NBS Cemetery Toilet Block & Chapel WC

14 July 2020

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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 drawings .
  - 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: Reveiw all available infomation, archive drawings, structural enginners reports and Asbestos refurbishment survey data before commencement .

10 EXTENT OF DECONSTRUCTION/ DEMOLITION

- General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to Internal walls as shown on drawing .

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.

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.

71 DANGEROUS OPENINGS

- General: Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
- 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: Refer to asbestos refurbishment survey report data.
- 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.

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.

D20 Excavating and filling

GENERALLY/THE SITE

CLEARANCE/EXCAVATING

DISPOSAL OF MATERIALS

410 EXCAVATED TOPSOIL STORAGE
- Storage: Stockpile in temporary storage heaps For later removal.

415 EXCAVATED TOPSOIL REMOVAL
- General: Remove from site.

441 SURPLUS SUBSOIL
- Excavated material: Stockpile in temporary storage heaps.
- Retained material: Spread and level surplus subsoil on site.
  - Locations: To be agreed.
  - Protected areas: Do not raise soil level within root spread of trees that are to be retained.
- Remaining material: Remove from site.

450 WATER
- Generally: Keep all excavations free from water until:
  - Formations are covered.
  - Below ground construction are completed.
  - Basement structures and retaining walls are able to resist leakage, water pressure and flotation.
- Drainage: Form surfaces of excavations and fill to provide adequate falls.
- Removal of water: Provide temporary drains, sumps and pumping as necessary. Do not pollute watercourses with silt laden water.

454 GROUND WATER LEVEL/ RUNNING WATER
- Give notice: If it is considered that the excavations are below the water table.
- Springs/ Running water: Give notice immediately if encountered.

457 PUMPING
- General: Do not disturb excavated faces or stability of adjacent ground or structures.
- Pumped water: Discharge without flooding the site or adjoining property.
- Sumps: Construct clear of excavations. Fill on completion.
  - Locations: Contractor's choice .

FILLING

500 PROPOSED FILL MATERIALS

- Details: Submit full details of proposed fill materials to demonstrate compliance with specification, including:
  - Type and source of imported fill.
  - Proposals for processing and reuse of material excavated on site.
  - Test reports as required elsewhere.
- Timing: At least 21 days before starting filling..

510 HAZARDOUS, AGGRESSIVE OR UNSTABLE MATERIALS

- General: Do not use fill materials which would, either in themselves or in combination with other materials or ground water, give rise to a health hazard, damage to building structures or instability in the filling, including material that is:
  - Frozen or containing ice.
  - Organic.
  - Contaminated or noxious.
  - Susceptible to spontaneous combustion.
  - Likely to erode or decay and cause voids.
  - With excessive moisture content, slurry, mud or from marshes or bogs.
  - Clay of liquid limit exceeding 80 and/or plasticity index exceeding 55.
  - Unacceptable, class U2 as defined in the Highways Agency 'Specification for highway works', clause 601.

520 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.
- Test reports: If the following fill materials are proposed, submit a laboratory report confirming they are non frost- susceptible:
  - Fine grained soil with a plasticity index less than 20%.
  - Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve.
  - Crushed chalk.
  - Crushed limestone fill with average saturation moisture content in excess of 3%.
  - Burnt colliery shale.
- Frost-susceptible fill: May only be used within the external walls of buildings below spaces that will be heated. Protect from frost during construction.

530 PLACING FILL

- Excavations and areas to be filled: Free from loose soil, rubbish and standing water.
- Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.
- Adjacent structures, membranes and buried services:
  - Do not overload, destabilise or damage.
  - Submit proposals for temporary support necessary to ensure stability during filling.
  - Allow 14 days (minimum) before backfilling against in situ concrete structures.
- Layers: Place so that only one type of material occurs in each layer.
- Earthmoving equipment: Vary route to avoid rutting.

550 GEOTEXTILE SHEET

- Manufacturer: Terram.
  - Product reference: 1000.
- Jointing: 300 mm overlap.
- Protect from:
  - Exposure to light, except for five hours (maximum) during laying.
  - Contaminants.
  - Materials listed as potentially deleterious by geotextile manufacturer.
  - Damage until fully covered by fill.
  - Wind uplift, by laying not more than 15 m before covering with fill.
- Preparation: Before laying, remove humps and sharp projections. Fill hollows.

617 HIGHWAYS AGENCY TYPE 1 GRANULAR FILLING

- Fill: To Highways Agency 'Specification for highway works', clause 803:
  - Crushed rock (other than argillaceous rock).
  - Crushed concrete.
  - Recycled aggregates.
  - Crushed non-expansive slag to clause 801.2.
  - Well-burned non-plastic colliery shale.
- Filling: To Highways Agency 'Specification for highway works', clauses 801.3 and 802.

626 COMPACTED GENERAL FILLING

- Fill: -.
- Excavated material: Select suitable material and keep separate.
- Filling: Spread and level material in layers. As soon as possible thoroughly compact each layer.
- Proposals: Well in advance of starting work submit details of proposed:
  - Materials to be used, including quantities of each type.
  - Type of plant.
  - Maximum depth of each compacted layer.
  - Minimum number of passes per layer.

710 HARDCORE FILLING

- Fill: Granular material, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111, and in any one layer only one of the following:
  - Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
  - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
  - Crushed non-expansive slag.
  - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
  - Well-burned non-plastic colliery shale.
  - Natural gravel.
  - Natural sand.
- Filling: Spread and level in 150 mm maximum layers. Thoroughly compact each layer.

E05 In situ concrete construction generally

220 DESIGN OF STRUCTURAL CONCRETE
- Standards:
  - Design: To BS 8110-1.
  - Drawings: To BS EN ISO 3766.
  - Reinforcement schedules: To BS 8666.
- Finished product: To comply with the requirements of design standard.

290 ACCURACY OF CONSTRUCTION
- Reference system: To BS 5964-1
- Element shape and position: To BS 5606.
  - Substitution of alternative requirements: -.

300 LEVELS OF STRUCTURAL CONCRETE FLOORS
- Tolerances (maximum):
- Level of floor: To be advised.
- Steps in floor level: Not applicable.

310 SURFACE REGULARITY OF CONCRETE FLOORS TO BS 8204 - GENERAL
- Standard: To BS 8204-1 or -2.
- Measurement: From underside of a 2m straightedge (between points of contact) placed anywhere on surface and using a slip gauge.

E10 Mixing/casting/curing in situ concrete

CONCRETE MIXES

101 SPECIFICATION
- Concrete generally: To BS EN 206-1 and BS 8500-2.

125 SUBSTITUTION OF STANDARDIZED PRESCRIBED CONCRETE FOR DESIGNATED CONCRETE
- General: Conform to BS 8500-2, clause 8.
- Substitution: In accordance with BS 8500-1, table A.7.
  - Proposals: Submit for each substitution, stating reasons.
- Mixing: If standardized prescribed concretes are made on site conform to BS 8000-2.1, subsections 2, 3 and 4.

MATERIALS, BATCHING AND MIXING

215 READY-MIXED CONCRETE
- Production plant: Currently certified by a body accredited by UKAS to BS EN 45011 for product conformity certification of ready-mixed concrete.
- Source of ready-mixed concrete: Obtain from one source if possible. Otherwise, submit proposals.
  - Name and address of depot: Submit before any concrete is delivered.
  - Delivery notes: Retain for inspection.
- Declarations of nonconformity from concrete producer: Notify immediately.

225 CHANGES TO SPECIFICATION
- Changes to specification of fresh concrete (outside concrete producer's responsibility): Pro hibited .

415 ADMIXTURES
- Calcium chloride and admixtures containing calcium chloride: Do not use.

IDENTITY TESTING/ CERTIFICATION

505 IDENTITY TESTING OF FRESH CONCRETE
- Testing: To BS EN 206-1, annex B and BS 8500-1, annexe B.
  - Nonconformity: Obtain instructions immediately.
- Recording: Maintain complete correlated records including:
  - Sampling, site tests, and identification numbers of specimens tested in the laboratory.
  - Location of the parts of the structure represented by each sample.
  - Location in the structure of the batch from which each sample is taken.

508 REGULAR IDENTITY TESTING
- Tests:
  -Compressive strength .
- Sampling:
  -Compressive strength: One sample per 60 m3 .

530 IDENTITY TESTS RESULTS
- Submission of reports: Within one day of completion of each test.
  - Number of copies: 1 .
- Reports on site: A complete set, available for inspection.

PLACING/ COMPACTION/ CURING AND PROTECTION

630 PREMATURE WATER LOSS
- Requirement: Prevent water loss from concrete laid on absorbent substrates.
  - Underlay: Select from:
    Polyethylene sheet: 250 micrometres thick.
    Building paper: To BS 1521, grade B1F.
  - Installation: Lap edges 150 mm.

640 CONSTRUCTION JOINTS
- Locations of construction joints: Submit proposals where not shown on drawings.
- Preparation of joint surfaces: Select from:
  - Brushing and spraying: Remove surface laitance and expose aggregate finish while concrete is still green.
  - Other methods: Submit proposals.
- Condition of joint surfaces immediately before placing fresh concrete: Clean and damp.

650 SURFACES TO RECEIVE CONCRETE
- Cleanliness of surfaces immediately before placing concrete: Clean with no debris, tying wire clippings, fastenings or free water.

680 PLACING
- Records: Maintain for time, date and location of all pours.
- 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.
- Continuity of pours: Place in final position in one continuous operation up to construction joints. Avoid formation of cold joints.
- Discharging concrete: Prevent uneven dispersal, segregation or loss of ingredients or any adverse effect on the formwork or formed finishes.
- Thickness of layers: To suit methods of compaction and achieve efficient amalgamation during compaction.
- Poker vibrators: Do not use to make concrete flow horizontally into position, except where necessary to achieve full compaction under void formers and cast-in accessories and at vertical joints.

690 COMPACTING
- General: Fully compact concrete to full depth to remove entrapped air. Continue until air bubbles cease to appear on the top surface.
  - Areas for particular attention: Around reinforcement, under void formers, cast-in accessories, into corners of formwork and at joints.
- Consecutive batches of concrete: Amalgamate without damaging adjacent partly hardened concrete.
- Methods of compaction: To suit consistence class and use of concrete.

