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C
Demolition/ Alteration/ Renovation

C20
Demolition

C20 Demolition

5 SURVEY

- Scope: Before starting deconstruction/ demolition work, examine available information, and carry out a survey of:
  - the structure or structures to be deconstructed/ demolished,
  - the site on which the structure or structures stand, and
  - the surrounding area.
- Report and method statements: Submit, describing:
  - Form, condition and details of the structure or structures, the site and the surrounding area.
    Extent: as drawing No's 8862/P02, 8862/P03 and 8862/P04 .
  - Type, location and condition of features of historical, archaeological, geological or ecological importance.
  - Type, location and condition of adjoining or surrounding premises that might be adversely affected by removal of the structure or structures or by noise, vibration and/ or dust generated during deconstruction/ demolition.
  - Identity and location of services above and below ground, including those required for the Contractor's use, and arrangements for their disconnection and removal.
  - Form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal.
  - Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.
  - Proposed programme of work, including sequence and methods of deconstruction/ demolition.
  - Details of specific pre-weakening required.
  - Arrangements for protection of personnel and the general public, including exclusion of unauthorized persons.
  - Arrangements for control of site transport and traffic.
  - Special requirements: Site waste management plan development and proposals .

10 EXTENT OF DECONSTRUCTION/ DEMOLITION

- General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to foundation level. Break up and dig out foundations.

15 BENCH MARKS

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

20A FEATURES TO BE RETAINED

- General: Keep in place and protect the following: All features to be retained that are not being demolished. No 8 Station Road is Grade II listed and all features need to be protected and retained.

25 LOCATION OF SERVICES

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

30 SERVICES DISCONNECTION ARRANGED BY CONTRACTOR

- Responsibility: Before starting deconstruction/ demolition arrange with the appropriate authorities for disconnection of services owned by those authorities and removal of associated fittings and equipment.

32 DISCONNECTION OF DRAINS

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

35 LIVE FOUL AND SURFACE WATER DRAINS

- General: Protect drains and fittings still in use. Keep free of debris and ensure normal flow during deconstruction/ demolition work.
- Damage: Make good damage arising from deconstruction/ demolition work. Leave clean and in working order at completion of deconstruction/ demolition work.

45 SERVICES TO BE RETAINED

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

50 WORKMANSHIP

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

55 SITE HAZARDS

- Precautions: Prevent fire and/ or explosion caused by gas and/ or vapour from tanks, pipes, etc.
- Dust: Reduce by periodically spraying with an appropriate wetting agent, or contain.
  - Lead dust: Submit method statement for control, containment and clean-up regimes.
- Site operatives and general public: Protect from vibration, dangerous fumes and dust arising during the course of the Works.

65 STRUCTURES TO BE RETAINED

- Extent: As drawings 8862/P05.
- Parts which are to be kept in place: Protect.
- Interface between retained structures and deconstruction/ demolition: Cut away and strip out with care to minimize making good.

70 PARTLY DECONSTRUCTED/ DEMOLISHED STRUCTURES

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

75 ASBESTOS-CONTAINING MATERIALS – KNOWN OCCURENCES

- General: Materials containing asbestos are known to be present in the structure(s) to be demolished in the following locations: Profied sheet roofing to the flat roofs at the rear of the property.
- Removal: By contractor licensed by the Health and Safety Executive, and prior to other works starting in these locations.

76 ASBESTOS-CONTAINING MATERIALS – UNKNOWN OCCURENCES

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

78 UNFORESEEN HAZARDS

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

85 SITE CONDITION AT COMPLETION

- Debris: Clear away and leave the site tidy on completion.
- Special requirements: none.

90 CONTRACTOR'S PROPERTY

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

95 RECYCLED MATERIALS

- Materials arising from deconstruction/ demolition work: Can be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification and in accordance with any site waste management plan.

C90
Alterations - spot items

C90 Alterations - spot items

GENERAL

10 DESCRIPTIONS

- Location of spot item descriptions: Schedule of work.

20 EMPLOYER'S PROPERTY

- Components and materials arising from alterations that are to remain the property of the Employer: None.
  - Protection: Maintain until items listed above are removed by the Employer or reused in the Works, or until the end of the Contract.

30 RECYCLED MATERIALS

- Materials arising from alterations: May be recycled or reused elsewhere in the project, subject to compliance with the appropriate specification.
- Evidence of compliance: Submit full details and supporting documentation.

D
Groundwork

D20
Excavating and filling

D20 Excavating and filling

4 SITE INVESTIGATION
- Report: See Preliminaries section A12.

10 PREPARATORY WORK
- Trees, shrubs and hedges to be removed: Cut down, grub up main roots and fill voids.
- Larger trees: Not applicable.
- Trees to be retained: Protect area around the trunk and do not use for building purposes or material storage.
  - Size of area: Not applicable.
- Clear site of rubbish and vegetation. Grub up large roots.
- Arisings: Remove from site.

25 INSPECTING FORMATIONS
- Notice: Make advance arrangements for inspection of formations for foundations and filling .

30 OBSTRUCTIONS
- Recorded foundations, beds, drains, etc: Break out and seal off drain ends. Remove contaminated earth.
- Unrecorded foundations, beds, basements, filling, tanks, service pipes, drains, etc: Give notice.

35 EXCESS EXCAVATIONS
- Excavation taken wider than required: Backfill as clause 60 .
- Excavation taken deeper than required: Backfill with well graded granular material .

50 HAZARDOUS, AGGRESSIVE OR UNSTABLE MATERIALS
- Generally: Do not import or use fill materials which would, either in themselves or in combination with other material or ground water, give rise to a health hazard, damage to building structures or instability in the filling.

53 WATER
General: Keep excavations free from water until foundations and below ground constructions are completed.

55 PLACING FILL GENERALLY
- Excavations and areas to be filled: Free from loose soil, rubbish and standing water.
- Freezing conditions: Do not use frozen materials or materials containing ice. Do not place fill on frozen surfaces.
- Fill against structures, membranes or buried services: Place and compact in a sequence and manner which will ensure stability and avoid damage.

60 BACKFILLING AROUND FOUNDATIONS
- Under oversite concrete and pavings: Hardcore.
- Under grassed or landscaped areas: Material excavated from the trench, laid and compacted in 300 mm layers.

62 FROST SUSCEPTIBILITY

- General: Except as allowed below, fill must be non frost-susceptible as defined in Highways Agency 'Specification for Highway Works', clause 801.17.
- Frost-susceptible fill: Use only within the external walls of buildings below spaces that will be heated. Protect from frost during construction.

65 HARDCORE

- Fill: Granular material, free from harmful matter and excessive dust or clay, well graded, all pieces less than 75 mm in any direction, and in any one layer only one of the following:
  - Crushed hard rock or quarry waste.
  - Crushed concrete, brick or tile, free from plaster.
  - Gravel or hoggin.
- Filling: Spread and level both backfilling and general filling in layers not exceeding 150 mm. Thoroughly compact each layer.

67 VENTING HARDCORE LAYER

- Fill: Clean granular material, well graded, passing a 75 mm BS sieve but retained on a 20 mm BS sieve and in any one layer only one of the following:
  - Crushed hard rock.
  - Crushed concrete, crushed brick or tile, free from plaster.
  - Gravel.
- Filling: Spread and level in 150 mm maximum layers. Thoroughly compact each layer, whilst maintaining enough voids to allow efficient venting.

75 BLINDING TO HARDCORE

- Surfaces to receive sheet overlays or concrete: Blind with:
  - Concrete where shown on drawings; or
  - Sand, fine gravel, or other approved fine material applied to provide a closed smooth surface.
- Permissible deviation on surface level: +0 -25mm.

E
In situ concrete/Large precast concrete

E10
Mixing/ Casting/ Curing in situ concrete

E10 Mixing/ Casting/ Curing in situ concrete

15 SPECIFICATION

- Concrete generally: To BS 8500-2.
- Exchange of information: Provide concrete producer with information required by BS 8500-1, clauses 4 and 5.

45 PROPERTIES OF FRESH CONCRETE

- Adjustments to suit construction process: Determine with concrete producer. Maintain conformity to the specification.

50 PREMATURE WATER LOSS

- Requirement: Prevent water loss from concrete laid on absorbent substrates.
  - Underlay: Polyethylene sheet 250 micrometres thick.
  - Installation: Lap edges 150 mm.

60 PLACING AND COMPACTING

- Surfaces to receive concrete: Clean, with no debris, tying wire clippings, fastenings or free water.
- Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction.
- Temperature limitations for concrete: 30°C (maximum) and 5°C (minimum). Do not place against frozen or frost covered surfaces.
- Compaction: Fully compact to full depth to remove entrapped air especially around reinforcement, cast-in accessories, into corners of formwork and at joints. Continue until air bubbles cease to appear on the top surface.
  - Methods of compaction: To suit consistence class and use of concrete.

70 CURING AND PROTECTING

- Evaporation from surfaces of concrete: Prevent throughout curing period.
  - Surfaces covered by formwork: Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking.
  - Top surfaces: Cover immediately after placing and compacting. Replace cover immediately after any finishing operations.
- Curing periods:
  - Surfaces which in the finished building will be exposed to the elements, and wearing surfaces of floors and pavements: 10 days (minimum).
  - Other structural concrete surfaces: 5 days (minimum).
- Protection: Protect concrete from shock, indentation and physical damage.

F
Masonry

F10
Brick/ block walling

F10 Brick/ block walling

10 RECLAIMED FACING BRICKWORK ABOVE DPC

- Reclaimed bricks: To match existing.
  - Condition: Sound, free from mortar and deleterious matter.
  - Supplier/ source: Contractors choice.
  - Format: To match existing.
- Mortar: As section Z21.
  - Standard: Not applicable.
  - Mix: Site batched and mixed mortar: Select from:.
- Bond: To match existing.
- Joints: To match existing.

51 BASIC WORKMANSHIP

- Bond where not specified: Half lap stretcher.
- Mortar joints: Fill all vertical joints. Lay bricks, solid and cellular blocks on a full bed.
- AAC block thin mortar adhesive and gypsum block adhesive joints: Fill vertical joints. Lay blocks on a full bed.
- Clay block joints:
  - Thin layer mortar: Lay blocks on a full bed.
  - Interlocking perpends: Butted.
- Quoins and advance work: Rack back.
- Locations for equal levelling of cavity wall leaves:
  - 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.
- Lift height (maximum) for walling using cement gauged or hydraulic lime mortar: 1.2 m above any other part of work at any time.
- Daily lift height (maximum) for walling using cement gauged or hydraulic lime mortar: 1.5 m for any one leaf.
- Lift height (maximum) for walling using thin joint mortar glue: 1.3 m above any other part of work at any time.

55 FACEWORK

- Commencement of facework: Not less than 150 mm below finished level of adjoining ground or external works level.
- 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.
- Coursing brickwork and concrete blockwork: Evenly spaced using gauge rods. To produce satisfactory junctions and joints with built-in elements and components.

60 ALTERATIONS/ EXTENSIONS

- Coursing: Line up with existing work.
- Block bonding new walls to existing: Unless agreed otherwise cut pocket requirements as follows:
  - Width: Full thickness of new wall.
  - Depth (minimum): 100 mm.
  - Vertical spacing: As follows:
  - Brick to brick: 4 courses high at 8 course centres.
  - Block to block: Every other course.
  - Pocket joints: Fully filled with mortar.
- New and existing facework in the same plane: Bonded together at every course to achieve continuity of bond and coursing.
- Support of existing work: Fully consolidate joint above inserted lintel or masonry with semidry mortar to support existing structure.

66 FIRE STOPPING

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

90 CRACKED BRICKS IN EXISTING FACEWORK

- Replacement: Prior to repointing adjacent cracked joints, cut out and replace with matching sound bricks to approval.
- Jointing mortar: As section Z21.
  - Standard: Not applicable.
  - Mix: Site batched and mixed mortar: Select from:.

91 CRACKED JOINTS IN EXISTING FACEWORK WHICH IS NOT TO BE REPOINTED

- Crack width determining need for joint remedial work: 2.0 mm.
- Preparation: Cut out joints to form a rectangular recess of 15-20 mm depth. Clean and dampen joints sufficiently to control suction.
- Joint profile: To match existing.
- Repointing mortar: As section Z21.
  - Standard: Not applicable.
  - Mix: Site batched and mixed mortar: Select from:.

95 REPOINTING

- Preparation: Cut out joints to form a rectangular recess of 15-20 mm depth. Clean and dampen joints sufficiently to control suction.
- Joint profile: Approved .
- Mortar: As section Z21.
  - Standard: Not applicable.
  - Mix: Site batched and mixed mortar: Select from:.

G
Structural/Carcassing metal/timber

G20
Carpentry/ timber framing/ first fixing

G20 Carpentry/ timber framing/ first fixing

2 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.

5 STRUCTURAL SOFTWOOD FOR JOISTS, PURLINS & RAFTERS

- Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
  - Timber of a target 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'.
- Strength class to BS EN 338: C16.
- Treatment: None required.

