**SECTION 2 - BATHROOM REFURBISHMENTS**

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**All sections to be read with Preliminaries/ General conditions.**

**Where a product brand has been specified, this highlights a typical product used by New Forest District Council as part of previous similar contracts. An equivalent may be priced but must meet the same specification in every respect. Where an alternative is priced, this MUST be specified within your covering letter and product specification sheets included within the tender.**

**C10 Site survey / Validation**

**VALIDATION / PRE WORKS SURVEYS**

**VALIDATION SURVEY for all main bathrooms and separate WC's**

Each property should receive a **pre-inspection** to validate the works once the address list has been provided. (see also section on bathroom standard requirements). Only bathrooms that meet

the criteria for renewal will refurbished. For pricing purposes, all addresses should be priced and those that do not later consent to works will be omitted.

If the tenant declines the works they must sign a **decent homes omissions** form which will be provided to the successful contractor. Each form must be submitted to the Contract

Administrator on completion.

**VALIDATION criteria**

1. Where all the sanitary ware (bath, basin and WC) are estimated to be over 30 years old, the bathroom shall be refurbished as per the Specification and included within the contract.
2. Where a bathroom/shower room has been partly refurbished in recent years either by the tenant or NFDC, if under 20 years of age, that single element (ie, bath, basin, shower or WC) may remain. The remainder of the room should be refurbished in accordance with the specification.
3. Where only a partial refurbishment is required the exact level of works should be raised and confirmed with the Contract Administrator.
4. Where a full disabled adaptation/ wet room/shower room has been carried out in the past and is under 20 years old, that address shall be omitted.

**Disabled Adaptations:**

There will be no requirement for the contractor to carry out additional shower/ wet room option validation works, other than verifying the information provided.

The contractor will receive a brief design and notes as to the requirements in each case via NFDC’s Occupational Therapist.

**GENERAL DESIGN and INSTALLATION CRITERIA - Bathroom / Shower Rooms**

The essential standards in bathroom design shall be strictly as follows:

1. All bathrooms to include 560 mm pedestal basin, 450 mm close coupled WC (lever handle option) and 1700 mm bath with a mixer tap and shower. Where a 1700 mm bath cannot be accommodated, a 1500 mm bath may be fitted with a tiled end shelf.
2. Wet room showers shall be walk-in type as agreed with the Occupational Therapist and fitted in accordance with the manufacturer's recommendations.
3. Doors should open clear of any fitted sanitary ware (i.e. free of all obstruction).
4. Grab rail positions to shower rooms shall be located as directed by the Occupational Therapist (NFDC).
5. Waterproof blinds to be fitted within window reveal (shower options only).
6. Slip resistant flooring only to be used in accordance with this specification.
7. Baths to have two hand grips, in appropriate positions.
8. Wall tiling to be full height within curtilage of shower tray area, allowing for 2 tiles beyond tray width.
9. Wall tiling to bath sides in contact with wall is to be applied full height (i.e., to ceiling), on 3 sides.
10. Splash back tiling to basin shall be 2 courses above finished basin level and to full width of basin.
11. Re-fixing of tenant's cupboards/towel rails, etc, shall be dictated by tenant. The re-fixing of accessories shall not compromise or represent a health and safety hazard (i.e., opening cupboard doors).
12. Low temperature radiator to be fitted (replacing the exiting) where radiator is in close proximity (within 300mm) to WC pan position.
13. Tenant's electrical fittings that do not comply with current IEE Regulations shall be removed and not reinstated. Contract Administrator to be informed.
14. All taps to be ¼ turn lever type.
15. Toilet tissue holders shall be fitted 650 mm above finished floor level and towards the front of the WC pan.
16. Pedestal wash basins and newly provided handwash basins shall be fixed minimum 200mm from return walls. Basins should not overhang baths or WCs.
17. Boxing in that is then wall tiled or painted as appropriate, of pipework were necessary.

**ASBESTOS CONTAINING MATERIALS**

**Contractor to provide evidence that all operatives have up to date asbestos awareness certificates which shall be presented to the Contract Administrator at the pre contract**

**meeting.**

Removal and working with all non-licensed asbestos products (eg: asbestos cement, floor tiles) to be carried out in accordance with HSE Guidance Note E71.

DO NOT USE POWER TOOLS. NEVER SAND OR FILE ASBESTOS PRODUCTS.

Wear suitable canister type particulate/dust mask, approved for the type of asbestos, and protective clothing. A dust mask canister should be replaced after each use when working

with asbestos bearing materials. Disposable overalls shall be worn where there is a risk of clothing becoming contaminated by asbestos, and especially when work on cement

products need to be carried out in an enclosed area.

Spread a plastic sheet covered with dampened newspaper under the working area to collect any dust or debris.

Thoroughly wet the material with water (provided there is no contact with electricity).

Do not drill, cut or screw asbestos materials, unless there is no alternative, in which case, use only a hand drill with a sharp bit, a sharp knife or a coarse (6-14 tooth) handsaw.

Clean up using a well dampened rag. DO NOT USE A BRUSH. DO NOT USE A STANDARD DOMESTIC VACUUM CLEANER. A type H vacuum cleaner should be used

to ensure the working area is thoroughly cleared of any potential asbestos dust on floors.

Unbroken asbestos cement products that have been removed shall be double wrapped in a marked plastic bag or sheeting, inside a clear bag or sheeting ready for special disposal.

Small broken pieces, debris, contaminated newspaper and rags, disposable overalls, etc, shall be double wrapped in a marked bag inside a clear plastic bag. Take care not to

create dust and securely seal ready for special disposal.