810 CURING GENERALLY

- Evaporation from surfaces of concrete: Prevent, including from perimeters and abutments, 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. If covering is removed for finishing operations, replace it immediately afterwards.
- Surface temperature: Maintain above 5°C throughout the specified curing period or four days, whichever is longer.
- Records: Maintain details of location and timing of casting of individual batches, removal of formwork and removal of coverings. Keep records on site, available for inspection.

811 COVERINGS FOR CURING

- Sheet coverings: Suitable impervious material.
- Curing compounds: Selection criteria:
  - Curing efficiency: Not less than 75% or for surfaces exposed to abrasion 90%.
  - Colouring: Fugitive dye.
  - Application to concrete exposed in the finished work: Readily removable without disfiguring the surface.
  - Application to concrete to receive bonded construction/ finish: No impediment to subsequent bonding.
- Interim covering to top surfaces of concrete: Until surfaces are in a suitable state to receive coverings in direct contact, cover with impervious sheeting held clear of the surface and sealed against draughts at perimeters and junctions.

820 CURING PERIODS

- General: Curing periods are in days (minimum).
  - Definition of 't': The average number of degrees Celsius air temperature during the curing period.
- Curing periods for concrete surfaces which, in the finished building, will be exposed to the elements; concrete wearing surface floors and pavements; water resistant concrete:

	Concrete made using CEM1; SRPC (BS 4027); IIA	Concrete made using IIB; IIIA; IIIB; IVB
Drying winds or dry, sunny weather	140 t+10	180 t+10
Intermediate conditions	100 t+10	140 t+10
Damp weather, protected from sun and wind	100 t+10	100 t+10

- Curing periods for other structural concrete surfaces (cements/ combinations as above):

Drying winds or dry, sunny weather	80 t+10	140 t+10
Intermediate conditions	60 t+10	80 t+10
Damp weather, protected from sun and wind	No special requirements	No special requirements

- Curing periods for concretes using admixtures or other types of cements/ combinations: Submit proposals.

840 PROTECTION

- Prevent damage to concrete, including:
  - Surfaces generally: From rain, indentation and other physical damage.
  - Surfaces to exposed visual concrete: From dirt, staining, rust marks and other disfiguration.
  - Immature concrete: From thermal shock, physical shock, overloading, movement and vibration
  - In cold weather: From entrapment and freezing expansion of water in pockets, etc.

E30 Reinforcement for in situ concrete

110 QUALITY ASSURANCE OF REINFORCEMENT
- Reinforcement to BS 4449, BS 4483 or BS 6744, cut and bent to BS 8666: Obtain from companies holding valid certificates of approval for product conformity issued by the UK Certification Authority for Reinforcing Steels (CARES).

140 PLAIN BAR REINFORCEMENT
- Standard: To BS 4449.
  - Strength grade: 250.

150 RIBBED BAR REINFORCEMENT
- Standard: To BS 4449.
  - Strength grade: 460 B.

210 FABRIC REINFORCEMENT
- Standard: To BS 4483.

310 CUTTING AND BENDING REINFORCMENT
- General: To schedules and to BS 8666.
- Restrictions on bending steel:
  - Rebending including minor adjustments: Obtain instructions.
  - Temperatures below 5°C: Obtain instructions.
  - Temperatures greater than 100°C: Prohibited.

320 PROTECTION OF REINFORCMENT
- Dropping from height, mechanical damage and shock loading: Prevent.
- Cleanliness of reinforcement at time of pouring concrete: Free from corrosive pitting, loose millscale, loose rust and contaminants which may adversely affect the reinforcement, concrete, or bond between the two.

425 LAPS NOT DETAILED ON DRAWINGS
- Laps in bar reinforcement (minimum): 300 mm.
- Laps in fabric reinforcement (minimum): 250 mm.
  - Laps at corners: Avoid four layer build-up.

451 FIXING REINFORCEMENT
- Standard: To BS 7973-1 and -2.
- Installation: In addition to any spacers and chairs shown on drawings or schedules, provide adequate support, tie securely and maintain the specified cover.
- Tying:
  - Wire type: 16 gauge black annealed. Use stainless steel wire for stainless steel reinforcement.
  - Ends of tying wire: Prevent intrusion into the concrete cover. Remove loose ends.
- Compatibility of metals: Prevent contact between ordinary carbon steel and stainless or galvanized reinforcement.

E41 Worked finishes to in situ concrete

10 FINISHING
- Timing: Carry out at optimum times in relation to setting and hardening of concrete.
- Prohibited treatments to surfaces:
  - Wetting to assist surface working.
  - Sprinkling cement.

20 SMOOTH FLOATED FINISH
- Surface on completion: Even, with no ridges or steps.

30 TROWELLED FINISH
- Surface on completion: Uniform, smooth but not polished, free from trowel marks and blemishes, and suitable to receive specified flooring material.

40 TROWELLED FINISH FOR WEARING SURFACES
- Surface on completion: Uniform and smooth, free from trowel marks and blemishes.

F10 Brick/ block walling

355 CONCRETE COMMON BLOCKWORK For Infll slots
- Blocks: To BS EN 771-3.
  - Manufacturer: Contractor's choice.
    Product reference: Thermalite shield .
  - Configuration: Solid.
  - Compressive strength:
    Mean value: 3.5 N/mm².
    Characteristic value: Not applicable.
    Category: -.
  - Freeze/ Thaw resistance: Suitable for exposed external use below d.p.c.
  - Thermal properties: Thermal conductivity: 0.15 W/m2K .
  - Work sizes (length x width x height): 440 x 100 x 215 mm.
  - Special shapes: None.
  - Additional requirements: None.
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:1:6 cement:lime:sand .
  - Additional requirements: None.
- Bond: Half lap stretcher.

380 ENGINEERING BRICKWORK To infill slots
- Engineering bricks: To BS 3921
  - Class A .
  - Manufacturer: Contractor's choice .
    Product reference: Red .
- Mortar: As section Z21.
  - Standard: To BS EN 998-2.
  - Mix: 1:0.5:4.5 cement:lime:sand, 6 N/mm² (mortar class 6) .
  - Additional requirements: None.
- Bond: Half lap stretcher .
- Joints: Flush.

WORKMANSHIP GENERALLY

430 CONDITIONING OF CLAY AND CALCIUM SILICATE BRICKS
- Bricks delivered warm from manufacturing process: Do not use until cold.
- Absorbent bricks in warm weather: Wet to reduce suction. Do not soak.

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

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

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

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

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

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

615 BRICKWORK TO RECEIVE ASPHALT DPC
- Substrate: Mortar bed finished flush, smooth and level.

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

635 JOINTING
- Profile: Consistent in appearance.

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

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

690 ADVERSE WEATHER

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

ADDITIONAL REQUIREMENTS FOR FACEWORK

760 APPEARANCE

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

780 GROUND LEVEL

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

830 CLEANLINESS

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

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

CAVITIES

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

150 FULL FILL CAVITY INSULATION
- Insulation: Rock wool batts.
  - Standard: BS EN 13162.
  - Product certification: British Board of Agrement (BBA) Certificate.
- Manufacturer: Rockwool.
  - Product reference: -.
- Face size (nominal length x width): Mineral wool batts: Select from:.
- Thickness (nominal): 50 mm.
- Thermal conductivity: 0.04 W/mK.
- Reaction to fire class: A1.
- Additional requirements: -.
- Placement: Continuous and free of mortar and debris.

180 CAVITY CLOSERS At opening reveals & wallplate
- Manufacturer: Contractor's choice .
  - Product reference: - .
- Accessories: To include integral dpc .

REINFORCING/ FIXING ACCESSORIES

210 CAVITY WALL TIES FOR ALL CAVITY WALLS
- Standard: To BS 1243.
  - Type: Contractor's choice .
- Material/ finish: Stainless steel .
- Sizes: To suit cavity wall construction .

228 FIXING TIES IN MASONRY CAVITY WALLS WITH FULL FILL CAVITY INSULATION
- Embedment in mortar beds (minimum): 50 mm.
- Placement: Sloping slightly downwards towards outer leaf, without bending. Drip centred in the cavity and pointing downwards.
- Spacing: Staggered in alternate courses.
  - Horizontal centres: 900 .
  - Vertical centres: 450 .
- Provision of additional ties:
  One row to support lowest row of insulation batts.
  Within 225 mm of reveals of unbonded openings.
  Spacing: At not more than 300 mm centres vertically .

241 WALL STARTERS/ CONNECTORS
- Manufacturer: Contractor's choice .
  - Product reference: - .
- Material/ finish: Austenitic stainless steel .
- Sizes: To suit cavity construction .

FLEXIBLE DAMP PROOF COURSES/ CAVITY TRAYS

310 DAMP PROOF COURSE - BITUMEN BASED
- Standard: To BS 6398.
  - Class: B .
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .

INSTALLATION OF DPCS/ CAVITY TRAYS

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

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

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

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

JOINTS

755 PREFABRICATED STEEL LINTELS
- Standard: To BS EN 845-2.
- Manufacturer: Catnic or Equal .
  - Product reference: As drawings .
- Types: As drawings .
- Material/ finish: Zinc coated steel to BS EN ISO 1461 with minimum coating mass of 710 g/m² and coating minimum thickness 100 micrometres .
- Sizes: As drawings .
- Additional requirements: - .
- Placement: Bed on mortar used for adjacent work.
  - Bearing length (minimum): 150 mm .

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

G20 Carpentry/ timber framing/ first fixing

GENERAL

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

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

PRODUCTS

210 STRUCTURAL SOFTWOOD (GRADED DIRECT TO STRENGTH CLASS) FOR STRUCTURAL USE GENERALLY
- Grading standard: To BS 4978 or BS EN 519 or other national equivalent and so marked.
- Strength class to BS EN 338: -.
- Treatment: Organic solvent impregnation to NBS section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C8, Service life: 40 years .

270 UNGRADED SOFTWOOD FOR INTERNAL NONSTRUCTURAL USE
- Quality of timber: Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
- Surface finish: Regularized .
- Treatment: Organic solvent impregnation to NBS section Z12 and British Wood Preserving and Damp-proofing Association Commodity Specification C5, Service life: 40 years .