30 SELECTION AND USE OF TIMBER

- Timber members damaged, crushed or split beyond the limits permitted by their grading: Do not use.

32 NOTCHES, HOLES AND JOINTS IN TIMBER

- 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.

35 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.

40 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%.

43 BOLTED JOINTS

- Bolt spacings (minimum): To BS EN 1995-1-1, section 8.5.
- Holes for bolts: Located accurately and drilled to diameters as close as practical to the nominal bolt diameter and not more than 2 mm larger.
- Washers: Placed under bolt heads and nuts that would otherwise bear directly on timber. Use spring washers in locations which will be hidden or inaccessible.
- Bolt tightening: So that washers just bite the surface of the timber. Ensure that at least one complete thread protrudes from the nut.
  - Checking: At agreed regular intervals. Tighten as necessary.

50 ADDITIONAL SUPPORTS

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

H
Cladding/Covering

H21
Timber weatherboarding

H21 Timber weatherboarding

15A HORIZONTAL TIMBER WEATHERBOARDING To match existing

- Battens:
  - Size: To match existing.
  - Centres: To match existing.
  - Fixing: To match existing.
- Boarding:
  - Standard: To BS EN 14915.
  - Quality of timber (exposed surfaces): To match existing.
  - Species: To match existing.
  - Profile: To match existing.
  - Finished face dimension (overall width): To match existing.
  - Finished thickness: To match existing.
  - Moisture content at time of fixing: To match existing.
  - Treatment: To match existing.
    Standard: To NBS section Z12 and Wood Protection Association Commodity Specification To match existing.
    Type: To match existing.
  - Method of fixing to each support: To match existing.
- Other requirements: To match existing.

31 FIXING BATTENS/ COUNTERBATTENS TO MASONRY

- Setting out: In straight, vertical lines.
- Batten/ Counterbatten length (minimum): 1200 mm.
- Installation: Fastener heads to finish flush with or slightly below batten face.

32 FIXING BATTENS/ COUNTERBATTENS TO FRAMING/ SHEATHING

- Setting out: In straight, vertical lines at centres coincident with vertical framing members.
- Batten/ Counterbatten length (minimum): 1200 mm.
- Installation: Where sheathing is provided, fix through sheathing into framing. Fastener heads to finish flush with or slightly below batten face.

33 FIXING BATTENS TO COUNTERBATTENS

- Setting out: In straight, horizontal lines. Align on adjacent areas.
- Batten/ Counterbatten length (minimum): 1200 mm.
- Joints: Square cut, butted centrally on counterbattens and not occurring more than once in any group of four battens on any one counterbatten.
- Installation: Fix each batten to each counterbatten. Use splay fixings at joints. Fastener heads to finish flush with or slightly below batten face.

40 TREATED TIMBER

- Surfaces exposed by minor cutting and/ or drilling: Treat with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.

50 SURFACE TREATMENT

- Finishing system: Before fixing boards, apply first coat of specified system to all surfaces. Apply liberally to end grain.

60 FIXING BOARDING

- General: Fix boards securely to give flat, true surfaces free from undulations, lipping, splits, hammer marks and protruding fasteners.
- Movement: Allow for movement of boards and fixings to prevent cupping, springing, excessive opening of joints or other defects.
- Heading joints: Position centrally over supports and at least two board widths apart on any one support.
- Nail heads: Punch below surfaces that will be seen in the completed work.

H60
Plain roof tiling

H60 Plain roof tiling

20 REMOVE EXISTING TILING
- General: Carefully remove tiles, battens, underlay, etc. with minimum disturbance of adjacent retained tiling.
- Undamaged tiles: Set aside for reuse.

25 UNDERLAY
- Laying: Maintain consistent tautness.
- Vertical laps (minimum): 100 mm wide, coinciding with supports.
- Fixing: Galvanized steel, copper or aluminium 20 x 3 mm extra large clout head nails.
- Eaves: Where exposed, use an external grade (UV resistant) underlay or a proprietary eaves support product.
- Penetrations: Use proprietary underlay seals or cut underlay neatly.

30 BATTENS/ COUNTERBATTENS
- Timber: Sawn softwood.
  - Standard: In accordance with BS 5534, Annex D.
  - Moisture content at time of fixing and covering (maximum): 22%.
- Preservative treatment: As section Z12 Wood Protection Association Commodity Specification C8.
  - Type: Contractor's choice.

32 BATTEN FIXING
- Batten length (minimum): Sufficient to span over three supports.
- Joints in length: Butt centrally on supports. Joints must not occur more than once in any group of four battens on one support.
- Additional battens: Provide where unsupported laps in underlay occur between battens.

35 TILE FIXING
- General: Fix tiling and accessories to make the whole sound and weathertight at earliest opportunity.
- Exposed fittings and accessories: To match tile colour and finish.
- Setting out: To true lines and regular appearance. Lay tiles to a half lap bond with joints slightly open. Align tails.
- Cut tiles: Cut only where necessary, to give straight, clean edges.
- Ends of courses: Use tile and a half tiles to maintain bond and to ensure that cut tiles are as large as possible.
- Top and bottom courses: Use eaves/ tops tiles to maintain gauge.
- Perimeter tiles: Twice nail end tile in every course. Twice nail or clip two courses of tiles at eaves and top edges.
- Fixings: Nails/ clips as recommended by tile manufacturer.

37 LOCAL AND GENERAL FIXING AREAS
- Definitions:
  - Local areas: Bands of tiling around all edges or obstructions of each plane of the roof. Calculate extent of each band in accordance with BS 5534, section 5.
  - General areas: Remaining areas of roof tiling.

40 MORTAR BEDDING/ POINTING

- Mortar: As section Z21.
  - Mix: In accordance with BS 5534,1:3 cement:sand, with plasticizing admixtures permitted.
- Weather: Do not use in wet or frosty conditions or when imminent.
- Appearance: Finish neatly and remove residue.

42 FIRE SEPARATING WALLS

- Separating wall: Completely fill space between top of wall and underside of tiles with mineral wool quilt to provide fire stopping.
- Boxed eaves: Completely seal air paths in plane of separating wall with wire reinforced mineral wool, not less than 50 mm thick, to provide fire stopping.

47 EAVES

- Ventilation components:
  - Manufacturer: Contractor's choice.
    Product reference: Contractor's choice.
- Underlay support: Contractor's choice .
  - Continuous to prevent water retaining troughs.
- Gutter: Dress underlay or underlay support tray to form drip into gutter.
- Undercourse and first course tiles: Fix with tails projecting 50 mm over gutter or to centre of gutter.

52 BEDDED VERGES WITH BEDDED UNDERCLOAK

- Underlay: Carry 50 mm onto outer leaf of gable wall and bed on mortar.
- Undercloak: Matching plain tiles, sloping towards verge and projecting 38-50 mm beyond face of wall.
  - Bedding: On mortar identical to that used in gable walling.
- Tiling battens: Carry onto undercloak and finish 100 mm from verge edge.
- Verge tiles: Bed flush with undercloak on 75 mm wide bed of mortar.

57 MORTAR BEDDED AND MECHANICALLY FIXED HIPS

- Underlay: Lay courses over hip. Overlap (minimum) 150 mm.
- Hip tile fixing battens: to match esisting.
- Roof tiles: Cut and fix closely at hip.
- Hip irons: Galvanized steel in accordance with BS 5534, clause 4.15.4. Fix to hip rafter or hip batten with galvanized steel screws.
- Hip tiles:
  - Manufacturer: Contractor's choice.
    Product reference: Contractor's choice.
  - Bedding: On mortar, continuous to edges and solid to joints.
  - Fixing: Secure all hip tiles to hip rafters or hip fixing battens with self-sealing non-ferrous through fixings.
  - Bottom hip tiles: Shape neatly to align with corner of eaves and fill ends with mortar and slips of tile finished flush.

70 SIDE ABUTMENTS

- Underlay: Turn up not less than 100 mm at abutments.
- Abutment tiles: Cut as necessary. Fix close to abutments.
- Soakers: Interleave and turn down over head of abutment tiles.

71 TOP EDGE ABUTMENTS

- Underlay: Turn up not less than 100 mm at abutments.
- Top course tiles: Fix close to abutments.

77 MORTAR BEDDED AND MECHANICALLY FIXEDRIDGES

- Underlay: Lay courses over ridge. Overlap (minimum) 100 mm.
- Ridge tile fixing battens: to match exisiting.
- Ridge tiles:
  - Manufacturer: Contractor's choice.
    Product reference: Contractor's choice.
  - Bedding: On mortar, continuous to edges and solid to joints.
  - Fixing: Secure all ridge tiles to ridge boards or ridge tile fixing battens with self-sealing non-ferrous fixings.
  - Gable end ridge tiles: Fill ends with mortar and slips of tiles finished flush.
- Ridge terminals: Contractor's choice.

90 VERTICAL TILING BOTTOM EDGES

- Tiling substrate work: Fix timber tilting fillet to support bottom course of tiles in correct vertical plane. Fix flashing to tilting fillet.
- Underlay: Dress over flashing.
- Undercourse and bottom course tiles: Fix with tails neatly aligned.

91 VERTICAL TILING TOP EDGES

- Top course tiles: Fix under abutment and make weathertight with flashing dressed down not less than 150 mm.

92 VERTICAL TILING SIDE ABUTMENTS

- Tiling substrate work: Chase abutment wall and insert metal stepped flashing.
  - Flashing: Return not less than 75 mm behind tiling, overlapping underlay and battens, turn back to form a vertical welt.
- Abutment tiles: Cut and fix neatly.

93 VERTICAL TILING ANGLE WITH ANGLE TILES

- Angle tiles: Fix right and left hand in alternate courses to break bond.
- Adjacent tiles: Cut and fix neatly.

H71
Lead sheet coverings/ flashings

H71 Lead sheet coverings/ flashings

2 ROOFING
- Underlay: Contractor's choice.
- Lead:
  - Thickness: 2.00 or 2.24 mm (Code 5).
- Joints in direction of fall: Wood cored roll with splash lap.
  - Spacing: Determined by Contractor.
- Cross joints: Not permitted.
  - Spacing: Determined by Contractor.
- Intermediate fixings: Brass cup and screw with lead cap.
- Accessories: Not required.

30 APRON FLASHINGS AT LEAN-TO TOP ABUTMENT
- Lead:
  - Thickness: 1.75 or 1.80 mm (Code 4).
- Dimensions:
  - Lengths: Not more than 1500 mm.
  - End to end joints: Laps not less than 100 mm.
  - Upstand not less than 75 mm.
  - Cover to abutment: Not less than 150 mm.
- Fixing:
  - Top edge: Lead wedges into bed joint.
  - Bottom edge: Clips.
    Material: Lead.
    Spacing: At laps and 500 mm centres.

50 FLASHINGS General
- Lead:
  - Thickness: 1.75 or 1.80 mm (Code 4).
- Dimensions:
  - Lengths: Not more than 1500 mm.
- Fixing: Nail top edge at 150 mm centres and welt edge. Clip bottom edge at laps and 500 mm centres..

60 MATERIALS AND WORKMANSHIP GENERALLY
- Lead production method:
  - Rolled, to BS EN 12588.
  - Machine cast: BBA certified.
- Identification: Colour marked for thickness/ code, weight and type.
- Workmanship standard: To BS 6915 and latest editions of 'Rolled lead sheet. The complete manual' published by the Lead Sheet Association.
- Fabrication and fixing: To provide a secure, free draining and weathertight installation.
- Marking out: Do not use scribers or other sharp instruments to mark out lead without approval.
- Solder: Use only where specified.
- Finished leadwork: Fully supported, adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress.
- Patination oil: Apply smear coating to all visible lead, evenly in one direction and in dry conditions.

62 LEADWELDING
- In situ leadwelding: Not permitted.

75 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.

76 UNDERLAY

- Handling: Prevent tears and punctures.
- Laying: Butt or overlap jointed onto a dry substrate.
  - Fixing edges: With copper or stainless steel staples or clout nails.
  - Do not lay over roof edges.
  - Turn up at abutments.
- Wood core rolls: Fixed over underlay.
- Protection: Keep dry and cover with lead at the earliest opportunity.

78 FIXING LEAD SHEET

- Top edge: Secured with two rows of fixings, 25 and 50 mm from edge.
- Fixings:
  - Nails to timber substrates: Copper clout nails to BS1202-2 , or stainless steel (austenitic) clout nails to BS 1202-1.
    Shank type: Annular ringed, helical threaded or serrated.
    Length: Not less than 20 mm or equal to substrate thickness.
  - Screws to concrete or masonry substrates: Brass or stainless steel to BS 1210.
    Diameter: Not less than 3.35 mm.
    Length: Not less than 19 mm.
    Washers and plastics plugs: Compatible with screws.

