of powder coating including: Name and contact details.
    Details of accreditation schemes.

225 GUARANTEES

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

230 CONTROL SAMPLES

- Sequence: Prior to ordering materials for the works, obtain approval of appearance for:
  - Powder coated samples: Of various grades and forms of background metal to be used, showing any colour, texture and gloss variation.
  - Fabrication samples: Showing joint assembly, how powder coating is affected and how any cut metal edges are finished and protected.
- Samples to include the following information:
  - Product reference.
  - Colour.
  - Reference number.
  - Name.
  - Gloss level.

250 COMPONENT DESIGN

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

310 PRETREATMENT OF ALUMINIUM COMPONENTS

- Condition of components to be pretreated:
  - Free from corrosion and damage.
  - All welding and jointing completed and finish off as specified.
  - Free from impurities including soil, grease, oil.
  - Suitable for and compatible with the pretreatment process.
- Conversion coating requirements:
  - Chromate system: To BS 6496 or BS EN 12206-1.
  - Chromate-free system: To BS EN 12206-1. Submit details before using.
- Rinsing requirements: Use demineralized water. Drain and dry.

320 PRETREATMENT OF STEEL COMPONENTS

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

430 EXTENT OF POWDER COATINGS

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

435 APPLICATION OF POWDER COATINGS

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

440 PERFORMANCE AND APPEARANCE OF POWDER COATINGS

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

450 ALUMINIUM ALLOY FABRICATIONS

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

460 STEEL FABRICATIONS

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

470 FIXINGS

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

480 DAMAGED COMPONENTS - REPAIR/ REPLACEMENT

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

510 PROTECTION

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

535 DOCUMENTATION

- Submit the following information for each batch of powder coated components:
  - Supplier.
  - Trade name.
  - Colour.
  - Type of powder.
  - Method of application.
  - Batch and reference number.
  - Statutory requirements.
  - Test certificates.
  - Maintenance instructions.

540 COMPLETION

- Protection: Remove.
- Cleaning and maintenance of powder coatings: Carry out in accordance with procedures detailed in powder coating manufacturer and applicator guarantees.