WORKMANSHIP GENERALLY

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

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

420 WARPING OF TIMBER
- Bow, spring, twist and cup: Not greater than the limits set down in BS 4978 or BS EN 519 for softwood, or BS 5756 for hardwood.

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

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

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

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

520 EXPOSED END GRAIN
- Components: Seal exposed end grain of the following before delivery to site:
  -.
- Sealer: Clear end grain sealer .

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

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

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

JOINTING TIMBER

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

580 FRAMING ANCHORS
- Manufacturer: Contractor's choice.
  - Product reference: -.
- Material/ finish: Galvanized low carbon steel .
- Fasteners: Galvanized or sherardized square twist nails.
  - Size: Not less than size recommended by anchor manufacturer.
- Fixing: Secure using not less than the number of nails recommended by anchor manufacturer.

ERECTION AND INSTALLATION

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

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

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

784 JOISTS GENERALLY
- Centres: Equal, and not exceeding designed spacing.
- Bowed joists: Installed with positive camber.
- End joists: Positioned approximately 50 mm from masonry walls.

786 JOISTS ON HANGERS
- Hangers: Bedded directly on and hard against supporting construction. Do not use packs or bed on mortar.
- Joists: Cut to leave not more than 6 mm gap between ends of joists and back of hanger. Rebated to lie flush with underside of hangers.
- Fixing to hangers: A nail in every hole.

791 PROPRIETARY JOIST HANGERS To Flat Roof Joists.
- Manufacturer: Constractor's choice.
  - Product reference: -.
- Material/ finish: Hot dip galvanized steel plate .
- Size: To suit joist, design load and crushing strength of supporting construction.

795 TRIMMING OPENINGS

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

805 TRUSS CLIPS

- Manufacturer: Contractor's choice.
  - Product reference: -.
- Material/finish: Galvanized steel.
- Fasteners: 32 x 3.5 mm galvanized or sherardized square twisted nails in every hole.

820 VERTICAL RESTRAINT STRAPS

- Type: Vertical/tension strapping.
- Manufacturer: Contractor's choice.
  - Product reference: -.
- Material/ finish: Galvanized steel .
- Size:
  - Cross section: Not less than 30x5mm.
  - Length: Min. 1.0m.
- Centres: Not more than 2.0.
- Fixing:
  - To timber members with not less than recommeneded.
  - To masonry with not less than recommeneded screws evenly spaced, with at least one screw located within 150 mm of the bottom end of each strap.

J30 Liquid applied damp proofing

10 COLD APPLIED DAMP PROOFING

- Substrate: Existing brickwork and concrete vertically where where dpc is bridged by paving or where edge of slab is exposed and horizontally where existing slab is to be broken up and reinstated or where a new screed is aplied to a slab having no dpm .
- Primer: As coating manufacturer's recommendations .
- Coating: Bituminous .
  - Manufacturer: Contractor's choice.
    Product reference: Contractor's choice.
  - Application: As coating manufacturer's recommendations .
- Reinforcement: As coating manufacturer's recommendations .
- Blinding: As coating manufacturer's recommendations .

10A BITUMEN SOLUTION COATING

- Manufacturer: RIW Ltd.
  - Web: www.riw.co.uk.
  - Email: technical@riw.co.uk.
  - Product reference: Liquid Asphaltic Composition (LAC)
- Application: 2 coats
  - Coverage per coat (maximum): 1st coat: 1.7 m²/litre, 2nd coat: 2.5 m²/litre

50 WORKMANSHIP

- Substrates generally: Smooth, even textured, clean, dry and frost free.
- Curing period for concrete substrates (minimum): 7 days.
- Moisture content and stability of substrate: Must not impair integrity of finished tanking/ damp proofing.
- Preliminary work: Complete.
- Adjacent surfaces exposed to view in finished work: Protect.
- Primer application: Uniform, continuous coverage.
- Coatings:
  - Apply in dry atmospheric conditions when manufacture rrecommends .
  - Uniform, continuous coverage. Do not allow to pool in hollows.
  - Firmly adhered to substrate and free from imperfections.
  - Prevent damage to finished coating.
- Penetrations: Impervious.
- Final covering: Apply as soon as possible after coating has hardened.

60 JUNCTIONS WITH DPCS

- DPCs: Clean, all edges fully exposed.
- Application: Fully coat dpc and overlap adjacent surfaces by (minimum) 50 mm .

Hamson Barron Smith

K10 Gypsum board dry linings/ partitions/ ceilings

To be read with Preliminaries/ General conditions.

185 WALL LINING SYSTEM (ADHESIVE) For existing blockwork walls
- Manufacturer: British Gypsum.
  - Product reference: Moisture resistant (MR).
- Wall: Concrete blockwork.
- Adhesive method: Dabs as clause 625.
- Linings: 12.5 mm MR plasterboard.
- Finishing: Skim coat plaster as clause 680.
  - Primer/ Sealer: Primer to painted areas.
  - Accessories: Metal beads/ stops recommended by the board manufacturer .
- Other requirements: None.

205 LINING ON TIMBER Infill wall Chapel
- Background: New timber framing.
- Metal resilient (acoustic) bars: Not required.
- Linings: British gypsum 12.5mm thick mosture resistant plasterboard (MR) .
  - Fixing: Screws.
- Finishing: Skim coat plaster.
  - Primer/ Sealer: As recommended by board manufacturer for vapour control .
  - Accessories: Metal beads/ stops recommended by board manufacturer .
- Other requirements: Fire stopping around service penetrations as section P12 .

245 CEILING LINING ON TIMBER Ceiling oveboarding
- Background: Existing PB Ceiling/timber ceiling joists .
- Metal resilient (acoustic) bars: Not required.
- Linings: 12.5 mm moisture resistant (MR) plasterboard.
  - Fixings: Screws.
- Finishing: Skim coat plaster.
  - Primer/ Sealer: Not required.
  - Accessories: Metal beads/ stops recommended by board manufacturer .
- Other requirements: Fire stopping around service penetrations as section P12 .

INSTALLATION

305 GYPSUM BOARDS GENERALLY
- Standard:
  - Gypsum plasterboard to BS EN 520.
  - Fibre reinforced gypsum board to BS EN 15283-2.
  - Evidence of compliance: All sheets to be CE marked. Submit Declaration of Performance (DoP).

335 ADDITIONAL SUPPORTS

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

435 DRY LININGS GENERALLY

- General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.
- Cutting gypsum boards: Neatly and accurately without damaging core or tearing paper facing.
  - Cut edges: Minimize and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.
- Fixings boards: Securely and firmly to suitably prepared and accurately levelled backgrounds.
- Finishing: Neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.

445 CEILINGS

- Sequence: Fix boards to ceilings before installing dry lined walls and partitions.
- Orientation of boards: Fix with bound edges at right angles to supports and with ends staggered in adjacent rows.
- Two layer boarding: Stagger joints between layers.

455 METAL FRAMING FOR PARTITIONS/ WALL LININGS

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

505 INSTALLING MINERAL WOOL INSULATION

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

510 SEALING GAPS AND AIR PATHS

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

530 CAVITY FIRE BARRIERS WITHIN PARTITIONS/ WALL LININGS

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

545 CAVITY FIRE BARRIERS WITHIN SUSPENDED CEILINGS

- Type: As recommended by board manufacturer to meet specified performance .
- Fire resistance: To BS EN 13501-2, REI 30.
- Ceiling void subdivision: Fix barriers not more than 20 m apart in any direction .
- Fixing at perimeters and joints: Secure, stable and continuous with no gaps, to provide a complete barrier to smoke and flame.
- Service penetrations: Cut and pack to maintain barrier integrity. Sleeve flexible materials. Adequately support services passing through barrier.
- Ceiling systems for fire protection: Do not impair fire resisting performance of ceiling system.

555 FIRE STOPPING AT PERIMETERS OF DRY LINING SYSTEMS

- Material: Tightly packed mineral wool or intumescent mastic/ sealant.
- Application: To perimeter abutments to provide a complete barrier to smoke and flame.

560 JOINTS BETWEEN BOARDS

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

565 VERTICAL JOINTS

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

570 HORIZONTAL JOINTS

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

590 FIXING GYPSUM BOARD TO METAL FRAMING/ FURRINGS

- Partitions/ Wall linings: Fix securely and firmly at the following centres (maximum):
  - Single layer boarding: To all framing at 300 mm centres. Reduce to 200 mm centres at external angles.
  - Multi-layer boarding: Face layer at 300 mm centres, and previous layers around perimeters at 300 mm centres.
- Ceilings: 230 mm. Reduce to 150 mm at board ends and at lining perimeters.
- Position of screws from edges of boards (minimum): 10 mm.
  - Screw heads: Set in a depression. Do not break paper or gypsum core.

620 FIXING GYPSUM BOARD WITH ADHESIVE DABS

- Setting out boards: Accurately aligned and plumb.
- Fixing to substrates: Securely using adhesive dabs.
- Adhesive dab spacings for each board:
  - Horizontally: One row along top edge and one continuous dab along bottom edge.
  - Vertically: One row along each edge and thereafter at intermediate spacings to suit size of board:

Thickness (mm)	Width (mm)	Dab centres (mm)
9.5	1200	400
9.5/12.5	900	450
12.5	1200	600

- Adhesive dab dimensions (width x length): At least 50-75 mm x 250 mm.
  - Position of dabs from edges/ ends of boards (minimum): 25 mm.

625 FIXING INSULATION BACKED PLASTERBOARD WITH ADHESIVE DABS

- Fixing to substrates: In addition to adhesive dab fixings, secure boards with nailable plugs in locations recommended by board manufacturer.

630 FIXING INSULATION BACKED PLASTERBOARD WITH ADHESIVE SPOTS

- Setting out boards: Accurately aligned and plumb.
- Fixing to substrates: Securely using adhesive spots and mechanical fastenings.
- Adhesive spot spacings to each board: Four vertical rows, at 400 mm centres in each row.
- Adhesive spot diameters (minimum): 25 mm.
- Mechanical fasteners: Nailable plugs in locations recommended by board manufacturer.

FINISHING

650 LEVEL OF DRY LINING ACROSS JOINTS

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

670 SEAMLESS JOINTING TO GYPSUM BOARDS

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

680 SKIM COAT PLASTER FINISH

- Plaster type: British Gypsum Thistle Multi-fiinsh .
  - 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.