80 CLIPS

- Material:
  - Lead clips: Cut from sheets of the same thickness/ code as sheet being secured.
  - Copper clips: Cut from 0.70 mm thick sheet to BS EN 1172, temper R220 (soft) or R240 (half hard) depending on position, dipped in solder if exposed to view.
  - Stainless steel: Cut from 0.38 mm sheet to BS EN 10088, grade 1.4301(304), terne coated if exposed to view.
- Dimensions:
  - Width: 50 mm where not continuous.
  - Length: To suit detail.
- Fixing clips: Secure each to substrate with either two screw or three nail fixings not more than 50 mm from edge of lead sheet. Use additional fixings where lead downstands exceed 75 mm.
- Fixing lead sheet: Welt clips around edges and turn over 25 mm.

83 WEDGE FIXING INTO JOINTS/ CHASES

- Joint/ chase: Rake out to a depth of not less than 25 mm.
- Lead: Dress into joint/ chase.
  - Fixing: Lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead.
- Sealant: Contractor's choice.
  - Application: As section Z22.

92 WOOD CORED ROLL JOINTS WITH SPLASH LAP

- Wood core:
  - Size: 45 x 45 mm round tapering to a flat base 25 mm wide.
  - Fixing to substrate: Brass or stainless steel screws at 300 mm centres.
- Undercloak: Dress three quarters around core.
  - Fixing: Nail to core at 150 mm centres for one third length of the sheet starting from the head.
- Overcloak: Dress around core and extend on to main surface to form a 40 mm splash lap.

94 DRIPS WITH SPLASH LAPS

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

96 DRIPS WITH SPLASH LAPS

- Underlap: Dress up full height of drip upstand.
  - Fixing: Two rows of nails to lower level substrate. Seal over nails with a soldered or leadwelded dot.
- Overlap: Dress over drip and form a 75 mm splash lap.
  - Fixing: Lead clips leadwelded to underlap at bay centres.

98 WELTED JOINTS

- Joint allowance: 50 mm overlap, 25 mm underlap.
- Copper or stainless steel clips: Fix to substrate at 450 mm centres.
- Overlap: Welt around underlap and clips and lightly dress down.

K
Linings/Sheathing/Dry partitioning

K10
Gypsum board dry linings/ partitions/ ceilings

K10 Gypsum board dry linings/ partitions/ ceilings

65 DRY LINING GENERALLY

- General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.
- Standard:
  - Gypsum plasterboard to BS EN 520.
  - Gypsum fibre board to BS EN 15283-2.
  - Evidence of compliance: All sheets to be CE marked. Submit Declaration of Performance (DoP).
- Cutting gypsum boards: Neatly and accurately without damaging core or tearing paper facing. Minimize cut edges.
- Two layer boarding: Stagger joints between layers.
- Finishing: Neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.

67 SKIM COAT PLASTER FINISH

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

69 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.

70 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 services.
  - Board edges and lining perimeters.

75 NEW WET LAID BASES

- Dpcs: Install under full width of partitions/ freestanding wall linings.

85 MINERAL WOOL INSULATION

- Fitting insulation: Closely butted joints and no gaps. Prevent slumping.
- Electrical cables overlaid by insulation: Size accordingly.

87 SEALING GAPS AND AIR PATHS

- Sealing: Apply sealant to perimeter abutments and around openings as a continuous bead with no gaps.
  - Gaps between floor and underside of gypsum board: After sealing, fill with joint compound.

90 SEAMLESS JOINTING

- Filling and taping: Fill joints, gaps and internal angles with jointing compound and cover with continuous lengths of tape, fully bedded.
- Finishing: Feather out jointing compound to give a flush, smooth, seamless surface.
- Nail/ screw depressions and minor indents: Fill to give a flush surface.

L
Windows/Doors/Stairs

L10
Windows/ Rooflights/ Screens/ Louvres

L10 Windows/ Rooflights/ Screens/ Louvres

5 TIMBER PROCUREMENT

- Timber (including timber for wood-based products): Obtained from well-managed forests and/ or plantations in accordance with:
  - The laws governing forest management in the producer country or countries.
  - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
  - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
  - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood-based products.
- Certification scheme: Contractor's choice, submit proposals.
  - Other evidence: None.

10 WOOD WINDOWS

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Species: Softwood.
- Finish as delivered: Prepared and primed as section M60.
- Thermal performance (U-value maximum): Singlke glazed.
- Glazing details: Single glazed.
  - Beading: to match exisiting.
- Ironmongery/ Accessories: to match exisiting.
- Fixing: to match exisiting.
  - Fastener 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.

20 STEEL WINDOWS

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Finish as delivered: Galvanized.
- Thermal performance (U-value maximum): Single glazed.
- Glazing details: Single glazed.
  - Beading: to match exisiting.
- Ironmongery/ Accessories: to match exisiting.
- Fixing: to matche exisiting.
  - Fastener spacing: Where not predrilled or specified otherwise, position fasteners not less than 50 mm and not more than 190 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 900 mm centres.
  - Windows fixed direct into openings: After fixing, fill back of steel frame with waterproof cement fillet.

35 WOOD SUBFRAMES

- Timber: To BS EN 942.
  - Species: to matche exisiting.
  - Appearance class: to match exisiting.
  - Moisture content on delivery: 12-19%.
- Assembly adhesive: to match exisiting.
- Joinery workmanship: As section Z10.
- Preservative treatment: to match exisiting.
- Finish as delivered: to match exisiting.
- Thermal performance: to match exisiting.
- Fixing: to match exisiting.
  - Fastener spacing: Position fasteners 150 mm from ends of each jamb and at 600 mm maximum centres along jambs, head and sill.

65 PRIMING/ SEALING

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

75 SEALANT JOINTS

- Sealant:
  - Manufacturer: Contractor's choice.
    Product reference: Contractor's choice.
  - Colour: to match exisiting.
  - Application: As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.

80 IRONMONGERY

- Fixing: In accordance with any third party certification conditions applicable. Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Do not damage ironmongery and adjacent surfaces.
- Checking/ adjusting/ lubricating: Carry out at completion and ensure correct functioning.

90 REPLACEMENT WINDOW INSTALLATION

- Standard: To BS 8213-4.

L20
Doors/ shutters/ hatches

L20 Doors/ shutters/ hatches

10 TIMBER PROCUREMENT

- Timber (including timber for wood-based products): Obtained from well-managed forests and/ or plantations in accordance with:
  - The laws governing forest management in the producer country or countries.
  - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
  - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
  - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood-based products.
- Certification scheme: Contractor's choice, submit proposals.
- Other evidence: None.

20 WOOD FLUSH DOORS FD30S FIRE RESISTING AND SMOKE CONTROL

- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Facings: To match exisiting.
- Lippings: To match exisiting.
- Preservative treatment: To match exisiting.
- Finish as delivered: To match exisiting.
- Glazing/ Infill details: To match exisiting.
  - Manifestation: To match exisiting.
  - Beading: To match exisiting.
- Thermal performance (U-value maximum): To match exisiting.
- Other requirements: To match exisiting.

25 WOOD PANELLED DOORS Rear

- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Wood species: To match exisiting.
- Preservative treatment: To match exisiting.
- Finish as delivered: To match exisiting.
- Glazing/ Infill details: To match exisiting.
  - Manifestation: To match exisiting.
  - Beading: To match exisiting.
- Thermal performance (U-value maximum): To match exisiting.
- Other requirements: To match exisiting.

30 WOOD DOORS Exisiting

- Materials: Generally to BS EN 942.
  - Species: To match exisiting.
  - Appearance class: To match exisiting.
- Panels: To match exisiting.
- Assembly:
  - Adhesive: To match exisiting.
  - Joinery workmanship: As section Z10.
  - Accuracy: To BS 4787-1.
- Preservative treatment: To match exisiting.
- Moisture content on delivery: To match exisiting.
- Finish as delivered: To match exisiting.
- Glazing/ Infill details: To match exisiting.
  - Manifestation: To match exisiting.
  - Beading: To match exisiting.
- Thermal performance (U-value maximum): To match exisiting.
- Other requirements: To match exisiting.

50 WOOD DOOR FRAMES FD30S FIRE RESISTING AND SMOKE CONTROL

- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Species: To match exisiting.
- Preservative treatment: To match exisiting.
- Finish as delivered: To match exisiting.
- Perimeter seals: To match exisiting.
- Thermal performance: Manufacturer's standard.
- Fixing: To match exisiting.
  - Spacing of fixings (frames not predrilled): Maximum 150 mm from ends of each jamb, adjacent to each hanging point and at 600 mm maximum centres.

70 FIRE AND SMOKE RESISTANCE

- Requirement: Specified performance to be the minimum period attained when tested for integrity in accordance with BS 476-22, BS EN 1634-1 or BS EN 1634-3.
- Components and assemblies will be marked to the relevant product standard and/ or third party certification rating.

75 FIRE RESISTING/ SMOKE CONTROL DOORS/ DOORSETS

- Gaps between frames and supporting construction: Filled as necessary in accordance with door/ doorset manufacturer's instructions.

80 SEALANT JOINTS

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

85 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.

L40
General glazing

L40 General glazing

10 WORKMANSHIP AND POSITIONING GENERALLY

- Glazing:
  - Generally: In accordance with BS 6262 series.
  - Integrity: Wind and watertight under all conditions. Make full allowance for deflections and other movements.
- Glass:
  - Standards: Generally to BS 952 and to the relevant parts of:
    BS EN 572 for basic soda lime silicate glass.
    BS EN 1096 for coated glass.
    BS EN 12150 for thermally toughened soda lime silicate glass.
    BS EN ISO 12543 for laminated glass.
  - Quality: Free from scratches, bubbles and other defects.
  - Dimensional tolerances: Panes/ sheets to be accurately sized.
- Material compatibility: Glass/ plastics, surround materials, sealers primers and paints/ clear finishes to be compatible. Comply with glazing/ sealant manufacturers' recommendations.

20 REMOVAL OF GLASS/ PLASTICS FOR REUSE

- Existing glass/ plastics, glazing compound, beads, etc.: Remove carefully, avoiding damage to frame, to leave clean, smooth rebates free from obstructions and debris. Clean glazing, beads and other components that are to be reused.
- Deterioration of frame/ surround: Submit report on defects revealed by removal of glazing.
  - Affected areas: Do not reglaze until instructed.

30 PREPARATION

- Surrounds, rebates, grooves and beads: Clean and prepare before installing glazing; ensure compliance with any certified installation requirements.

40 PUTTY FRONTED SINGLE GLAZING To match exisiting

- Pane material: To match exisiting.
- Surround: To match exisiting.
- Putty: To match exisiting.
- Glass installation:
  - Glass: Located centrally in surround using setting and location blocks, and secured with glazing sprigs/ cleats/ clips at 300 mm centres.
  - Finished thickness of back bedding after inserting glazing (minimum): 1.5 mm.
  - Front putty: Finished to a smooth, neat triangular profile stopping 2 mm short of sight line. Surface lightly brushed to seal putty to glass.
- Sealing putty: Seal as soon as sufficiently hard by applying either the full final finish, or two coats of undercoat applied locally.

50 BEAD FIXED SINGLE GLAZING To match exisiting

- Pane material: To match exisiting .
- Surround/ bead: To match exisiting .
  - Preparation: To match exisiting .
  - Bead location: To match exisiting .
  - Bead fixing: To match exisiting .
- Glazing compound: To match exisiting .
- Glazing installation:
  - Glass: Located centrally in surround using setting and location blocks and distance pieces.
  - Finished thickness of back bedding after inserting glazing (minimum): 3 mm.
  - Front bedding: Applied to fill voids.
  - Beads: Bedded in glazing compound and fixed securely.
  - Visible edge of glazing compound: Finish internally and externally with a smooth chamfer.

M
Surface finishes

M10
Cement based levelling/ wearing screeds

M10 Cement based levelling/ wearing screeds

30 FULLY BONDED CONSTRUCTION
- Removing mortar matrix: Shortly before laying screed, expose coarse aggregate over entire area of hardened base.
- Texture of surface: Suitable to accept screed and achieve a full bond over complete area.
- Bonding coat: As recommended by screed manufacturer.

35 PARTIALLY BONDED CONSTRUCTION
- Substrate surface: Brushed finish with no surface laitance.
  - Texture of surface: Suitable to accept screed and achieve a bond over complete area.
- Bonding coat: As recommended by screed manufacturer.

45 AGGREGATES AND CEMENTS
- Sand: To BS EN 13139.
  - Grading limits: In accordance with BS 8204-1, Table B.1.
- Coarse aggregates:
  - Standard: To BS EN 12620.
- Cement:
  - Cement types: In accordance with BS 8204-1, clause 5.1.3.

47 ADMIXTURES
- Standards; In accordance with BS 8204-1, Table 1.
- Calcium chloride: Do not use in admixtures.

50 MIXING
- Water content: Minimum necessary to achieve full compaction.
- Mixing: Mix materials thoroughly to uniform consistency in a suitable forced action mechanical mixer.

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

55 JOINTS IN LEVELLING SCREEDS
- Laying screeds: Lay continuously using 'wet screeds' between strips or bays. Minimize defined joints.

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

75 TROWELLED FINISH TO LEVELLING SCREEDS
- Floating: To an even texture with no ridges or steps.
- Trowelling: To a uniform smooth surface, free from trowel marks and other blemishes, and suitable to receive specified flooring material.

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

90 CURING

- Curing period (minimum): As soon as screed has set sufficiently, closely cover with polyethylene sheeting for period recommended by screed manufacturer.
- Drying after curing: Allow screeds to dry gradually.

M20
Plastered/ Rendered/ Roughcast coatings

M20 Plastered/ Rendered/ Roughcast coatings

10 CEMENT:LIME:SAND To match exisiting

- Substrate: To match exisiting.
  - Preparation: To match exisiting.
- Mortar: To match exisiting.
- Sand: To BS EN 13139.
  - Grading: 0/2 or 0/4 (CP or MP); category 2 fines.
- Lime: Nonhydraulic to BS EN 459-1, type CL 90S.
- Undercoats:
  - Mix (cement:lime:sand): To match exisiting.
  - Thickness (excluding dubbing out and keys): To match exisiting.
- Final coat:
  - Mix (cement:lime:sand): To match exisiting.
  - Thickness: To match exisiting.
- Finish: To match exisiting.

50 GYPSUM PLASTER SKIM COAT ON PLASTERBOARD

- Plasterboard manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Plaster: Board finish plaster to BS EN 13279-1, class B.
  - Manufacturer: Contractor's choice.
    Product reference: Contractor's choice.
  - Thickness: 3mm.
  - Finish: Smooth.

60 CEMENTS FOR MORTARS

- Cement: To BS EN 197-1.
  - Types: Portland cement, CEM I.
    Portland slag cement, CEM II.
    Portland fly ash cement, CEM II.
  - Strength class: 32.5, 42.5 or 52.5.
- Sulfate resisting cement: To BS EN 197-1.
  - Strength class: 42.5.
- Masonry cement: To BS EN 998-1 and Kitemarked
  - Class: MC 12.5 (with air entraining agent).

62 ADMIXTURES FOR CEMENT GAUGED MORTARS

- Air entraining (plasticizing) admixtures: To BS EN 934-2 and compatible with other mortar constituents.
- Other admixtures: Submit proposals.
- Prohibited admixtures: Calcium chloride and admixtures containing calcium chloride.

65 MIXING

- Render mortars (site-made):
  - Batching: By volume using gauge boxes or buckets.
  - Mix proportions: Based on damp sand. Adjust for dry sand.
- Mixes: Of uniform consistence and free from lumps.

67 COLD WEATHER

- Internal work: Take precautions to prevent damage to internal coatings when air temperature is below 3°C.
- External work: Avoid when air temperature is at or below 5°C and falling or below 3°C and rising.

71 SUITABILITY OF SUBSTRATES

- General: Suitable to receive coatings. Sound, free from contamination and loose areas.

74 EXISTING DAMP AFFECTED PLASTER/ RENDER

- Plaster affected by rising damp: Remove to a height of 300 mm above highest point reached by damp or 1 m above dpc, whichever is higher.
- Perished and salt contaminated masonry:
  - Mortar joints: Rake out.
  - Masonry units: Submit proposals.
- Drying out substrates: Establish drying conditions.

76 REMOVING DEFECTIVE EXISTING PLASTER

- Plaster for removal: Loose, hollow, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.
- Removing plaster: Cut back to a square, sound edge.

78 REMOVING DEFECTIVE EXISTING RENDER

- Render for removal: Detached, hollow, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.
- Removing defective render: Cut out to regular rectangular areas with straight, square cut or slightly undercut edges.
  - Render with imitation joints: Cut back to joint lines.
- Cracks (other than hairline cracks): Cut out to a width of 75 mm (minimum).

80 PLASTERBOARD BACKINGS

- Additional framing supports:
  - Fixtures, fittings and service outlets: Accurately position to suit fasteners.
  - Board edges and perimeters: To suit type and performance of board.
- Joints:
  - Joint widths (maximum): 3 mm.
  - End joints: Stagger between rows.
  - Two layer boarding: Stagger joints between layers.
- Joint reinforcement tape: Apply to joints and angles except where coincident with metal beads.

82 BEADS/ STOPS

- Location: External angles and stop ends.
- Materials:
  - External render: Stainless steel.
  - Internal plaster/ render: Galvanized steel.
- Fixing: Secure and true to line and level.
  - Beads/ stops to external render: Fix mechanically.

85 DAMP PROOF LATHING

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Joints between lathing sheets and junctions with openings: Prevent penetration and bridging of cavity by coatings.
- Ventilation gaps: to match exisiting.

87 APPLICATION OF COATINGS

- General: Apply coatings firmly and achieve good adhesion.
- Appearance of finished surfaces: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
  - Accuracy: Finish to a true plane with walls and reveals plumb and square.
- Drying out: Prevent excessively rapid or localized drying out.
- Keying undercoats: Cross scratch (plaster coatings) and comb (render coatings). Do not penetrate undercoat.

93 CURING AND DRYING OF RENDER COATINGS

- Curing: Keep each coat damp by covering with polyethylene sheet and/ or spraying with water
  - Curing period (minimum): in accordance with manufacturers recomendations.
- Drying: Allow each coat to dry thoroughly, with shrinkage substantially complete before applying next coat.

95 RENDER FINAL COAT - DRY DASH

- Aggregate: To BS EN 12620. Well washed.
  - Type/ Size: in accordance with manufacturers recomendations.
- Application: Achieve firm adhesion and an even overall appearance.

97 RENDER FINAL COAT - SCRAPED FINISH

- Finish: Scraped to expose aggregate and achieve an even texture.

99 RENDER FINAL COAT - PLAIN FLOATED FINISH

- Finish: Even, open texture free from laitance.

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

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

40 LAYING COVERINGS ON NEW WET LAID BASES
- Base drying aids: Not used for at least four days prior to moisture content test.
- Base moisture content test: Carry out in accordance with BS 5325, Annexe A or BS 8203, Annexe A.
- Commencement of laying coverings: Not until all readings show 75% relative humidity or less.

45 EXISTING FLOOR COVERING REMOVED
- Substrate: Clear of covering and as much adhesive as possible. Skim with smoothing compound to give smooth, even surface.

50 HARDBOARD UNDERLAY
- Standard: To BS EN 622-2.
  - Type: HB.
- Thickness: 4 mm.
- Sheet size: 1200 x 1200 mm.
- Substrate: Existing floor boards securely fixed and level with no gross irregularities or protruding fasteners.
- Conditioning sheets: Prior to fixing.
  - Requirement: To restrict in situ expansion and prevent consequential disfigurement to floor coverings.
- Laying sheets: Mesh face uppermost.
  - Cross joints: Staggered with none coincident with joints in base.
    Joints: Butted.
- Fasteners: 25 mm ring shanked or twisted shank nails or divergent staples.
  - Spacing: Commence at centre of one side of each sheet, at 150 mm grid centres over area and 100 mm centres along perimeter, set in 12 mm from edge.
  - Placement: Not to project above sheet surface or through underside of base.
- Underlay conditioned by wetting: Do not lay coverings until hardboard is dry.

65 LAYING COVERINGS
- Base/ substrate condition: Rigid, dry, smooth, free from grease, dirt and other contaminants.
- Use a primer where recommended by adhesive manufacturer. Allow to dry thoroughly.
- Adhesive: As specified, as recommended by covering manufacturer or, as approved.
- Conditioning of materials prior to laying: As recommended by manufacturer.
- Environment: Before, during and after laying, provide adequate ventilation and maintain temperature and humidity approximately at levels which will prevail after building is occupied.
- Finished coverings: Accurately fitted, tightly jointed, securely bonded, smooth and free from air bubbles, rippling, adhesive marks, stains, trowel ridges and high spots.

75 STAIR NOSINGS AND TRIMS
- Manufacturer: Retain exisiting .
  - Product reference: Retain exisiting .
- Material/ finish: Retain exisiting .
- Fixing: Secure, level with mitred joints. Adjusted to suit thickness of covering with continuous strips of hardboard or plywood. Packing strips and nosings bedded in gap-filling adhesive.
  - Screw fixing with matching plugs: Retain exisiting .

85 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

M60 Painting/ clear finishing

30 PREPARATION GENERALLY

- Standard: In accordance with BS 6150.
- Refer to any pre-existing CDM Health and Safety File and CDM Construction Phase Plan where applicable.
- Risk assessment and method statement for hazardous materials: Prepare for 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, dirt, grease and oil: Remove.
- Surface irregularities: Provide smooth finish.
- Organic growths and infected coatings:
  - Remove with assistance of biocidal solution.
  - Apply residual effect biocidal solution to inhibit regrowth.
- Joints, cracks, holes and other depressions: Fill with stoppers/ fillers. Provide smooth finish.
- Dust, particles and residues from preparation: Remove and dispose of safely.
- Doors, opening windows and other moving parts:
  - Ease, if necessary, before coating.
  - Prime resulting bare areas.

32 PREVIOUSLY COATED SURFACES GENERALLY

- Preparation: In accordance with BS 6150, clause 11.5.
- Contaminated or hazardous surfaces: Give notice of:
  - Coatings suspected of containing lead.
  - Substrates suspected of containing asbestos or other hazardous materials.
  - Significant rot, corrosion or other degradation of substrates.
- Risk assessment and method statement for hazardous materials: Prepare for 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.
  - Gloss coated surfaces: Provide key.
- Partly removed coatings: Apply additional preparatory coats.
- Completely stripped surfaces: Prepare as for uncoated surfaces.

35 FIXTURES AND FITTINGS

- Risk assessment and method statement for hazardous materials: Prepare for operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
- Removal: Before commencing work: Ironmongery, coverplates, grilles, wall clocks, and other surface mounted fixtures.
- Replacement: Refurbish as necessary, refit when coating is dry.

37 WOOD PREPARATION

- General: Provide smooth, even finish with lightly rounded arrises.
- Degraded or weathered surface wood: Take back surface to provide suitable substrate.
- Degraded substrate wood: Repair with sound material of same species.
- Heads of fasteners: Countersink sufficient to hold stoppers/ fillers.
- Resinous areas and knots: Apply two coats of knotting.
- Defective primer: Take back to bare wood and reprime.

39 STEEL PREPARATION

- 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.

41 MASONRY AND RENDERING PREPARATION

- Loose and flaking material: Remove.

43 PLASTER PREPARATION

- Nibs, trowel marks and plaster splashes: Scrape off.
- Overtrowelled 'polished' areas: Provide suitable key.

45 PREVIOUSLY PAINTED WINDOW 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.

50 EXTERNAL POINTING TO EXISTING FRAMES

- Defective sealant pointing: Remove.
- Joint depth: Approximately half joint width; adjust with backing strip if necessary.
- Sealant:
  - Manufacturer: Contractor's choice.
    Product reference: Contractor's choice.
  - Preparation and application: As section Z22.

55 EXISTING GUTTERS

- Dirt and debris: Remove from inside of gutters.
- Defective joints: Clean and seal with suitable jointing material.
- Suspected hazardous materials: submit method statement.

61 COATING GENERALLY

- Application standard: In accordance with BS 6150, clause 9.
- Conditions: Maintain suitable temperature, humidity and air quality.
- Surfaces: Clean and dry at time of application.
- Thinning and intermixing: Not permitted unless recommended by manufacturer.
- Priming coats: Apply as soon as possible on same day as preparation is completed.
- Finish:
  - Even, smooth and of uniform colour.
  - Free from brush marks, sags, runs and other defects.
  - Cut in neatly.
- Doors, opening windows and other moving parts: Ease before coating and between coats.

68 STAINING WOOD

- Primer: Apply if recommended by stain manufacturer.
- Application: Apply in flowing coats and brush out excess stain to produce uniform appearance.

70 EXTERNAL DOORS

- Bottom edges: Prime and coat before hanging.

75 BEAD GLAZING TO COATED WOOD

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

80 LINSEED OIL PUTTY GLAZING

- Setting: Allow putty to set for seven days.
- Sealing:
  - Within a further 14 days, seal with a solvent-borne primer.
  - Fully protect putty with coating system as soon as it is sufficiently hard.
  - Extend finishing coats on to glass up to sight line.

N
Furniture/Equipment

N11
Domestic kitchen fittings, furnishings and equipment

N11 Domestic kitchen fittings, furnishings and equipment

10 FITTED BASE UNITS AND WALL UNITS

- Manufacturer: As shedule of works.
  - Product reference: As shedule of works.
- Dimensions: To BS EN 1116.
- Surface finishes: To BS 6222-3.
- Doors and drawer fronts:
  - Material: As shedule of works.
  - Finish and colour: As shedule of works.
  - Edges: As shedule of works.
- Side panels, plinths and shelves:
  - Material: As shedule of works.
  - Finish and colour: As shedule of works.
  - Edges: As shedule of works.
- Accessories: As shedule of works.