695 INSTALLING BEADS/ STOPS

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

L10 Windows/ Rooflights/ Screens/ Louvres

10 WOOD WINDOWS

- Manufacturer: Contractor's choice.
  - Product reference: Purpose made (joinery quality) .
- Species: White Oak 69x44mm Gothic arched.
- Finish as delivered: planed/sanded and oiled .
- Glazing details: Double glazed to achieve whole unit 'U' value of 0.16w/m2k, laminated inner and toughended outer pane .
  - Beading: 32x22mm solid wjite oak.
- Ironmongery/ Accessories: none.
- Fixing: Plugged and screwed to masonry.
  - 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.

30 PVC-U WINDOWS

- Manufacturer: Contractor's choice.
  - Product reference: min. 70mm steel reinforced sections, engery rating 'A' .
  - Colour/ Texture: White/chamfered.
- Glazing details: to achieve whole unit 'U' value of 0.16w/m2k, laminated inner and toughended outer pane .
  - Beading: External.
- Ironmongery/ Accessories:
  - Espagnolette lock;
  - Locking handle;
  - Restrictor; and
  - Trickle ventilator.
- Fixing: Through frame fixing .
  - Fastener spacing: When not predrilled or specified otherwise, position fasteners 150-250 mm from ends of each jamb, adjacent to each hanging point of opening lights, but no closer than 150 mm to a transom or mullion centre line, and at maximum 600 mm centres.

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: Contracor's choice.
  - Colour: Brown.
  - Application: As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.

80 IRONMONGERY

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

90 REPLACEMENT WINDOW INSTALLATION

- Standard: To BS 8213-4.

L20 Doors/shutters/hatches

25G WOOD PANELLED DOORS - EXTERNAL HARDWOOD

- Manufacturer:
  Contractor's choice
  or equivalent.
  - Product reference:
    purposed made, refer to drawings
    or equivalent.
- Wood species: BS EN 942, National Annex NA, Hardwood as table NA2.White Oak .
- Preservative treatment: Required.
- Finish as delivered: oiled.
- Glazing/ Panel details: Site glazed as section L40.
- Other requirements: moisture content 13–19% for external joinery.

55G DOORSETS - STEEL

- Manufacturer:
  Doors for Security
  or equivalent.
  - Product reference:
    Steel Security Door with Multi-Point Locking System (Single - Heavy Duty
    or equivalent.
- Finish as delivered: Polyester powder coated - standard; grey.
- Glazing details: Not applicable.
- Ironmongery: Manufacturer's standard, Multi-Point Locking System .
- Perimeter seals: EPDM weatherseal.
- Other requirements: Size to suit opening - contracrtor to carry out own survey..
- Fixing: Plugged and screwed.
  - Spacing of fixings (frames not predrilled): Maximum 150 mm from ends of each jamb and at 600 mm maximum centres.

80G SEALANT JOINTS

- Sealant:
  - Manufacturer:
    Manufacturer's choice
    or equivalent.
    Product reference:
    Manufacturer's choice
    or equivalent.
  - Colour: Grey .
  - 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

GENERAL REQUIREMENTS

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

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

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

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

TYPES OF GLAZING

250 BEAD FIXED SINGLE GLAZING Internal Doors

- Pane material: See doors Section L20 .
- Surround/ bead: Hardwood .
  - Preparation: as doors .
  - Bead location: Outside .
  - Bead fixing: stainless steel woodscrews .
- Glazing system:
  - Tape: - .
  - Bead bedding sealant: To maintain fire/acoustic rating .
  - Capping sealant: One-part, fire rated intumescent acrylic sealant .
- Glazing installation:
  - Glass: Located centrally in surround using setting and location blocks.
  - Glazing tape: Top edge approximately 6 mm short of sight line on external side of glazing, to allow for capping sealant. Corners butt jointed with no gaps.
  - Thickness of glazing tape bed (minimum): 3 mm on both sides of glazing after compression.
  - Beads: Bedded in sealant, pressed firmly into position to compress tape, and fixed securely.
  - Excess tape on internal side: Carefully trimmed to a smooth chamfer.
  - Capping sealant: Applied to fill void between bead and glazing and finished to a smooth chamfer.

550 GLASS MIRRORS To Basins

- Mirror material: Float glass, silvered to give maximum reflection, free from tarnishing, discoloration, scratches and other defects visible in the designed viewing conditions.
  - Thickness: 6 mm .
  - Backing: Contractor's choice .
  - Edge treatment: Polished bevel .
- Background: Plastered masonry .
- Fixing method: Adhesive .
- Installation: Fixed accurately and securely without overtightening fasteners, to provide a flat surface giving a distortion free reflection.

M10 Cement based levelling/ wearing screeds

TYPES OF SCREED

140A PROPRIETARY POLYMER MODIFIED LEVELLING SCREEDS To form shower area
" Substrate: In situ concrete slab.
" Screed manufacturer: Ronacrete.
- Product reference: Ronafix.
" Screed construction: Fully bonded.
" Thickness:
- Nominal: 15 mm.
- Minimum: 6 mm.
- Maximum: 40 mm.
" Mix:
- Proportions (cement:sand): To BS 8204-3, Table 2. .
" Finish: Trowelled, as clause 75.
To receive: sheet flooring.

GENERALLY/PREPARATION

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

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

280 UNBONDED CONSTRUCTION
- Separation: Lay screed over a suitable sheet dpm or a separating layer.
  - Type: Polyethylene dpm, as section J40. .
- Installation of separating layer: Lay on clean substrate. Turn up for full depth of screed at abutments with walls, columns, etc. Lap 100 mm at joints.

BATCHING/MIXING

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

305 AGGREGATES
- Sand: To BS EN 13139.
  - Grading limits: In accordance with BS 8204-1, Table B1.
- Coarse aggregates for fine concrete levelling screeds:
  - Standard: To BS EN 12620.
  - Designation 4/10.
- Lightweight aggregates: To BS 8204-1, Annex A.

307 ADMIXTURES
- Standard: In accordance with BS 8204-1, Table 1.
- Calcium chloride: Do not use in admixtures.

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

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

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

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

LAYING

345 LEVEL OF SCREED SURFACES
- Permissible deviation: (allowing for thickness of coverings): ±5 mm from datum..

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

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

392 GENERAL REINFORCEMENT
- Steel fabric: To BS 4483, table 1.
  - Type: A142.
- Installation: In accordance with BS 8204-1.

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

FINISHING/CURING

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

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

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

M20 Plastered/rendered/roughcast coatings

25G GYPSUM PLASTER ON CEMENT GAUGED RENDER UNDERCOATS

- Background: Concrete blockwork. .
  - Preparation: To manufacturer's recommendations .
- Undercoats:
  - Sand: To BS 1199, type A.
  - Mix: 1:4-5 masonry cement:sand .
  - Thickness (excluding dubbing out): 10 mm .
- Final coat: Gypsum plaster to BS 1191-1, class B.
  - Manufacturer: British Gypsum .
    or equivalent.
    Product reference: Unspecified .
    or equivalent.
  - Thickness: 3 mm .
  - Finish: Smooth .

47G ONE COAT PROPRIETARY PLASTER TO EXISTING AREAS

- Background: Existing masonry .
  - Preparation: Apply bonding agentt .
- Plaster manufacturer: British Gypsum .
  or equivalent.
  - Product reference: Thistle Universal One Coat .
    or equivalent.
  - Thickness (excluding dubbing out): 13 mm .
  - Finish: Smooth .

60 CEMENTS FOR RENDER MORTAR

- Portland cement: To BS EN 197-1.
- Sulfate resisting cement: To BS 4027.
- Masonry cement: To BS 5224, class MC 12.5 (with air entraining agent).
- Certification for all cements: BSI Kitemark scheme.

62 ADMIXTURES FOR CEMENT GAUGED RENDER MORTARS

- Air entraining (plasticizing) admixtures: To BS 4887-1 and compatible with other mortar constituents.
- Other admixtures: Submit proposals.
- Prohibited admixtures: Calcium chloride and admixtures containing calcium chloride.

65 MIXING

- Render mortars (site prepared):
  - 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.
- Contamination: Prevent. Keep plant and banker boards clean.

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

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

76 REMOVING DEFECTIVE EXISTING PLASTER
- Plaster for removal: Loose, hollow, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.
- Stained plaster: Seek instructions.
- Removing plaster: Cut back to a square, sound edge.

78 REMOVING DEFECTIVE EXISTING RENDER
- Render for removal: Loose, hollow, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.
- Patches: Cut out rectangular areas with straight and square (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 FIXING PLASTERBOARD BACKINGS
- Additional framing supports:
  - Fixtures, fittings and service outlets: To suit fixings.
  - 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: 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.
  - External render: Fix mechanically.

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: Provide key for next coat by cross scratching (plaster coatings) and combing (render coatings). Do not penetrate undercoat.

99 RENDER FINAL COAT - PLAIN FLOATED FINISH
- Finish: An even, open texture free from laitance.

M30 Metal lathing/ anchored mesh reinforcement for plastered/ rendered coatings

215 METAL LATH
- Internal applications: Flat, corrugated and ribbed expanded lath to BS 1369-1 or BS EN 13658-1.
- External applications: Flat, corrugated and ribbed expanded lath to BS 1369-1 or BS EN 13658-2.
- Galvanized steel: To BS EN 10327 and BS EN 10143.
- Stainless steel: To BS EN 10088-1 and -2, number 1.4301 (name X5CrNi18-10).

285 FIXINGS
- Nails: 38 x 2 mm galvanized steel clout nails to BS 1202-1.
- Staples: 32 x 2 mm galvanized steel.

EXECUTION

395 FIXING METAL LATH
- Expanded metal lath to metal: 1.2 mm wire ties.
- Ribbed metal lath to metal: 1.6 mm wire ties, or doubled 1.2 mm wire ties.
- Welded mesh and paper lath to metal: 1.2 mm wire ties.
- Fixing to runners: 1.2 mm wire ties.
- Wire ties: Twist ends tightly together, cut off surplus and bend ends of wire away from face of coating.
- Fixing to timber: Select from clout nails or staples.

410 FIXING EXPANDED METAL LATH
- Requirement: Fixed securely to give a taut, firm base for plaster or render.
- Placement:
  - Orientation: Long way of mesh at right angles to supports.
  - Strands:
    Horizontal lath: Sloping in same direction.
    Vertical lath: Sloping downwards away from outer face.
- Laps:
  - Sides (minimum): 25 mm.
  - Ends (minimum): 50 mm at supports.
  - Angles and bends: Do not locate laps within 100 mm of angles or bends.
- Fixing:
  - Generally: 100 mm centres.
  - Sides and ends at supports: 1.2 mm wire ties.
    Centres (maximum): 150 mm.

460 FIXING METAL LATH ON SOLID SUBSTRATES
- Requirement: Fixed securely to give a taut, firm base for plaster or render.
  - Length and frequency of fasteners: Increase as necessary in weak areas.
- Lath fixing generally: 150 mm centres.

M40 Stone/ concrete/ quarry/ ceramic tiling/ mosaic

TYPES OF TILING/ MOSAIC

110 TILING TO Splashbacks
- Tiles: Ceramic wall tiles .
  - Manufacturer/ Supplier: Johnsons .
    Product reference: Prismatic .
  - Colour: Constrasting colour from standard range .
  - Finish: Glazed .
  - Size: 150 x 150 mm .
  - Thickness: 6mm .
- Background/ Base: Plaster/plasterboard .
  - Preparation: as clause 330 .
- Intermediate substrate: Not required .
- Bedding: Thin bed adhesive - as clause 651 .
  - Reinforcement: N/R .
  - Adhesive: Contractor's choice .
- Joint width: As spacer lugs .
- Grout: as clause 875 .
  - Type/ classification: CG1 .
- Movement joints: N/R .
- Accessories: top and side trims .

GENERALLY

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

PREPARATION

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

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

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

FIXING

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

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

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

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

MOVEMENT JOINTS/ GROUTING/ COMPLETION

855 CEMENTSAND GROUTING MIX
- Grout mix:
  - Cement: Portland cement to BS EN 197-1 type CEM I/42.5.
  - Sand:
    Joint widths of 6 mm or greater: To BS 1199, table 1, Type B.
    Joint widths of 3 - 6 mm: To BS 5385-5 table 2.
  - Proportions (cement:sand): 1:3.
  - Pigment: white.
- Mixing: Mix thoroughly. Use the minimum of clean water needed for workability.

875 GROUTING

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

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

20A SHEETING Vinyl Generally
- Base: Existing/new concrete screed.
  - Preparation: As clause 40/45.
- Fabricated underlay: N/a.
- Flooring roll: EN426.
  - Manufacturer: Refer to schedule of works/drawings.
    Product reference: Refer to schedule of works/drawing.
  - Recycled content: Manufacturer's Standard.
  - Width: 2000 mm.
  - Thickness: 2mm.
  - Colour/ pattern: To be confirmed from standard range.
- Adhesive (and primer if recommended by manufacturer): As recommended by manufacturer .
- Seam welding: Hot welding with complimentary coloured rod .

25 CARPETING Generally
- Base: Existing concrete screed.
  - Preparation: As clause 45.
- Fabricated underlay: N/r.
- Carpet underlay: N/r.
  - Manufacturer: -.
    Product reference: -.
  - Recycled content: -.
- Underlay adhesive (and primer if recommended by manufacturer): -.
- Carpet: Refer to schedule of works/drawings.
  - Manufacturer: Refer to schedule of works/drawings.
    Product reference: Refer to schedule of works/drawings.
  - Recycled content: Manufacturer's standard.
  - Width: Manufacturer's standard.
  - Colour/ pattern: TBA.
- Carpet adhesive (and primer if recommended by manufacturer): As recommended by manufacturer/supplier .

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.

60 SETTING OUT TILES
- Method: Set out from centre of area/ room so that wherever possible:
  - Tiles along opposite edges are of equal size.
  - Edge tiles are more than 50% of full tile width.

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.

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

30 PREPARATION GENERALLY

- Standard: To BS 6150, Section 4.
- Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Substrates: Sufficiently dry in depth to suit coating.
- Efflorescence salts, dirt, grease and oil: Remove.
- Surface irregularities: Abrade to a 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. Abrade to a smooth finish.
- Dust, particles and residues from abrasion: Remove.
- Doors, opening windows and other moving parts:
  - Ease, if necessary, before coating.
  - Prime resulting bare areas.

32 PREVIOUSLY COATED SURFACES GENERALLY

- Preparation standard: To BS 6150, Section 6.
- Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
- Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
- Alkali affected coatings: Completely remove.
- Contaminated surfaces: Give notice of:
  - Coatings suspected of containing lead.
  - Substrates suspected of containing asbestos.
  - Significant rot, corrosion or other degradation of substrates.
- Retained coatings:
  - Thoroughly clean.
  - Gloss coated surfaces: Abrade to provide a key.
- Partly removed coatings: Apply additional preparatory coats.
- Completely stripped surfaces: Prepare as for uncoated surfaces.

37 WOOD PREPARATION

- General: Abrade to a smooth, even finish with lightly rounded arrises.
- Degraded or weathered surface wood: Abrade to remove.
- 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: Abrade back to bare wood and reprime.

39 STEEL PREPARATION

- Corrosion and loose scale: Abrade 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: Abrade lightly.

61 COATING GENERALLY
- Application standard: To BS 6150, Section 5.
- 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.

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.

N13 Sanitary appliances and fittings

10 WC PANS AND FLUSHING ARRANGEMENTS

- Standard: To Defra WC suite performance specification or equivalent approved by the relevant water company.
- Type: Close coupled cistern.
- Pan: Twyford/Armitage Shanks contract quality- Vitreous china to BS EN 33 and BS EN 997, Class 2, white.
  - Seat: To BS 1254 and Kitemarked, colour to match pan.
  - Pan connector: To BS 5627, colour to match pan.
- Flushing arrangement: Twyford/Armitage Shanks contract quality- Vitreous china close coupled cistern to BS EN 997, Class 2, white.
- Accessories: Tundish overflow assembly.

10A DOCUMENT 'M' WC PACK (WITH CONTRASTING SEAT & RAILS)

· Twyford/Armitage Shanks Doc 'M' Super Pack consisting;
·WC bowl with horizontal outlet.
-Doc.M cistern, fittings and spatula lever.
-Avalon seat ring 25 mm and hinge, no cover.
-Hand rinse no overflow, no chainstay.
-Thermostatic mixer tap, TMV3 approved.
-Avalon support rail (five required).
-Avalon hinged support rail and toilet roll holder.
-Wall hangers (pair).
-Grid waste.
-Pan fixings.
-Cistern cover clips.

·Note; discard mixer tap, supply only single DDA lever tap as recommended by supplier.

30 WASH BASINS

- Type: Twyford/Armitage Shanks contract quality - Vitreous china to BS EN 14688, white.
- Taps: Peglar single pillar tap as supplied by WHB manufacturer.
  - Water supply temperature (maximum): Refer to Mechanical services section.
- Wastes: Chain and plug.
- Traps: DN 30 bottle trap, 75 mm seal.
- Accessories: None.

40 SHOWER UNITS

- Tray: Contract quality - Acrylic resin to BS EN 14527, Class 2, white.
- Shower fittings: Refer to Mechanical specifiication section.
  - Water supply temperature (maximum): Refer to Mechanical specifiication section.
- Wastes: Grated, top access.
- Traps: Refer to Mechanical specifiication sectiol.
- Enclosure: Hewi or simiar circular white nylon coated steel shower rail/fixings/hooks and nylon curtain.

68 SEALANT FOR POINTING
- Standard: To BS EN ISO 11600.
  - Class: F20 HM.
- Type: Silicone.
  - Manufacturer: Contractor's choice.
    Product reference: Contractor's choice.
- Colour: White.

70 INSTALLATION GENERALLY
- Assembly and fixing: Fix appliances securely to structure, without taking support from pipelines, level and plumb and so that surfaces designed to fall drain as intended.
- Jointing and bedding compounds: Recommended by manufacturers of appliances, accessories and pipes, to form watertight joints between appliances and backgrounds (except cisterns) and between appliances and discharge pipes.

75 CISTERNS
- Cistern operating components: Obtain from cistern manufacturer.
- Inlet and flushing valves: Match to pressure of water supply.
- Internal overflows: Into pan, to give visible warning of discharge.
- External overflows: Fix pipes to falls, and locate to give visible warning of discharge. Agree position.

81 SEALANT BEDDING AND POINTING
- Bedding: Bed sinks to top of worktops.
- Pointing: Joints between appliances splashbacks/walls/floors .

P10 Sundry insulation/ proofing work

5 EAVES ROOF VENTILATORS FOR EXISTING ROOFS
- Manufacturer: Glidevale.
  - Product reference: SV20000 & RV655.
- Eaves free air space (minimum): As recommended in BRE Report 262.

10 LOFT INSULATION
- Material: Rockwool.
- Manufacturer: Rockwool.
  - Product reference: Rockwool Thermal insulation (split) roll .
- Recycled content: Manufactuerer's standard.
- Depth/ Thickness: 100+200.
- Installation: To manufacturer's instructions .

60 VAPOUR CONTROL LAYER FIXED TO STUDS/ JOISTS/ FRAMING
- Material: Combined air barrier and vapour control layer: Vapour resistance of 250 MN.s/g, meeting the requirements of BS9250 .
- Manufacturer: Klober.
  - Product reference: Wallint KU0065 (Wallint® 50)+Butylon tape .
- Moisture content of timber at time of fixing (maximum): 20%.
- Installation requirements:
  - Setting out: Joints minimized.
  - Fixing: Staples at 250 mm centres maximum along all supports. Membrane not sagging.
  - Joints: At supports only, lapped 150 mm minimum.
  - Openings: Membrane fixed to reveals.
  - Joints and edges: Sealed with double sided tape.
  - Penetrations: Sealed.

P11 Foamed/ fibre/ bead cavity wall insulation

10 SURVEY OF EXISTING WALLS
- Timing: Before starting insulation work.
- Purpose: To confirm suitability for filling.
- Report: Submit, stating:
  - Form of construction, materials used.
  - General condition of walls.
  - Thickness of walls.
  - Width and condition of cavity.
  - Exposure to wind driven rain.
  - Nature and extent of remedial work and other work required to ensure suitability.
  - Any other information considered relevant.