20 WORKTOPS

- Manufacturer: As shedule of works.
  - Product reference: As shedule of works.
- Material: Laminate covered particle board type ???.
- Dimensions: As shedule of works.
- Exposed edges: As shedule of works.
- Support: As shedule of works.

30 SINKS, TAPS, TRAPS AND WASTES

- Sinks:
  - Manufacturer: As shedule of works.
    Product reference: As shedule of works.
  - Configuration: As shedule of works.
  - Material: Stainless steel .
    Colour and finish: Cromed steel.
- Tap/ chainstay/ overflow holes: As shedule of works.
- Taps: Mixer.
  - Manufacturer: As shedule of works.
    Product reference: As shedule of works.
  - Operation: As shedule of works.
- Wastes: Plug and chain.
  - Manufacturer: contractors choice.
    Product reference: contractors choice.
  - Size: To fit sink .
- Traps: contractors choice.
  - Manufacturer: Contractor's choice.
    Product reference: Contractor's choice.
  - Size: To fit waste.
  - Depth of seal (minimum): 75 mm.
- Accessories: contractors choice.

50 SEALANT

- Standard: To BS EN ISO 11600, class F20 HM.
- Type: One part silicone.
  - Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Colour: To match worktop.

P
Building fabric sundries

P10
Sundry insulation/ proofing work

P10 Sundry insulation/ proofing work

40 INSULATION FITTED BETWEEN STUDS

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Recycled content: Submit proposals.
- Thickness: 100mm.
- Installation requirements:
  - Joints: Butted, no gaps.
  - Fasteners: Used to prevent slumping.

65 BREATHER MEMBRANE

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Installation requirements:
  - Set out: Joints minimized. Membrane to form a continuous barrier to prevent water, snow and wind blown dust reaching the substrate.
  - Joints: Lapped 100 mm minimum horizontally and 150 mm minimum vertically.
  - Fixings: Galvanized, sherardized or stainless steel large head nails or stainless steel staples.
  - Bottom edges: Membrane lapped over flashings, sills, etc. to allow free drainage to the exterior.
  - Penetrations: Sealed.

P20
Unframed isolated trims/ skirtings/ sundry items

P20 Unframed isolated trims/ skirtings/ sundry items

10 SOFTWOOD Window Boards, skirtings etc

- Quality of wood and fixing: To BS 1186-3.
  - Species: Contractor's choice.
  - Class: CSH.
- Moisture content at time of fixing: 10-14%.
- Preservative treatment: Not required.
- Fire rating: Not applicable.
- Profile: To match exisiting.
  - Finished size: To match exisiting.
- Finish as delivered: To match exisiting.
- Fixing: To match exisiting.

80 INSTALLATION GENERALLY

- Joinery workmanship: As section Z10.
- Metal workmanship: As section Z11.
- Methods of fixing and fasteners: As section Z20.
- 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

P21 Door/ window ironmongery

2 QUANTITIES AND LOCATIONS
- Quantities and locations of ironmongery are To match exisiting .
- Fixing: As sections L10 and L20.

6 SINGLE AXIS DOOR HINGES To match exisiting
- Standard: To BS EN 1935.
  - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .
- Hinge grade: To match exisiting .
- Other requirements: To match exisiting .

8 DOOR HINGES To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .
- Other requirements: To match exisiting .

12 OVERHEAD DOOR CLOSERS To match exisiting
- Standard: To BS EN 1154.
  - Devices to fire/ smoke control doors: CE marked.
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Power size: To match exisiting .
- Other functions: To match exisiting .
- Casing finish: To match exisiting .
- Operational adjustment:
  - Variable power: Matched to size, weight and location of doors. Fully closing latched doors and holding unlatched doors closed.
  - Closing against smoke seals of fire doors: Positive. No gaps.

24 DOOR LOCKS To match exisiting
- Standard: To BS EN 12209.
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice
- Type: To match exisiting .
- Backset: To match exisiting .
- Material/ finish: To match exisiting .
- Keying: To match exisiting .

28 DOOR LATCHES To match exisiting
- Standard: To BS EN 12209.
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Backset: To match exisiting .
  Material/ finish: To match exisiting .
- Latch spring strength: Select to prevent unsprung lever handles drooping.

34 DOOR BOLTS To match exisiting
- Standard: To BS EN 12051.
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .

36 PRIVACY INDICATOR BOLTS To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Material/ finish: To match exisiting .
- Emergency release facility: Required.

38 LEVER HANDLES To match exisiting
- Standard: To BS EN 1906.
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Style: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .
- Mounting: To match exisiting .

40 DOOR KNOBS To match exisiting
- Standard: To BS EN 1906.
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Style: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .
- Mounting: To match exisiting .

42 PULL HANDLES To match exisiting
- Standard: To BS 8424.
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Shape: To match exisiting.
- Diameter: To match exisiting.
- Distance between centres: To match exisiting.
- Material/ finish: To match exisiting.
- Mounting: To match exisiting.

44 PUSH PLATES To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Size: To match exisiting .
- Material/ finish: To match exisiting .
- Mounting: To match exisiting .

48 ESCUTCHEONS To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Material/ finish: To match exisiting .
- Keyhole type: To match exisiting .

50 DOOR STOPS To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .

52 LETTER PLATES To match exisiting
- Standard: To BS EN 13724.
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Operation: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .
- Features: To match exisiting .

56 DOOR HOLDERS To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .

58 DOOR MOUNTED COAT HOOKS To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Material/ finish: To match exisiting .

60 THRESHOLD WEATHERSTRIP To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting
- Material/ finish: To match exisiting .

62 WEATHERSTRIP TO DOOR HEAD AND JAMBS To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .

70 SINGLE AXIS WINDOW HINGES To match exisiting
- Standard: To BS EN 1935.
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .
- Hinge grade: To match exisiting .

72 WINDOW HINGES To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .

74 SLIDING FRICTION STAY WINDOW HINGES To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .

76 SPIRAL SASH WINDOW BALANCES To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Sash heights: To match exisiting .
- Sash weight: To match exisiting .
- Type: To match exisiting .
- Material/ finish: To match exisiting .

78 BOXED SASH WINDOW HANGING FITTINGS To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Axle pulleys: To match exisiting .
- Cords: To match exisiting .
- Weights: To match exisiting .
  - Matched to weights of glazed sashes.
- Other requirements: To match exisiting .

80 SASH WINDOW FASTENERS To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .

82 CASEMENT/ SASH WINDOW MORTICE BOLTS To match exisiting
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .
- Additional requirements: To match exisiting .

84 CASEMENT WINDOW HANDLES To match exisiting

- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Material/ finish: To match exisiting .
- Features: To match exisiting .

86 CASEMENT WINDOW STAYS To match exisiting

- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .
- Features: To match exisiting .

88 SASH WINDOW LIFT HANDLES To match exisiting

- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .

90 SASH WINDOW EYES To match exisiting

- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .

92 WEATHERSTRIP TO WINDOWS To match exisiting

- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Type: To match exisiting .
- Size: To match exisiting .
- Material/ finish: To match exisiting .

Q
Paving/Planting/Fencing/Site furniture

Q20
Granular sub-bases to roads/ pavings

Q20 Granular sub-bases to roads/ pavings

10 THICKNESSES OF SUB-BASES

- Thicknesses: As specified in the relevant paving section.

30 EXCAVATION AND COMPACTION OF SUBGRADES

- Final excavation to formation level: Carry out immediately before compaction of subgrade.
- Soft spots and voids: Give notice.
- Old drainage and service trenches: Excavate to remove soft or degraded material, then backfill with specified granular sub-base material and compact..
- Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilized.
- 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.

40 SUB-BASES

- Granular material: Of a known suitability for use in sub-bases, free from ice, harmful matter and excessive dust or clay, well graded, all pieces less than 75 mm in any direction, and selected from one of the following:
  - Crushed rock (other than argillaceous rock) or quarry waste.
  - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
  - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
  - Natural sand or gravel.

45 LAYING AND COMPACTING SUB-BASES

- Subgrade: Not frozen and free from loose soil, rubbish and standing water.
- Structures, membranes and buried services: Ensure stability and avoid damage.
- General: Spread and level in layers.
- 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.

50 ACCURACY

- Permissible deviation from required levels, falls and cambers (maximum):
  - Subgrade: ± 20 mm.
  - Sub-base: ± 12 mm.

60 SURFACES TO RECEIVE SAND BEDDING FOR PAVING

- Blind surface: As necessary before compaction to ensure that surface is tight and dense enough to prevent laying course sand being lost into it during construction or use.
- Material: Sand or PFA.

70 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

Q22 Asphalt roads/ pavings

10 ASPHALT CONCRETE PAVING TO ENTRANCE DRIVE

- Standard: To BS EN 13108-1.
- Geomembrane: Geotextile membranes.
  - Manufacturer: Contractor's choice.
    Product reference: Contractor's choice.
- Granular sub-base: As section Q20.
  - Compacted thickness: 200 mm.
- Water collection: Not required .
- Base: Contractor's choice.
  - Paving grade: See shedule of works.
  - Compacted thickness: See shedule of works.
- Binder course: See shedule of works.
  - Paving grade: See shedule of works.
  - Compacted thickness: See shedule of works.
- Surface course: See shedule of works.
  - Paving grade: See shedule of works.
  - Compacted thickness: See shedule of works.
- Surface treatment: See shedule of works.
- Reclaimed content:
  - Standard: To BS EN 13108-8.
  - Value (maximum): See shedule of works.

20 TIMBER EDGING To perimeter of building and boundarys

- Softwood board:
  - Size: 38 x 150 mm.
  - Fixing: Galvanized nails into softwood pegs.
- Softwood pegs:
  - Size: 50 x 50 x 600 mm long.
  - Fixing: Drive into ground.
  - Centres: 1200 mm.
- Preservative treatment: To provide a 15 year service life.

30 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.
- Permissible deviation from the required levels, falls and cambers (maximum): In accordance with BS 594987, Table 7.
- 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.
  - Condition on completion: Clean.

Q40
Fencing

Q40 Fencing

FENCING

15 PREFABRICATED WOOD PANEL FENCING
- Standard: To BS 1722-11.
- Type of infill: Waney edged horizontal boards, lapped.
- Height: 1830 mm.
- Posts: Concrete.
  - Setting: Concrete.
- Accessories: None.
- Conformity: Submit manufacturer's and installer's certificates, to BS 1722-11.

45 GATES/ GATE POSTS
- Manufacturer: Exisiting (overhall).
  - Product reference: Exisiting (overhall).
- Sizes: Exisiting (overhall).
- Finish: Exisiting (overhall).
- Fittings: Exisiting (overhall).
- Post setting: Exisiting (overhall).

60 INSTALLATION GENERALLY
- Expertise: By an experienced fencing contractor.
- 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.

70 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: Unless specified otherwise position post/ strut and fill hole with concrete to not less than half the depth, well rammed as filling proceeds and consolidated.
- Backfilling of holes not completely filled with concrete: Excavated material, well rammed and consolidated.

72 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.

75 DRIVEN POSTS
- Damage to heads: Minimize.
  - Repair: Neatly finish post tops after installation.

85 SITE CUTTING OF WOOD

- General: Kept to a minimum.
- Below or near ground level: Cutting prohibited.
- Treatment of surfaces exposed by minor cutting and drilling: Two flood coats of solution recommended for the purpose by main treatment solution manufacturer.

90 MAKING GOOD 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.

R
Disposal systems

R10
Rainwater drainage systems

R10 Rainwater drainage systems

16 PVC-U GUTTERS

- Standard: To BS EN 607 and BS EN 1462, Kitemark certified.
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Recycled content: Contractor's choice.
- Profile: Half round.
- Colour: Black.
- Accessories: Stop ends.
- Fixing: Galvanized steel top rafter brackets at 900 mm centres.

26 RAINWATER OUTLETS

- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Type of grate: Flat.
- Outlet: Type and direction to suit pipework, with adaptors and connections recommended for the purpose by outlet manufacturer.
- Accessories: none.
- Fixing: Grout into preformed holes.

35 PVC-U PIPEWORK

- Standard: To BS EN 12200-1, Kitemark certified.
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Recycled content: Contractor's choice.
- Sections: Round.
- Nominal sizes: DN 82.
- Colour: Black.
- Accessories: as required.
- Fixing: PVC-U clips at 1200 mm centres.

50 INSTALLATION GENERALLY

- Discharge of rainwater: Complete, and without leakage or noise nuisance.
- Components: Obtain from same manufacturer for each type of pipework and guttering.
- Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
- Fixings and fasteners: As section Z20.

60 GUTTERS LAID TO FALL

- Setting out: To true line and even gradient to prevent 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.
- Joints: Watertight.
- Roofing underlay: Dressed into gutter.

65 GUTTERS LAID LEVEL

- Setting out: Level and as close as practical to roof.
- Joints: Watertight.
- Roofing underlay: Dressed into gutter.

70 PIPEWORK

- Fixing: Securely, plumb and/ or true to line with additional supports as necessary to support pipe collars, particularly at changes in direction.
- Cut ends of pipes and gutters: Clean and square with burrs and swarf removed.

80 INTERNAL PIPEWORK TEST - ENGLAND, WALES, IRELAND AND NORTHERN IRELAND

- Preparation: Temporarily seal open ends of pipework with plugs.
- Testing: Connect a 'U' tube water gauge and 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 not less than 3 minutes.

81 INTERNAL PIPEWORK TEST - SCOTLAND

- Standard: To BS EN 12056-2, NG.3.1.
- Required performance: To BS EN 12056-2, NG.3.1.2.

S
Piped supply systems

S90
Hot and cold water supply systems - domestic

S90 Hot and cold water supply systems - domestic

GENERAL

10 MAINS COLD WATER SUPPLY Retain exisiting supply.
- Estimated daily consumption: -.
- Position of incoming mains water supply: -.
- Pipelines: -.
  - Accessories: -.
- Valves: -.
- Insulation: -.
- Sanitary appliances: -.
- Controls: -.
- Accessories: -.
- Completion: -.

SYSTEM PERFORMANCE

20 DESIGN OF INSTANTANEOUS HOT WATER SUPPLY
- Design: Complete the design of the hot and cold water supply system.
- Standard: To BS EN 806-2, BS 8558 and in accordance with HSE publication 'The control of legionella bacteria in water systems. Approved code of practice and guidance'.
- Proposals: Submit drawings (showing equipment positions and pipeline routes), technical information, calculations and manufacturers' literature.

24 PIPELINE SIZES
- Sizing: Calculate sizes to meet simultaneous demand for the building in accordance with BS 8558. Submit proposals.
- Performance:
  - Water velocity (maximum): 1.3 m/s for hot water and 2.0 m/s for cold water.
  - Filling time (maximum) for cold water storage cistern: -.

PRODUCTS

50 COPPER PIPELINES FOR GENERAL USE
- Standard: To BS EN 1057, Kitemark certified.
- Temper: Half hard R250.
- Finish: Submit proposals.
  - Colour: Submit proposals.
- Wall thickness (nominal):
  - OD 6, 8, 10 and 12 mm: 0.6 mm.
  - OD 15 mm: 0.7 mm.
  - OD 22 and 28 mm: 0.9 mm.
  - OD 35 and 42 mm: 1.2 mm.
- Jointing:
  - Chromium plated: Type A compression fittings to BS EN 1254-2, chromium plated.
  - Plain: Integral lead free solder ring capillary fittings to BS EN 1254-1, Kitemark certified.
  - Plastics coated: Type A compression fittings to BS EN 1254-2.
- Connections to appliances and equipment: Select from:
  - Compression fittings: To BS EN 1254-2, Kitemark certified.
  - Fittings with threaded ends: To BS EN 1254-4.
- Supports: Submit proposals.

59 THERMOSTATS TVR

- Standards: To BS EN 60730-2-9 and BS EN 61058-2-5.
- Type: Strap-on.
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.

EXECUTION

70 INSTALLATION GENERALLY

- Installation: To BS EN 806-4.
- Performance: Free from leaks and the audible effects of expansion, vibration and water hammer.
- Fixing of equipment, components and accessories: Fix securely, parallel or perpendicular to the structure of the building.
- Preparation: Immediately before installing tanks and cisterns on a floor or platform, clear the surface completely of debris and projections.
- Corrosion resistance: In locations where moisture is present or may occur, provide corrosion resistant fittings/ fixings and avoid contact between dissimilar metals by use of suitable washers, gaskets, etc.

71 INSTALLING CISTERNS

- Outlet positions: Connect lowest outlets at least 30 mm above bottom of cistern.
- Access: Fix cistern with a minimum clear space of 350 mm above, or 225 mm if the cistern does not exceed 450 mm in any dimension.

72 INSTALLING WARNING/ OVERFLOW PIPES TO CISTERNS

- Difference (minimum) between normal water level and overflow level:
  - Cold water storage cisterns: The greater of 32 mm or the bore of warning pipe.
  - Feed and expansion cisterns: Sufficient to allow 20% increase in the volume of water in the tank, plus 25 mm.
- Vertical distance (minimum) of water supply inlet above overflow level: Bore of warning pipe.
- Fall (minimum): 1 in 10.
- Installation: Support to prevent sagging. Terminate pipes separately in prominent positions with turned down ends. Turn down within the cistern. Terminate 50 mm below normal water level.
- Insulation: Insulate within the building where the pipe is in an uninsulated space and subject to freezing.

73 INSTALLING VENT PIPES OVER CISTERNS

- Route: Install with no restrictions or valves and rising continuously from system connection to discharge over cistern.
- Internal diameter (minimum): 20 mm.

75 INSTALLING GAS FIRED INSTANTANEOUS WATER HEATERS

- Label: In accordance with BS 5546.

77 INSTALLING FLUE PIPES

- Joints and bends: Minimize number.
- Slope: Not more than 30° from the vertical.
- Joints: Install with sockets uppermost, fully supported and fixed securely with brackets supplied for the purpose. Do not locate joints within the depth of floors.
  - Seals: Seal joints in accordance with manufacturer's installation instructions, to provide a gas-tight installation.
- Expansion and contraction: Accommodate thermal movement.
- Fire safety: Locate a safe distance from combustible materials.
- Roof junction: Weatherproof. Fit terminal and flashings, collars, and the like.

79 PIPELINES INSTALLATION

- Appearance: Install pipes straight, and parallel or perpendicular to walls, floors, ceilings, and other building elements.
- Pipelines finish: Smooth, consistent bore, clean, free from defects, e.g. external scratching, toolmarks, distortion, wrinkling, and cracks.
- Concealment: Generally conceal pipelines within floor, ceiling and/ or roof voids.
- Access: Locate runs to facilitate installation of equipment, accessories and insulation and allow access for maintenance.
- Arrangement of hot and cold pipelines: Run hot pipelines above cold where routed together horizontally. Do not run cold water pipelines near to heating pipelines or through heated spaces.
- Electrical equipment: Install pipelines clear of electrical equipment. Do not run pipelines through electrical enclosures or above switch gear distribution boards or the like.
- Insulation allowance: Provide space around pipelines to fit insulation without compression.

80 PIPELINES FIXING

- Fixing: Secure and neat.
- Joints, bends and offsets: Minimize.
- Pipeline support: Prevent strain, e.g. from the operation of taps or valves.
- Drains and vents: Fix pipelines to falls. Fit draining taps at low points and vents at high points.
- Thermal expansion and contraction: Allow for thermal movement of pipelines. Isolate from structure. Prevent noise or abrasion of pipelines caused by movement. Sleeve pipelines passing through walls, floors or other building elements.
- Dirt, insects or rodents: Prevent ingress.

82 SUPPORTS FOR PIPELINES

- Spacing for copper pipelines: Fix securely and true to line at the following maximum centres:
  - 15 and 22 mm pipe OD: 1200 mm horizontal, 1800 mm vertical.
  - 28 and 35 mm pipe OD: 1800 mm horizontal, 2400 mm vertical.
  - 42 and 54 mm pipe OD: 2400 mm horizontal, 3000 mm vertical.
- Spacing for thermoplastics pipelines: Fix securely and true to line at the following maximum centres:
  - Up to 16 mm pipe OD: 300 mm horizontal, 500 mm vertical.
  - 17-25 mm pipe OD: 500 mm horizontal, 800 mm vertical.
  - 26-32 mm pipe OD: 800 mm horizontal, 1000 mm vertical.
- Additional supports: Locate within 150 mm of connections, junctions and changes of direction.

83 PIPELINE SPACING

- Clearance (minimum) to face of wall-fixed pipes or pipe insulation:
  - From floor: 150 mm.
  - From ceiling: 50 mm.
  - From wall: 15 mm.
  - Between pipes: 25 mm.
  - From electrical conduit, cables, etc: 150 mm.

84 JOINTS IN PIPELINES

- Copper pipelines:
  - Preparation: Cut pipes square. Remove burrs.
  - Joints: Neat, clean and fully sealed. Install pipe ends into joint fittings to full depth.
  - Bends: Do not use formed bends on exposed pipework, except for small offsets. Form changes of direction with radius fittings.
  - Adaptors for connecting dissimilar materials: Purpose designed.
  - Substrate and plastics pipes and fittings: Do not damage, e.g. by heat when forming soldered joints.
  - Flux residue: Clean off.
- Capillary joints in plastics coated pipelines.
  - Plastics coating: Do not damage, e.g. by direct or indirect heat. Wrap completed joint (when cool) with PVC tape of matching colour, half lapped.
- Thermoplastics pipelines:
  - Standard: Fusion jointing in accordance with WIS 4-32-08.
  - Fittings and accessories for joints: Purpose designed.
  - Preparation: Cut pipes square. Remove burrs.
  - Joints: Neat, clean and fully sealed. Install pipe ends into joint fittings to full depth.
  - Compression fittings: Do not overtighten.

85 PIPELINES ENTERING BUILDINGS

- Depth: Lay pipes at least 750 mm and no more than 1350 mm below finished ground level.
- Pipelines rising into building within 750 mm of the external face of the external wall or passing through a ventilated void below floor level: Insulate from finished floor level to 600 mm beyond external face of building.
- Ends of pipeducts: Seal both ends to a depth of at least 150 mm.

86 INSTALLING INSULATION TO PIPELINES

- Standard: In accordance with BS 5970.
- Cold water pipelines: Insulate in unheated spaces. Insulate potable cold water pipelines.
- Hot water pipelines: Insulate, except for short lengths in prominent positions next to appliances.
- External supply pipelines exposed to air or less than 750 mm below finished ground level: Insulate.
- Appearance: Fix securely and neatly. Make continuous over fittings and at supports. Leave no gaps. Locate split on 'blind' side of pipeline.
- Timing: Fit insulation after testing.

87 INSTALLING INSULATION TO CISTERNS

- Standard: In accordance with BS 5970.
- General: Fix securely to sides and top of cisterns. Leave no gaps.
- Access cover: Allow removal of cover with minimum disturbance to insulation.
- Underside of cistern: Insulate where exposed in unheated spaces.

88 INSTALLING VALVES

- Isolation and regulation valves: Provide on equipment and subcircuits.
- Access: Locate where valves can be readily operated and maintained and next to equipment which is to be isolated.
- Connection to pipework: Fit with joints to suit the pipe material.

COMPLETION

90 FLUSHING AND FILLING

- Standard: To BS EN 806-4.

91 SYSTEM DISINFECTION

- Disinfection: To BS EN 806-4.

92 TESTING

- Standard: To BS EN 806-4.
  - Notice (minimum): 3 days.
- Preparation: Secure and clean pipework and equipment. Fit cistern and tank covers.
- Leak testing: Start boiler and run the system until all parts are at normal operating temperatures and then allow to cool to cold condition for a period of 3 h.
- Pressure testing: At both hot and cold conditions joints, fittings and components must be free from leaks and signs of physical distress when tested for at least 1 h as follows:
  - Systems fed directly from the mains, and systems downstream of a booster pump: Apply a test pressure equal to 1.5 times the maximum pressure to which the installation or relevant part is designed to be subjected in operation.
  - Systems fed from storage: Apply a test pressure equal to the pressure produced when the storage cistern is filled to its normal maximum operating level.
  - Inaccessible or buried pipelines: Carry out hydraulic pressure test to twice the working pressure.

93 COMMISSIONING

- Standard: To BS EN 806-4.
- Equipment: Check and adjust operation of equipment, controls and safety devices.
- Outlets: Check operation of outlets for satisfactory rate of flow and temperature.

94 TESTING SERVICE PIPELINES

- Test method: Disconnect from the mains, fill with potable water, exclude air, and apply at least twice the working pressure for 1 h.
- Test criterion: No leakage.

95 DOCUMENTATION

- Manufacturers' operating and maintenance instructions: Submit for equipment and controls.
- System operating and maintenance instructions: Submit for the system as a whole giving optimum settings for controls.
- Record drawings: Submit drawings showing the location of circuits and operating controls.

96 OPERATING TOOLS

- Tools: Supply tools for operation, maintenance and cleaning purposes.
- Valve keys: Supply keys for valves and vents.

97 LABELS

- Valve labels: Provide labels on isolating and regulating valves on primary circuits, stating their function.

S91
Natural gas supply systems - domestic

S91 Natural gas supply systems - domestic

GENERAL

10 INCOMING GAS SUPPLY
- Gas supplier: Retain exisiting.
- Volume flow rate: Retain exisiting.
- Position of meter: Retain exisiting.

11 GAS SYSTEM Retain exisiting
- Gas meter: Retain exisiting.
- Gas pipeline: Domestic low pressure.
- Gas valves: as required.
- Gas equipment: Boiler.

SYSTEM PERFORMANCE

20 DESIGN
- Design: Complete the design of the gas supply system.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

21 PIPELINE SIZES
- Sizing: Calculate sizes of gas pipes for the equipment proposed.
- Equipment gas consumption: In accordance with Chartered Institute of Plumbing and Heating Engineers Design Guide .