20 REMEDIAL WORK
- Responsibility: Contractor.
- Work to be carried out: As identified by the survey.
- Approval: Obtain before starting insulation work.

25 SUITABILITY OF WALLS
- Timing: Before and during filling of cavities.
- Defects: Report immediately.

50 CAVITY FILL
- Material: Blown polystyrene beads.
  - Type: Currently certified as suitable for the purpose and exposure situation by the British Board of Agrément (BBA).
  - Manufacturer: Contractor's choice.
    Product reference: Contractor's choice.
- Recycled content: Submit proposals.
- Installer: Approved in accordance with the BBA Surveillance Scheme.

70 GAPS AND OPENINGS
- Gaps: Seal with tightly packed mineral wool to prevent loss of fill.
- Openings: Fit approved sleeve to keep openings permanently clear.
- Air bricks/ grilles of untrunked vents: Remove and seal openings into cavity.

75 INJECTION HOLES
- Arrangement: Form neatly to a regular pattern and to sizes recommended by cavity fill manufacturer.
- Before commencing filling of each wall: Form all holes in that wall.
- Precautions: Avoid damage to dpcs, cavity trays, flues, etc. Prevent debris falling into cavity.

80 MAKING GOOD
- Blockage: Remove from vents and refix or replace any air bricks.
- Injection holes: Fill, replacing existing materials where possible.
  - Finished appearance: Obtain approval of first few holes before completing the remainder.

85 FLUES WITH NO APPLIANCE

- Smoke test: Carry out if full inspection cannot be made.
  - Purpose: To ensure there is no leakage of gases from flue walls/ joints.
- Blockages: Remove.

90 FLUES WITH AN APPLIANCE FITTED

- Test: Before and after filling cavities. Give notice before testing.
  - Purpose: To ensure there is no leakage of gases from flue walls/ joints.
- Blockages: Remove and retest until performance is satisfactory.

95 DOCUMENTATION

- Certificates, records, guarantees and other documents: Submit on completion.

P20 Unframed isolated trims/ skirtings/ sundry items

35 MEDIUM DENSITY FIBREBOARD SKIRTING BOARDS

- Manufacturer: Contractor's choice.
  - Product reference: 19x119mm MDF.
- Standard: To BS EN 622-5.
  - Type: MDF.
  - Formaldehyde class: To BS EN 622-1, Class E1.
- Fire rating: Not applicable.
- Thickness: 19mm.
- Edges: Chamfered.
- Finish: Prepared and primed as M60 .
- Recycled content: 60% (minimum) to BS EN ISO 14021.
- Support/ Fixing: Fix to softwood grounds with lost head nails at 600 mm centres .

35A MEDIUM DENSITY FIBREBOARD WINDOW SILL BOARDS

- Manufacturer: Contractor's choice.
  - Product reference: 22x220mm MDF.
- Standard: To BS EN 622-5.
  - Type: MDF.
  - Formaldehyde class: To BS EN 622-1, Class E1.
- Fire rating: Not applicable.
- Thickness: 22mm.
- Edges: Edges half rounded.
- Finish: Prepared and primed as M60 .
- Recycled content: 60% (minimum) to BS EN ISO 14021.
- Support/ Fixing: Fix to softwood grounds with lost head nails at 600 mm centres .

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.

P31 Holes, chases, covers and supports for services

10 HOLES, RECESSES AND CHASES IN MASONRY

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

20 NOTCHES AND HOLES IN STRUCTURAL TIMBER

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

30 PIPE SLEEVES

- Material: Match pipeline.
- Sleeves: Extend through full thickness of wall or floor. Position accurately.
  - Clearance around service (maximum): 20 mm or diameter of service, whichever is the lesser.
  - Installation: Bed solid.

40 SEALING AROUND SERVICES

- Service: Refer to Services Engineers drawings & Specification .
- Location: Refer to Services Engineers drawings & Specification .
- Sealing material: Intumescent sealant .
- Method: Completely fill gaps with sealant and finish neatly .
- Requirements: Moisture vapour and airtight .

R11 Above ground foul drainage systems

115 ABOVE GROUND FOUL DRAINAGE SYSTEM
- Sanitary and floor drainage outlets: Sanitary fittings as section N13.
- Waste pipework: MUPVC or PVC-C.
- Discharge stack and branch pipework: PVC-U.
- Separate ventilating pipework: PVC-U .
- Accessories: Rodding eyes.
- Disposal: To below ground drainage as section R12.

SYSTEM PERFORMANCE

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

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

PRODUCTS

350 MUPVC OR PVC-C PIPEWORK FOR WASTES
- Material and standard:
  - MUPVC: To BS 5255 and Kitemark certified; or
  - PVC-C: To BS EN 1566-1, and Kitemark certified.
    Application area code: B.
    Opening dimensions of access fittings, design of swept fittings, stand off dimensions of pipe and fitting brackets and requirements for adaptors and plugs: To BS 4514.
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
- Nominal sizes: DN 50.
- Colour: White where exposed to vi.
- Brackets: Plastics pipe clips, colour to match pipes.
  - Fixings: Sherardized steel screws.
    Size: As recommended.
- Accessories: Access fittings.

365 PVC-U PIPEWORK - FOR DISCHARGE STACKS AND BRANCHES
- Standard: To BS EN 1329-1, Kitemark certified.
  - Weather resistance, connectors to WC pans, opening dimensions of access fittings, design of swept fittings, stand off dimensions of pipe and fitting brackets and requirements for adaptors and plugs: To BS 4514.
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
- Nominal size: DN 110.
- Colour: Grey.
- Brackets: Plastics pipe clips, colour to match pipes.
  - Fixings: Sherardized steel screws.
    Size: As recommended.
- Accessories: -.

375 AIR ADMITTANCE VALVES
- Standard: To BS EN 12380 or Agrément certified.
- Minimum air flow rate: To BS EN 12056-2.
- Manufacturer: Osma Wavin.
  - Product reference: OSMAVENT 110.

EXECUTION

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

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

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

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

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

695 DISCHARGE AND VENTILATING STACKS
- Terminations: Perforated cover or cage that does not restrict airflow.
  - Material: Plastics, as discharge stack.

COMPLETION

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

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

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

R12 Below ground drainage systems

GENERAL

110 BELOW GROUND DRAINAGE SYSTEMS -
- Surface water and rainwater drainage sources: Rainwater downpipes (nonsiphonic), as section R10.
- Foul drainage sources: Sanitary appliances, as section N13 and Discharge stack and branch pipes, as section R11.
- Land drainage sources: None .
- Pressure relief drainage sources: None .
- Pipes, bends and junctions: PVC-U - plain wall .
  - Accessories: Rodding points .
- Manholes, inspection chambers, traps, and separators: Inspection chambers - plastics .
  - Accessories: Manhole channels and branches - conventional .
- Disposal: To sewers and To soakaways, as section R17.
- Accessories - general: Access covers and frames Class B.

SYSTEM PERFORMANCE

211 DESIGN - BELOW GROUND DRAINAGE SYSTEMS
- Design: Complete the design of the below ground drainage system in accordance with BS EN 752-1, -2, -3 and -4, BS EN 1295-1 and BS EN 1610.
- Ground conditions: See SI Report.
- Performance criteria: " BS EN 752-1 to -7.
  " BS EN 1295-1.
  " BS EN 1610.
  " CPDA 'The specification, design and construction of drainage and sewerage systems using vitrified clay pipes'.
- .
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

PRODUCTS

311 CONNECTORS - WASTE PIPES TO PLASTICS DRAINAGE
- Material and standard: Plastics to BS 4660 and Kitemark certified.
- Type: DN 100 discharge stacks to DN 110 plastics, DN 100 rainwater pipes to DN 110 plastics and DN 50 waste pipes to DN 110 plastics.
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.

315A ONE PIECE GULLIES AND COVERS
- Manufacturer: OSMA.
  - Web: www.osma.co.uk.
  - Email: info@osma.co.uk.
  - Product reference: 4D800 OsmaDrain yard gully
- Cover and frame: 4D810 ductile iron hinged grating .
- Silt bucket: 4D815 galvanized mild steel silt bucket .

317 COMPOSITE GULLIES - BACK INLET
- Standards:
  - Cast iron: To BS 437 and Kitemark certified, or Agrément certified.
  - Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
  - Plastics: To BS 4660 and Kitemark certified, or Agrément certified.
  - Polypropylene: To BS EN 1852-1.
- Material: Plastics.
- Manufacturer: Contractor's choice.
- Traps:
  - Product reference: Contractor's choice.
- Raising pieces:
  - Product reference: Contractor's choice.
  - Heights: As required.
- Hoppers:
  - Product reference: Contractor's choice.
- Covers:
  - Product reference: Contractor's choice.
  - Type: Loose solid plate with cut-out for rainwater or waste pipes.
  - Material: Ductile cast iron.
  - Sizes: As required.
  - Loading grades to BS EN 124: B125.
- Silt buckets: Plastics.
  - Product reference: Contractor's choice.

329 PIPES, BENDS AND JUNCTIONS - SUPPLY
- Pipes and fittings: From same manufacturer for each pipeline.

346 PIPES, BENDS AND JUNCTIONS - PVC-U - PLAIN WALL FOUL & SURFACE WATER DRAINAGE
- Standard: BS EN 1401-1, class SN4, with flexible joints, Kitemark certified.
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
- Sizes: DN 110.
- Application area code: UD.

357 CONNECTORS - SADDLE
- Standards:
  - Cast iron: To BS 437 and Kitemark certified, or Agrément certified.
  - Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
  - Concrete: To BS 5911-6 and Kitemark certified, or Agrément certified.
  - Plastics: To BS 4660 and Kitemark certified, or Agrément certified.
- Material: Plastics.
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
- Sizes: As required.

371 RODDING POINTS -
- Standards:
  - Cast iron: To BS 437 and Kitemark certified, or Agrément certified.
  - Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
  - Concrete: To BS 5911-6 and Kitemark certified, or Agrément certified.
  - Plastics: To BS 4660 and Kitemark certified, or Agrément certified.
- Material: Plastics.
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
- Sizes: DN 110.