PRODUCTS

30 SAFETY AND CONTROL DEVICES
- Standard: To BS EN 13611.

33 GAS PLUG COCKS
- Standard: To BS 1552.
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.

34 GAS BALL VALVES
- Standard: To BS EN 331.
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.

EXECUTION

60 INSTALLATION GENERALLY
- Domestic gas pipelines: To BS 6891.
- Secondary gas meters: To BS 6400.

62 GAS SAFE REGISTRATION REQUIREMENTS
- Type of service: Domestic.
- Type of gas: Natural gas.
- Area of work: Gas boilers.

COMPLETION

90 TESTING, COMMISSIONING AND PURGING GAS PIPELINES

- Standard: To BS 6891.

91 DOCUMENTATION

- Manufacturers' operating and maintenance instructions: Submit for equipment and controls.
- Record drawings: Submit drawings showing the location of circuits and operating controls.

92 OPERATING TOOLS

- Tools: Supply tools for operation, maintenance and cleaning purposes.
- Valve keys: Supply keys for valves, vents and meter housing.
  - Quantity: One for each type of valve, vent and meter housing.

T
Mechanical heating/Cooling/Refrigeration systems

T90
Heating systems - domestic

T90 Heating systems - domestic

GENERAL

SYSTEM PERFORMANCE

20 DESIGN

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

21 BASIC DESIGN TEMPERATURES

- Room temperatures: Design the system to provide the following temperatures for the specified air change rates and an external air temperature of -4°C:
  - Living rooms: 21°C, for 1.5 air changes per hour.
  - Dining rooms: 21°C, for 1.5 air changes per hour.
  - Bedsitting rooms: 21°C, for 1.5 air changes per hour.
  - Bedrooms: 18°C, for 1 air changes per hour.
  - Halls and landings: 18°C, for 1.5 air changes per hour.
  - Kitchens: 18°C, for 2 air changes per hour.
  - Bathrooms: 22°C, for 2 air changes per hour.
  - Toilets: 18°C, for 2 air changes per hour.
- Submittals: Submit heat loss calculations for each room using the HEVACOMP suite of programmes.

27 SYSTEM CONTROL

- Temperature and time control: Fully automatic and independent.
- Controls: Compatible with each other and with central heating boiler.

PRODUCTS

30 BOILERS, GAS FIRED -

- Standard: To BS 5258-1, BS EN 483 or BS EN 297.
- Type: Wall mounted.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Output: 23.4 kW.
- Casing finish: White vitreous enamel.
- Integral controls: 7 day digital timer and thermostat.
- Integral accessories: as required.
- Integral flues: Submit proposals.

48 COPPER PIPELINES FOR GENERAL USE -

- Standard: To BS EN 1057, Kitemark certified.
- Temper: Half hard R250.
- Wall thickness (nominal):
  - OD 6, 8, 10 and 12 mm: 0.6 mm.
  - OD 15 mm: 0.7 mm.
  - OD 22 and 28 mm: 0.9 mm.
  - OD 35 and 42 mm: 1.2 mm.
- Microbore temper: Soft coil R220.
- Microbore wall thickness (nominal):
  - OD 6 and 8 mm: 0.6 mm.
  - OD 10 mm: 0.7 mm.
- Jointing: Integral lead-free solder ring capillary fittings.
  - Standard: To BS EN 1254-1, Kitemark certified.
- Connections to appliances and equipment: Select from:
  - Compression fittings: To BS EN 1254-2, Kitemark certified.
  - Fittings with threaded ends: To BS EN 1254-4.
- Supports: Submit proposals .

49 COPPER PIPELINES, PLASTICS COATED -

- Standard: To BS EN 1057, Kitemark certified.
- Temper: Half hard R250.
- Wall thickness (nominal):
  - OD 6, 8, 10 and 12 mm: 0.6 mm.
  - OD 15 mm: 0.7 mm.
  - OD 22 and 28 mm: 0.9 mm.
  - OD 35 and 42 mm: 1.2 mm.
- Microbore temper: Soft coil R220.
- Microbore wall thickness (nominal):
  - OD 6 and 8 mm: 0.6 mm.
  - OD 10 mm: 0.7 mm.
- Jointing: Integral lead-free solder ring capillary fittings.
  - Standard: To BS EN 1254-1, Kitemark certified.
- Connections to appliances and equipment: Select from:
  - Compression fittings: To BS EN 1254-2, Kitemark certified.
  - Fittings with threaded ends: To BS EN 1254-4.
- Finish: Plain .
  - Colour: Submit proposals .
- Supports: Submit proposals .

50 THERMOPLASTICS PIPELINES -

- Pipes and fittings: Submit proposals.
- Jointing: Submit proposals.
- Supports: Submit proposals.

51 VENT PIPELINES -

- Materials: To BS EN 1057.
- Jointing:
  - Compression: To BS EN 1254-2.
  - Capillary: To BS EN 1254-1.

52 WARNING AND OVERFLOW PIPES TO FEED AND EXPANSION CISTERNS -

- Material: Submit proposals.
- Jointing: Submit proposals.
- Minimum OD: Greater than inlet pipe OD and at least 22 mm.
- Difference between normal water level and overflow level: Sufficient to allow 20% increase in the volume of water in the tank plus 25 mm.
- Vertical distance of water supply inlet above overflow level: Not less than the bore of the warning pipe.

53 VALVES GENERALLY

- Types: Approved for the purpose by local water supply undertaker and of appropriate pressure and temperature ratings.
- Control of valves: Fit with handwheels for isolation and lockshields for isolation and regulation of circuits or equipment.

56 THERMOSTATIC RADIATOR VALVES all

- Standard: To BS EN 215 and capable of providing isolation.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Features: Submit proposals.
- Finish: Submit proposals.
- Lockshield valves: To BS 2767 with matching finish fitted to return side of radiator.

57 CIRCULATING PUMPS -

- Standards: To BS EN 16297-1, -2 and BS EN 60335-2-51.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Flow rate: as required.
- System resistance: as required.
- Accessories: Submit proposals.

61 RADIATORS Exisiting Overhall

- Standard: To BS EN 442-1, -2, -3.
- Type: -.
- Manufacturer: -.
  - Product reference: -.
- Material: -.
- Finish: -.
- Sizes: -.

65 THERMOSTATS -

- Standards: To BS EN 60730-1, -2-7, -2-8, -2-9, -2-14 and BS EN 61058-1, -2-5. BEAB approved.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.

66 TIMERS -

- Standards: To BS EN 60730-1, -2-7, -2-10, -2-14 and BS EN 61058-1, -2-5. BEAB approved.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Features: Submit proposals.

EXECUTION

72 STRIPPING OUT

- Extent of stripping out: as per shedule of works.

73 INSTALLATION GENERALLY

- Standard: To BS EN 14336.
- Performance: Free from leaks and the audible effects of expansion, vibration and water hammer.
- Fixing of equipment, components and accessories: Fix securely, parallel or perpendicular to the structure of the building.
- Preparation: Immediately before installing tanks and cisterns on a floor or platform, clear the surface completely of debris and projections.
- Corrosion resistance: In locations where moisture is present or may occur, use corrosion resistant fittings/ fixings and avoid contact between dissimilar metals by use of suitable washers, gaskets, etc.

74 INSTALLATION OF FEED AND EXPANSION CISTERNS

- Outlet positions: Connect lowest outlets at least 30 mm above bottom of cistern.
- Water level (minimum): 25 mm below the overflow level of the warning pipe.
- Access: Fix cistern with a minimum clear space of 350 mm above, or 225 mm if the cistern does not exceed 450 mm in any dimension.
- Mounting height above the highest point of the circulation system (minimum): 1 m.
- Location: Provide sufficient space for cleaning and maintenance, with enough clearance above the cistern to service the valve and accommodate the expansion pipe.
- Plinth: Firm, level and continuous.
- Jointing pipes to thermoplastics cisterns: To BS EN 806-4.
- Insulation: Where the space below the cistern is heated do not insulate the underside.

75 PIPELINE INSTALLATION

- Appearance: Install pipes straight, and parallel or perpendicular to walls, floors, ceilings, and other building elements.
- Pipelines finish: Smooth, consistent bore, clean, free from defects, e.g. external scratching, toolmarks, distortion, wrinkling, and cracks.
- Concealment: Generally conceal pipelines within floor, ceiling and/ or roof voids.
- Access: Locate runs to facilitate installation of equipment, accessories and insulation and allow access for maintenance.
- Arrangement of hot and cold pipelines: Run hot pipelines above cold where routed together horizontally. Do not run cold water pipelines near to heating pipelines or through heated spaces.
- Electrical equipment: Install pipelines clear of electrical equipment. Do not run pipelines through electrical enclosures or above switch gear distribution boards or the like.
- Insulation allowance: Provide space around pipelines to fit insulation without compression.

76 PIPELINE FIXING

- Fixing: Secure and neat.
- Joints, bends and offsets: Minimize.
- Pipeline support: Prevent strain, e.g. from the operation of taps or valves.
- Drains and vents: Fix pipelines to falls. Fit draining taps at low points and vents at high points.
- Thermal expansion and contraction: Allow for thermal movement of pipelines. Isolate from structure. Prevent noise or abrasion of pipelines caused by movement. Sleeve pipelines passing through walls, floors or other building elements.
- Dirt, insects or rodents: Prevent ingress.

77 JOINTS IN COPPER PIPELINES

- Preparation: Cut pipes square. Remove burrs.
- Joints: Neat, clean and fully sealed. Install pipe ends into joint fittings to full depth.
- Bends: Do not use formed bends on exposed pipework, except for small offsets. Form changes of direction with radius fittings.
- Adaptors for connecting dissimilar materials: Purpose designed.
- Substrate and plastics pipes and fittings: Do not damage, e.g. by heat when forming soldered joints.
- Flux residue: Clean off.

78 JOINTS IN THERMOPLASTICS PIPELINES

- Fittings and accessories for joints: Purpose designed.
- Preparation: Cut pipes square. Remove burrs.
- Joints: Neat, clean and fully sealed. Install pipe ends into joint fittings to full depth.
- Compression fittings: Do not overtighten.

79 INSTALLATION OF OIL STORAGE TANKS

- Standard: To BS 5410-1.

80 INSTALLATION OF HEAT PUMPS GENERALLY

- Standards: To BS EN 378-3 and -4.
- Fixing of equipment, components and accessories: Fix securely on purpose-made bases or supports.
- External units: Protect from high winds. Prevent snow from blocking air flow.
- Access: Provide for inspection and servicing of heat pumps and ancillary equipment.
- Refrigerant lines: Short and straight.
- Location of outdoor unit: Away from windows and adjacent buildings.

81 INSTALLATION OF GROUND HEAT EXCHANGER COLLECTORS

- Horizontal loops: Lay on a bed of sand and cover with a further 150 mm layer of sand.
- Vertical heat exchangers: Backfill with high conductivity grout, e.g. bentonite.
- Pipelines: Continuous loop.
- External pipelines: Insulate within 1.5 m of walls, structures or water pipes.
- Warning tape: Install over buried pipes.
- Mechanical couplings: Do not use on buried pipelines.

COMPLETION

90 TESTING

- Standard: To BS EN 14336.
- Notice (minimum): 3 days.
- Preparation: Secure and clean pipework and equipment. Fit cistern/ tank covers.
- Leak testing: Start boiler and run the system until parts are at normal operating temperatures and then allow to cool to cold condition for a period of 3 h.
- Pressure testing: At both hot and cold conditions joints, fittings and components must be free from leaks and signs of physical distress when tested for at least 1 h as follows:
  - Systems fed directly from the mains and systems downstream of a booster pump: Apply a test pressure equal to 1.5 times the maximum pressure to which the installation or relevant part is designed to be subjected in operation.
  - Systems fed from storage: Apply a test pressure equal to the pressure produced when the storage cistern is filled to its normal maximum operating level.
  - Inaccessible or buried pipelines: Carry out hydraulic pressure test to twice the working pressure.

91 SETTING TO WORK AND COMMISSIONING

- Equipment: Check and adjust operation of equipment, controls and safety devices.
- Outlets: Check operation of outlets for satisfactory rate of flow and temperature.

92 DOCUMENTATION

- Manufacturers' operating and maintenance instructions: Submit for equipment and controls.
- System operating and maintenance instructions: Submit for the system as a whole giving optimum settings for controls.
- Record drawings: Submit drawings showing the location of circuits and operating controls.

93 LABELS

- Valve labels: Provide labels on isolating and regulating valves on primary circuits, stating their function.

V
Electrical supply/power/lighting systems

V90
Electrical systems - domestic

V90 Electrical systems - domestic

GENERAL

20 DESIGN OF LOW VOLTAGE ELECTRICAL INSTALLATION GENERALLY

- Design and detailing: Complete for the electrical installation.
- Standards: In accordance with BS 7671 and the requirements of the electricity distributor.
- Design information: Submit calculations, manufacturer's literature and drawings showing equipment positions and routes.