401 INSPECTION CHAMBERS - PLASTICS -
- Standard: To BS 7158 or BS EN 13598-1, or Agrément certified.
- Diameter: 450 mm.
- Manufacturer: Contractor's choice.
- Bases:
  - Product reference: Submit proposals.
- Shaft units:
  - Product reference: Submit proposals.
- Access covers and frames:
  - Product reference: Submit proposals.
  - Loading grades to BS EN 124: B125.

471 ACCESS COVERS AND FRAMES - FOUL MANHOLES
- Standard: To BS EN 124.
- Types: Single seal.
- Manufacturer: Contractor's choice.
  - Product reference: Submit proposals.
- Materials: Ductile cast iron.
- Finishes: Black bitumen painted.
- Sizes: As required.
- Loading grades to BS EN 124: B125.
- Edging trims: Not required.
- Accessories: -.

483 CONCRETE (GENERAL)
- Standards: To BS 8500-1, -2 and BS EN 206-1.
- Concrete: GEN1.

485 CONCRETE (STRUCTURAL)
- Standards: To BS 8500-1, -2 and BS EN 206-1.
- Concrete: GEN3.

496 GRANULAR MATERIAL
- Standard: To BS EN 12620.
  - Size: Dependent on location - see Execution clauses in this section, and in sections R16, R17 and R18, if used.

498 GRANULAR SUB-BASE MATERIAL
- Standard: To Highways Agency 'Specification for Highway Works', Type 1 Unbound mixtures for sub-base.

EXECUTION

610 STRIPPING OUT
- Extent of stripping out: Refer to drawings.
- Exposed ends of existing drainage to be abandoned: Seal with concrete (general).

611 EXISTING DRAINS
- Setting out: Before starting work, check invert levels and positions of existing drains, sewers, inspection chambers and manholes against drawings. Report discrepancies.
- Protection: Protect existing drains to be retained and maintain normal operation if in use.

613 EXCAVATED MATERIAL
- Turf, topsoil, hardcore, etc: Set aside for use in reinstatement.

616 SELECTED FILL FOR BACKFILLING
- Selected fill: As-dug material, free from vegetable matter, rubbish, frozen soil and material retained on a 40 mm sieve.
  - Compaction: By hand in 100 mm layers.

623 LOWER PART OF TRENCH - GENERAL
- Trench up to 300 mm above crown of pipe: Vertical sides, width as small as practicable.
  - Width (minimum): External diameter of pipe plus 300 mm.

631 TYPE OF SUBSOIL
- General: Where type of subsoil at level of crown of pipe differs from that stated for the type of bedding, surround or support, give notice.

635 FORMATION FOR BEDDINGS
- Timing: Excavate to formation immediately before laying beddings or pipes.
- Mud, rock projections, boulders and hard spots: Remove. Replace with consolidated bedding material.
- Local soft spots: Harden by tamping in bedding material.
- Inspection of excavated formations: Give notice.

663 CLASS P SUPPORT TO PIPES, BENDS AND JUNCTIONS – PVC-U –

- Type of subsoil: Sand, silty sand, clayey sand - loose .
- Granular material:
  - Pipe sizes DN 100 and DN 150: Size 4/10.
  - Pipe sizes DN 225 and DN 300: Size 4/10, 10/20 or 4/20.
- Bedding:
  - Material: Granular, compacted over full width of trench.
  - Thickness (minimum): 100 mm.
- Pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.
- Initial testing before placing support: Required .
- Support:
  - Material: Granular.
  - Depth: To slightly above crown of pipe.
  - Compaction: By hand.
- Backfilling:
  - Material and depth:
    Protective cushion of selected fill to 300 mm above crown of pipe; or
    Additional granular material, to 100 mm above crown of pipe.
  - Compaction: By hand in 100 mm layers.

680 CONCRETE SURROUND FOR PIPE RUNS NEAR FOUNDATIONS

- Class Z surround: Provide in locations where bottom of trench is lower than bottom of foundation and as follows (horizontal clear distance between nearest edges of foundations and pipe trenches):
  - Trenches less than 1 m from foundations: Top of concrete surround not lower than bottom of foundation.
  - Trenches more than 1 m from foundations: Top of concrete surround not lower than D mm below bottom of foundation, where D mm is horizontal distance of trench from foundation, less 150 mm.

683 LAYING PIPELINES

- Laying pipes: To true line and regular gradient on even bed for full length of barrel with sockets (if any) facing up the gradient.
- Ingress of debris: Seal exposed ends during construction.
- Timing: Minimize time between laying and testing.

685 JOINTING PIPELINES

- Connections: Durable, effective and free from leakage.
- Junctions, including to differing pipework systems: With adaptors intended for the purpose.
- Cut ends of pipes: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.
- Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
- Allowance for movement: Provide and maintain appropriate clearance at ends of spigots as fixing and jointing proceeds.
- Jointing material: Do not allow to project into bore of pipes and fittings.

689 PIPELINES PASSING THROUGH STRUCTURES

- Pipelines that must be cast in or fixed to structures (including manholes, catchpits and inspection chambers): Provide 600 mm long rocker pipes adjacent to the external face of the structure (or both faces where appropriate, e.g. walls to footings), with flexible joints at both ends.
  - Distance to rocker pipe from structure (maximum):150 mm.
- Provision for movement for pipelines that need not be cast in or fixed to structures (e.g. walls to footings):
  - Rocker pipes as specified above; or
  - Openings in the structures to give 50 mm minimum clearance around the pipeline. Closely fit a rigid sheet to each side of opening to prevent ingress of fill or vermin.

691 BENDS AT BASE OF SOIL STACKS

- Type: Large radius.
  - Radius to centreline of pipe (minimum): 200 mm.
- Height of invert of horizontal drain at base of stack below centreline of lowest branch pipe (minimum): 450 mm.
- Bedding: Do not impair flexibility of pipe couplings.
  - Material: Concrete (general).

693 DIRECT CONNECTION OF GROUND FLOOR WCS TO DRAINS

- Drop from crown of WC trap to invert of drain (maximum): 1.3 m.
- Horizontal distance from the drop to a ventilated drain (maximum): 6 m.

697 INSTALLING FLEXIBLE COUPLINGS

- Ends of pipes to be joined: Cut cleanly and square.
- Outer surfaces of pipes to be joined: Clean and smooth. Where necessary, e.g. on concrete or iron pipes, smooth out mould lines and/ or apply a cement grout over the sealing area.
- Clamping bands: Tighten carefully to make gastight and watertight seals.

705 INITIAL TESTING OF PIPELINES

- Before testing:
  - Cement mortar jointing: Leave 24 h.
  - Solvent welded pipelines: Leave 1 h.
- Method: Block open ends of pipelines to be tested and pressurise. Air test short lengths to BS EN 1610.

715 BACKFILLING TO PIPELINES

- Backfilling above top of surround or protective cushion: Material excavated from trench, compacted in layers 300 mm (maximum) thick.
- Heavy compactors: Do not use before there is 600 mm (total) of material over pipes.

728 LAYING WARNING MARKER TAPES

- Installation: During backfilling, lay continuously over pipelines.
- Depth: 300-400 mm.
  - Pipelines deeper than 2 m: Lay an additional tape 600 mm above the top of the pipeline.

734 INSTALLING ACCESS POINTS AND GULLIES

- Bedding:
  - Material: Concrete (general).
  - Thickness (minimum): 150 mm.
- Surround:
  - Material: Concrete (general).
  - Thickness (minimum): 150 mm.
  - Height: Full height .
- Backfilling: -.
  - Material: Granular material, size 4/10, to 100 mm above crown of pipes, then selected fill .
  - Compaction: By hand in 100 mm layers.
- Setting out relative to adjacent construction features: Square and tightly jointed.
- Permissible deviation in level of external covers and gratings: +0 to -6 mm.
- Raising pieces (clay and concrete units): Joint with 1:3 cement:sand mortar.
- Exposed openings: Fit purpose made temporary caps. Protect from site traffic.

736 INSTALLING RODDING POINTS

- Bedding and surround:
  - Material: Concrete (general).
  - Thickness (minimum): 100 mm. 150 mm
- Permissible deviation in level of external covers and gratings: +0 to -6 mm.

741 INSTALLING INSPECTION CHAMBERS - PLASTICS

- Bedding:
  - Material: Concrete (general).
  - Thickness (minimum): 150 mm.
- Surround:
  - Material: Concrete (general).
  - Thickness (minimum): 150 mm.
- Backfilling: Granular material, size 4/10, to 100 mm above crown of pipes, then selected fill .
  - Compaction: By hand in 100 mm layers.
- Concrete collar:
  - Material: Concrete (general).
  - Thickness (minimum): 300 mm.
  - Width (minimum): 300 mm.
- Seating: Brickwork as section F10.

757 LAYING CONVENTIONAL CHANNELS, BRANCHES AND BENCHING

- Main channel: Bed solid in 1:3 cement:sand mortar.
  - Branches: Connect to channel, preferably at half pipe level, so that discharge flows smoothly in direction of main flow.
  - Branches greater than nominal size 150 mm: Connect the branch soffit level with the main drain soffit.
  - Connecting angles more than 45° to direction of flow: Use three-quarter section channel bends.
- Benching:
  - Material: Concrete (general).
  - Profile: Rise vertically from top of main channel to a level not lower than soffit of outlet pipe, then slope upwards at 10% to walls.
  - Topping:
    Material: 1:3 Cement:sand mortar.
    Application: Before benching concrete has set, and with dense smooth uniform finish.

773 INSTALLING ACCESS COVERS AND FRAMES

- Seating: Brickwork as section F10.
- Bedding and haunching of frames: Continuously.
  - Material: Cement:sand.
  - Top of haunching: 30 mm below surrounding surfaces.
- Horizontal positioning of frames:
  - Centred over openings.
  - Square with joints in surrounding paving.
- Vertical positioning of frames:
  - Level; or
  - Marry in with levels of surrounding paving.
- Permissible deviation in level of external covers and frames: +0 to -6 mm.

776 EXPOSED OPENINGS IN INSPECTION CHAMBERS, ACCESS POINTS, FITTINGS AND EQUIPMENT

- General: Fit purpose made temporary caps. Protect from site traffic.