24 DESIGN OF GENERAL LIGHTING SYSTEM

- Purpose: as per schedule of works.
- Design and detailing: Complete for the general lighting system.
- Standard: To SLL 'Code for lighting'.
- Room: as per schedule of works.
  - Maintained average illuminance: as per schedule of works.
  - Controls: as per schedule of works.
- Maintenance: Submit proposals for the maintenance/ relamping regime.

25 DESIGN OF EXTERNAL LIGHTING SYSTEM

- Purpose: as per schedul of works.
- Design and detailing: Complete for the external lighting system.
- Standards: To SLL 'Code for lighting' and CIBSE Lighting Guide 6.
- Area: as per schedul of works.
  - Maintained average illuminance: as per schedul of works.
  - Minimum illuminance at any point: as per schedul of works.
  - Uniformity: as per schedul of works.

27 SMALL POWER SYSTEM DESIGN

- Purpose: as per schedul of works.
- Small power outlets: Provide to serve the building and its equipment.
- Room: as per schedul of works.
  - Outlets: as per schedul of works.
- Fixed equipment: Provide supplies.

PRODUCTS

30 PRODUCTS GENERALLY

- Standard: To BS 7671.
- CE Marking: Required.

32 DISTRIBUTION BOARDS

- Standard: To BS EN 61439-3.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Third party certification: ASTA certified.
- Rating: Submit proposals.
- Incoming devices: Submit proposals.
- Number of outgoing ways: Submit proposals.
- Outgoing devices: Submit proposals.
- Enclosure:
  - Ingress protection to BS EN 60529: Submit proposals.
  - Material: Submit proposals.
  - Door lock: Submit proposals.

39 CABLES

- Approval: British Approvals Service for Cables (BASEC) certified.
- Cable sizes not stated: Submit proposals and calculations.

40 PROTECTIVE CONDUCTORS

- Type: Cable conductors with yellow/ green sheath.

41 ELECTRICAL ACCESSORIES -

- Standards:
  - Generally: To BS 5733.
  - Switches: To BS EN 60669-1.
- Manufacturer: Submit proposals .
  - Product reference: Submit proposals .
- Finish: Submit proposals .
- Mounting: Submit proposals.

45 LUMINAIRES as per schedul of works

- Standards: To BS EN 60598-1 and BS EN 55015.
  - Approval: Kitemark certified.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Mounting: Submit proposals.
- Lamp: Submit proposals.
  - Wattage: Submit proposals.

47 LAMPS GENERALLY

- Standards:
  - Compact fluorescent lamps: To BS EN 60901 and BS EN 61199.
  - High pressure mercury lamps: To BS EN 60188 and BS EN 62035.
  - High pressure sodium lamps: To BS EN 62035.
  - Light emitting diodes (LEDs): To BS EN 62031.
  - Metal halide lamps: To BS EN 62035.
  - Tubular fluorescent lamps:
    Single-capped lamps: To BS EN 60901 and BS EN 61199.
    Double-capped lamps: To BS EN 60081 and BS EN 61195.
  - Tungsten halogen lamps: To BS EN 60432-2 and BS EN 60357.
- Manufacturer: Submit proposals.
  - Lamps of the same type and rating: Same manufacturer.

50 EXTERNAL LUMINAIRES as per schedul of works

- Standards: To BS EN 60598-1 and BS EN 55015.
- Approval: Kitemark certified.
- Manufacturer: Submit proposals.
  - Product reference: Submit proposals.
- Mounting: Submit proposals.
- Ingress protection to BS EN 60529: Submit proposals.
- Lamp: Submit proposals.
  - Wattage: Submit proposals.
  - Colour temperature: Submit proposals.
- Spill lighting control: as per schedul of works.

EXECUTION

60 GENERAL EXECUTION

- Standard: In accordance with BS 7671.

63 INSTALLING CONDUIT AND FITTINGS

- Fixing: Fix securely. Fix boxes independently of conduit.
- Drainage outlets: Locate at lowest points in conduit installed externally, and where condensation may occur.
- Location: Position vertically and horizontally in line with equipment served, and parallel with building lines. Locate where accessible.
- Jointing:
  - Number of joints: Minimize.
  - Lengths of conduit: Maximize.
  - Cut ends: Remove burrs, and plug during building works.
  - Movement joints in structure: Manufactured expansion coupling.
  - Threaded steel conduits: Tightly screw to ensure electrical continuity, with no thread showing.
  - Conduit connections to boxes and items of equipment, other than those with threaded entries: Earthing coupling/ male brass bush and protective conductor.
- Changes of direction: Site machine-formed bends, junction boxes and proprietary components. Do not use elbows or tees. Alternatively, use conduit boxes.
  - Connections to boxes, trunking, equipment and accessories: Screwed couplings, adaptors, connectors and glands, with rubber bushes at open ends.

64 INSTALLING TRUNKING AND DUCTING

- Positioning: Accurate with respect to equipment served, and parallel with other services and, where relevant, floor level and other building lines.
- Access: Provide space encompassing cable trunking to permit access for installing and maintaining cables.
- Jointing:
  - Number of joints: Minimize.
  - Lengths of trunking: Maximize.
  - Steel systems: Mechanical couplings. Do not weld. Fit a copper link at each joint to ensure electrical continuity.
- Movement: Fix securely. Restrain floor mounted systems during screeding.
- Junctions and changes of direction: Proprietary jointing units.
- Cable entries: Fit grommets, bushes or liners.
- Internal fire barriers: Provide to maintain integrity of fire compartment.
- Protection: Fit temporary blanking plates. Prevent ingress of screed and other extraneous materials.
- Service outlet units: Fit when cables are installed.

66 CABLE ROUTES

- Cables generally: Conceal wherever possible.
  - Concealed cable runs to wall switches and outlets: Align vertically with the accessory.
- Exposed cable runs: Submit proposals.
  - Orientation: Straight, vertical and/ or horizontal and parallel to walls.
- Distance from other services running parallel: 150 mm minimum.
  - Heating pipes: Position cables below.

68 INSTALLING ELECTRICAL ACCESSORIES AND EQUIPMENT

- Location: as per schedule of works.
- Arrangement: Coordinate with other wall or ceiling mounted equipment.
- Positioning: Accurately and square to vertical and horizontal axes.
- Alignment: Align adjacent accessories on the same vertical or horizontal axis.
- Mounting: Submit proposals.
- Mounting heights (finished floor level to underside of equipment or accessory): Submit proposals .

70 INSTALLING FINAL CONNECTIONS

- Size: Determine.
- Cable: Heat resisting white flex.
- Length: Allow for equipment removal and maintenance.

72 INSTALLING LUMINAIRES

- Location: as per schedile of works.
- Supports: Adequate for weight of luminaire.
- Locations: Submit proposals.

74 EQUIPMENT LABELLING

- Electrical equipment: Install labels indicating purpose.
- Voltage warning notices:
  - Location: Apply to equipment when the voltage exceeds 230 V.
  - Format: To BS EN ISO 7010 W012, include warnings of the voltage present.
- Distribution boards: Card circuit chart within a reusable clear plastic cover. Fit to the inside of each unit. Include typed information identifying the outgoing circuit references, their device rating, cable type, size, circuit location and details. Label each outgoing way corresponding to the circuit chart.
- Sub-main cables: Label at both ends, with circuit reference using proprietary cable marker sleeves.

76 ENGRAVING

- Metal and plastic accessories: Engrave, indicating their purpose.
- Emergency lighting test key switches: Describe their function.
- Multigang light switches: Describe the luminaire arrangement.

78 FINAL FIX

- Accessory faceplates, luminaires and other equipment: Fit after completion of building painting.

79 CLEANING

- Electrical equipment: Clean immediately before handover.
- Equipment not supplied but installed under the electrical works: Clean immediately before handover.

COMPLETION

85 INSPECTION AND TESTING GENERALLY

- Standard: In accordance with BS 7671.
- Notice before commencing tests (minimum): 24 hours.
- Labels and signs: Fix securely before system is tested.
- Certificates: Submit.
  - Number of copies: 2.

86 TESTING AND COMMISSIONING OF PV SYSTEMS

- Standards: To BS EN 62446 and in accordance with ENA G83/2.
- Microgeneration Certification Scheme: Submit certificate.
- Documentation: To BS EN 62446, Annex A and Annex C.

87 TESTING AND COMMISSIONING OF SMALL SCALE WIND GENERATING SYSTEMS

- Standards: To BS EN 61400-2, and in accordance with ENA G83/2.
- Microgeneration Certification Scheme: Submit certificate.

89 MAINTENANCE

- Servicing and maintenance: Undertake.
  - Duration: Until 12 months after Practical Completion.

Z
Building fabric reference specification

Z10
Purpose made joinery

Z10 Purpose made joinery

10 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. Heads of countersunk screws sunk at least 2 mm below surfaces visible in completed work.
- Adhesives: Compatible with wood preservatives applied and end uses of timber.

20 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.
  - Hardwood sections: To BS EN 1313-2.

30 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.

40 MOISTURE CONTENT

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

50 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

Z11 Purpose made metalwork

31 METAL PRODUCTS
- Grades of metals, section dimensions and properties: To the appropriate British Standards and suitable for the purpose.
- Fasteners: Generally, same metal as component, with matching coating and finish.

50 PREPARATION FOR APPLICATION OF COATINGS
- General: Fabrication complete, and fixing holes drilled before applying coatings.
- Paint, grease, flux, rust, burrs and sharp arrises: Removed.

51 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.
- Prefinished metals: Do not damage or alter appearance of finish.

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

53 WELDING AND BRAZING GENERALLY
- Surfaces to be joined: Clean thoroughly.
- Tack welds: Use only for temporary attachment.
- Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
- Surfaces of materials that will be self-finished and visible in completed work: Protect from weld spatter.
- Flux residue, slag and weld spatter: Remove.

54 WELDING OF STEEL
- Method: Metal arc welding to BS EN 1011-1 and -2.

56 FINISHING WELDED AND BRAZED JOINTS VISIBLE IN COMPLETE WORK
- Butt joints: Smooth, and flush with adjacent surfaces.
- Fillet joints: Neat.
- Grinding: Grind smooth where indicated on drawings.

58 GALVANIZING
- Standard: To BS EN ISO 1461.
- Vent and drain holes:
  - Location: Submit proposals.
  - Sealing after galvanizing: Required. Submit proposals.

Z12
Preservative/ fire retardant treatment

Z12 Preservative/ fire retardant treatment

10 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.

20 COMMODITY SPECIFICATIONS
- Standard: Current edition of the Wood Protection Association (WPA) publication 'Industrial wood preservation specification and practice'.

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

70 MAKING GOOD TO PROTECTION TREATMENT ON-SITE
- Fire retardant/ preservative solution: Compatible with off-site treatment.
- Application: In accordance with preservative manufacturer's recommendations.

80 RECYCLED TIMBER CONTAINING CREOSOTE OR CHROMIUM/ ARSENIC BASED PRESERVATIVE
- Usage: -.

Z20
Fixings and adhesives

Z20 Fixings and adhesives

10 FIXINGS AND FASTENERS 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 or sleeves to avoid bimetallic corrosion.
- General usage: To recommendations of fastener manufacturers and/ or manufacturers of components, products or materials fixed and fixed to.
- Fixings: To be in straight lines, at regular centres.

25 FASTENER DURABILITY

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

30 FIXINGS THROUGH FINISHES

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

35 PACKINGS

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

40 CRAMP FIXINGS

- Fasteners: Fix cramps to frames with screws of same material as cramps.
- Fixings in masonry work: Fully bed in mortar.

50 PELLETED COUNTERSUNK SCREW FIXINGS

- Finished level of countersunk screw heads: Minimum 6 mm below timber surface.
- Pellets: Cut from matching timber, grain matched, glued in to full depth of hole.
- Finished level of pellets: Flush with surface.

55 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.

60 APPLYING ADHESIVES

- Surfaces: Clean. 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

Z21 Mortars

10 MORTAR MIXES

- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.

20 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 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.

25 SAND FOR LIME:SAND MASONRY MORTARS

- Type: Sharp, well graded.
  - Quality, sampling and testing: To BS EN 13139.
  - Grading/ Source: As specified elsewhere.

30 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.

40 CEMENTS FOR MORTARS

- Cement: To BS EN 197-1 and CE marked.
  - Types: Portland cement, CEM I.
    Portland limestone cement, CEM ll/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 EN 197-1 Sulfate resisting Portland cement, CEM I/SR and CE marked.
    To BS EN 197-1 fly ash cement, CEM ll/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.

50 ADMIXTURES FOR SITE MADE 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.

60 MAKING MORTARS GENERALLY

- 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.
- Contamination: Prevent intermixing with other materials.

70 MAKING HYDRAULIC LIME:SAND MORTARS

- Mixing hydrated hydraulic lime:sand: Follow the lime manufacturer's recommendations for each stage of the mix.
  - Water quantity: Only sufficient to produce a workable mix.

Z22
Sealants

Z22 Sealants

31 JOINTS -
- Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.

EXECUTION

61 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.

62 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.

63 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.