COMPLETION

901 REMOVAL OF DEBRIS AND CLEANING

- Preparation: Lift covers to manholes, inspection chambers and access points. Remove mortar droppings, debris and loose wrappings.
  - Timing: Before cleaning, final testing, CCTV inspection if specified, and immediately before handover.
- Cleaning: Thoroughly flush pipelines with water to remove silt and check for blockages. Rod pipelines between access points if there is any indication that they may be obstructed.
- Washings and detritus: Do not discharge into sewers or watercourses.
- Covers: Securely replace after cleaning and testing.

921 FINAL TESTING OF PRIVATE GRAVITY DRAINS AND SEWERS UP TO DN 300

- Before testing:
  - Cement mortar jointing: Leave 24 h.
  - Solvent welded pipelines: Leave 1 h.
- Standard: To Building Regulations.
- Method: Contractor's choice.

941 WATER TESTING OF MANHOLES AND INSPECTION CHAMBERS

- Timing: Before backfilling.
- Standard:
  - Exfiltration: To BS EN 1610.
    Method: Testing with water (method W).
  - Infiltration: No identifiable flow of water penetrating the chamber.

R17 Soakaway, septic tank and sewage treatment units

To be read with Preliminaries/ General conditions

PRODUCTS

305 BELOW GROUND DRAINAGE SYSTEMS - PRODUCTS
- Products generally: As section R12.

320 PRIVATE PACKAGED SEPTIC TANK UNITS
- Standard: To BS EN 12566-1 or Agrément certified.
- Manufacturer: Kingspan.
  - Product reference: Alpha.
- Access covers and frames: Yes.
  - Material: Ductile cast iron.
  - Finishes: Black bitumen painted.
  - Sizes: 600 x 600 mm.
  - Loading to BS EN 124: B125.
- Accessories: Additional equipment and fittings necessary to complete the installation, including safety covers and chains, access equipment, tools and the like .

370 POLYETHYLENE SHEET
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Thickness: 300 µm (1200 gauge).

380 CABLE DUCTS FOR SEWAGE TREATMENT UNITS
- Standard: To BS EN 61386-1 and -24.
- Material: Plastics.
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Sizes: DN 80.

EXECUTION

605 BELOW GROUND DRAINAGE SYSTEMS - EXECUTION
- Execution generally: As section R12.

630 INSTALLING SEPTIC TANK AND SEWAGE TREATMENT UNITS
- Base: Concrete.
  - Thickness: 150 mm.
- Surround:
  - Preparation: Temporarily fill tanks with water to prevent flotation.
  - Material: Concrete.
  - Height: As required by manufacturer to suit ground conditions .
- Backfill: Concrete.

647 LAYING CABLE DUCTS
- Drawlines: Thread through during laying.

650 BACKFILLING WITH AS-DUG MATERIAL
- Material: As excavated from the trench.
- Placing and compaction: Maximum 300 mm thick layers, up to finished ground level. Compact each layer before placing the next.
- Heavy compactors: Do not use before there is 600 mm of material over pipes.

COMPLETION

910 COMMISSIONING OF SEWAGE TREATMENT UNITS
- Testing: Test the operation of all pumps, valves, controls, sensors and the like to verify correct operation, and make good if necessary.
- Hand over at completion:
  - Manufacturers' operating and maintenance instructions.
  - Tools for operation, maintenance and cleaning, including keys for access covers.

Hamson Barron Smith

S90 Hot and cold water supply systems - domestic

GENERAL

SYSTEM PERFORMANCE

20 DESIGN OF INDIRECT 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.

21 COLD WATER SUPPLY

- Incoming mains water supply:
  - Location: Existing.
  - Site factors: None.
- Storage capacity: Not required.
- Drinking water outlets: Not required.
- Pumped supply: Not required.

22 INSTANTANEOUS HOT WATER SUPPLY

- Type: Electric.
- Water supply: Mains.

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

30 DEZINCIFICATION

- Fittings, pipelines, equipment located below ground or in concealed or inaccessible locations: Resistant to dezincification, e.g. gunmetal.

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: Compatible with pipe material .

55 INSULATION TO PIPELINES -
- Material: Contractor's choice.
- Function: Condensation control .
- Thermal conductivity: 0.035 W/m·K.
- Emissivity: High.
- Thickness (minimum): To BS 5422, Tables 19 and 20 and in accordance with 'TIMSA guidance for achieving compliance with Part L of the Building Regulations', Table 6.1.1.
- Fire performance: Class 1 spread of flame when tested to BS 476-7.

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

61 BALL VALVES To WC cistern
- Standard: WRAS approved.
- Material: Copper alloy.
- Operation: Allen key.

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.

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.

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.

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: General Office.
- Design and detailing: Complete for the general lighting system.
- Standard: To SLL 'Code for lighting'.
- Room: To New Office (Rear Extension).
  - Maintained average illuminance: 300 lux.
  - Controls: Wall switch only.
- Maintenance: Submit proposals for the maintenance/ relamping regime.

PRODUCTS

30 PRODUCTS GENERALLY
- Standard: To BS 7671.
- CE Marking: Required.

41 ELECTRICAL ACCESSORIES -
- Standards:
  - Generally: To BS 5733.
  - Switches: To BS EN 60669-1.
- Manufacturer: Contractor's choice .
  - Product reference: Submit proposals .
- Finish: White plastic/contrasting surrounds to light-switches .
- Mounting: Recessed.

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: As recommended by luminaire manufacturer .
  - Lamps of the same type and rating: Same manufacturer.

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: Throughout .
- 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: Recessed.
- Mounting heights (finished floor level to underside of equipment or accessory): to Part 'M' of current building regulations .

72 INSTALLING LUMINAIRES
- Location: As shown .
- 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.

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.

W53 Assistance call systems

GENERAL

SYSTEM PERFORMANCE

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

33 PULL CORDS
- Manufacturer: Contractor's choice.
  - Product reference: Contractor's choice.
- Mounting: Ceiling.
- Cord:
  - Material: Nylon.
  - Colour: Orange.
  - Pull handles: Two triangular pull handles.
  - Length: Sufficient so that maximum height above floor to the lowest pull handle is 200 mm and the maximum height to the highest pull handle is 1200 mm.
- Accessories: Integral red illuminated alarm indicator .

34 OVERDOOR INDICATORS
- Manufacturer: System manufacturer.
  - Product reference: System manufacturer.
- Wall mounting: Semi recessed.
- Material: White plastics.
- Visual indicator: Red.
- Integral buzzer: Required.

35 REMOTE INDICATORS
- Manufacturer: System manufacturer.
  - Product reference: System manufacturer.
- Mounting: Wall mounted .
- Zone indication: Engrave with zone description.
- Visual indication: Individual zone red indicators.
- Audible indication: Tone distinguishable from the fire alarm system.
  - Alarm mute facility: Required.

36 ALARM INDICATION WITHIN ACCESSIBLE ACCOMMODATION
- Manufacturer: System manufacturer.
  - Product reference: System manufacturer.
- Mounting: Within pull cord mounting .
- Visual indication: Red.
- Audible indication: Tone distinguishable from the fire alarm system.

37 RESET UNITS
- Manufacturer: System manufacturer.
  - Product reference: System manufacturer.
- Mounting: Wall mounted.
- Integral visual and audible alarm: Not required.

EXECUTION

62 INSTALLING ASSISTANCE CALL SYSTEMS GENERALLY
- Standard: In accordance with BS 7671.

64 INSTALLING PULL CORDS
- Location: Ceiling mounted.
- Position within room: Within reach of persons using the toilet .

67 INSTALLING RESET UNITS
- Location: Within reach of persons in a wheelchair .

COMPLETION

81 TESTING AND COMMISSIONING
- Standard: In accordance with BS 7671.
- Controls: Check operation.
- Alarm signalling: Check operation.
- Results: Submit.

82 DOCUMENTATION
- Operation and maintenance instructions: Submit.
- Record drawings: Submit.

Z20 Fixings/ adhesives

110 FIXINGS GENERALLY
- Integrity of supported components: Types, sizes and quantities of fasteners/ packings and spacings of fixings selected to retain supported components without distortion or loss of support.
- Components/ substrates/ fasteners of dissimilar metals: Fixed with isolating washers/ sleeves to avoid bimetallic corrosion.
- General usage: To recommendations of fastener manufacturers and/ or manufacturers of components, products or materials fixed and fixed to.
- Appearance: As approved samples.

130 FASTENER DURABILITY
- Fasteners in external construction:
  - Fasteners not directly exposed to weather: Of corrosion resistant material or with a corrosion resistant finish.
  - Fasteners directly exposed to weather: Of corrosion resistant material.

140 FIXINGS THROUGH FINISHES
- Penetration of fasteners/ plugs into substrate: To achieve a secure fixing.

150 PACKINGS
- Function: To take up tolerances and prevent distortion of materials/ components.
- Materials: Noncompressible, noncorrodible, rot proof.
- Locations: Not within zones to be filled with sealant.

160 CRAMP FIXINGS
- Cramp positions: Maximum 150 mm from each end of frame sections and at 600 mm maximum centres.
- Fasteners: Cramps fixed to frames with screws of same material as cramps.
- Cramp fixings in masonry work: Fully bedded in mortar.

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

250 POWDER ACTUATED FIXING SYSTEMS
- Powder actuated fixing tools: To BS 4078-2 and Kitemark certified. Operatives trained and certified as competent by tool manufacturer.
- Types of fastener, accessories and consumables: As recommended by tool manufacturer.
- Protective coating to exposed fasteners used externally or in other locations subject to dampness: Zinc rich primer to fastener heads.

510 ADHESIVES
- Storage/ Usage: In accordance with manufacturer's and statutory requirements.
- Surfaces: Clean. Regularity and texture adjusted to suit bonding and gap filling characteristics of adhesive.
- Finished adhesive joints: Fully bonded. Free of surplus adhesive.

Z22 Sealants

PRODUCTS

309 SEALANT FOR SANITARYWARE
'Adshead Ratcliffe' or equivalent approved 'Arbosil' 1081 white one-part acetoxy cure silicone sealant with fungicide to BS 5889 Type B.

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

EXECUTION

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

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

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