Any damage to asbestos materials which are to remain in the premises must be repaired, either with duct sealing tape or PVC coating, polyfiller etc and clearly marked with sticky

tape or labels denoting the presence of asbestos.

All asbestos cement products however small that need disposal to a designated landfill site must be treated as special waste and transported in accordance with the Hazardous

Waste Regulations 2005.

Removal of asbestos containing products in connection with the works are deemed to be included within the pricing provided within Appendix C3.

**M20 Plastered/ Rendered/ Roughcast coatings**

**Note: All re-plastering works to wall and ceiling surfaces are deemed to be included, this may be when existing tiles are removed and the wall requires re-plastering**

**prior to new tiling. It would also include where the surfaces are not smooth enough to for decoration. No claim for plastering would be accepted.**

**TYPES OF COATING**

**Concrete Work**

All concrete work shall comply with BS8110: Part 1 - The Structural Use of Concrete.

The water is to be clean and free from harmful matter is such quantities as would adversely affect the properties of the concrete.

The cement shall be Ordinary Portland Cement to comply with BS EN 197-1: 2000 delivered in the manufacturer's original sealed bags and stored in a clean dry place on a

boarded platform to avoid deterioration. Only one type of cement to be used in any one mix. Cement which has commenced to set shall not be used or re-gauged.

The fine aggregate shall comply to BS EN 12620 Aggregates for Concrete and shall consist of well graded natural sand or mixed sand.

The coarse aggregate shall comply to BS EN 12620 and shall consist of single sized natural gravel, crushed gravel or crushed stone.

The all-in aggregate shall comply to BS EN 12620 and shall consist of aggregate containing a proportion of material of all sizes graded from the 20 mm nominal maximum

sizes specified down to 5 mm.

Concrete to be composed of cement to BS EN 197-1: 2000 and fine and coarse aggregate conforming to BS EN 12620: 2002 and the mix shall comply with the following

recommendations; in proportions of 50 kg of cement to not more than 0.1 m3 of fine aggregate and 0.2 m3 of course aggregate. The following mixes will be suitable for ground

bearing floor slabs; site standard mix grade ST22 concrete; or Ready Mix designated mix Gen 1: both in accordance with NHBC regulations Appendix 2.1B and BS 8500.

The concrete shall be mixed on site or poured from a ready mix concrete lorry as required.

Ready mixed concrete shall comply with BS 8500 obtained from a depot of the British Ready Mixed Concrete Association. The concrete shall be delivered in truck-type concrete

mixers and the temperature of the delivered concrete shall not be less than 7 degrees C in cold weather and not exceed 30 degrees C in hot weather.

Where mixing is done by hand or in a batch mixer on site, materials are to be measured in gauge boxes on a platform. The platform, boxes, mixer and tools must be kept clean and

free from partially set cement.

The proportions referred to are for dry aggregate and allowance shall be made for the moist cement. The amount of mixing water shall be sufficient to give a good workable mix

but in no case shall this slump exceed 50 mm. The mixing shall be carried out in an approved mechanical batch mixer, mixing shall continue until there is a uniform distribution

of materials and the mass is uniform in colour and consistency. All concrete shall be transported and placed as rapidly as possible after mixing and in all cases within 30

minutes to prevent segregation and a loss of ingredients.

Take precautions to prevent damage due to unfavourable weather of any description and take particular precautions in respect of cold and freezing conditions.

No concrete to be mixed or placed when the temperature is below 4oc and the Contractor shall prevent damage by frost and shall make good any frost damage entirely at his own

expense.

Admixtures shall not be used to assist setting or for any reason without the prior approval of the Contract Administrator.

No concrete shall be placed after it has developed its initial set. Concrete shall not be dropped from a height greater than 1.0 metre.

Concrete shall be well compacted until it forms a solid mass free from voids, thoroughly worked around any reinforcement and embedded fixtures and all corners of formwork.

Exposed surfaces shall be protected from premature drying and rain.

The structure must be monitored by the Structural Engineer for signs of movement in roof and floors as the works proceed.

**BACKINGS/ BEADS/ JOINTS**

605 GYPSUM PLASTERBOARD BACKINGS

• Type: To BS EN 520 -.

* Core density (minimum): 650 kg/m³.

• Exposed surface and edge profiles: Suitable to receive specified plaster finish.

607 PROPRIETARY GYPSUM PLASTERBOARD BACKINGS

• Manufacturer: Contractor's choice.

- Product reference: Contractor's choice.

• Exposed surface and edge profiles: Suitable to receive specified plaster finish.

610 FIXING PLASTERBOARD BACKINGS TO TIMBER BACKGROUNDS

• Fixings, accessories and installation methods: As recommended by board manufacturer.

• Fixing: At the following centres (maximum):

- Nails: 150 mm.

- Screws to partitions/ walls: 300 mm. Reduce to 200 mm at external angles.

- Screws to ceilings: 230 mm.

• Position of nails/ screws from edges of boards (minimum):

- Bound edges: 10 mm.

- Cut/ unbound edges: 13 mm.

• Position of nails/ screws from edges of supports (minimum): 6 mm.

• Nail/ screw heads: Set below surface. Do not break paper or gypsum core.

611 FIXING PLASTERBOARD BACKINGS to masonry

• Manufacturer: Contractor's choice.

- Product reference: Contractor's choice.

• Accessories, materials and installation methods: As recommended by the plasterboard manufacturer.

612 JOINTS IN PLASTERBOARD BACKINGS

• Ceilings:

- Bound edges: At right angles to supports and with ends staggered in adjacent rows.

- Two layer boarding: Stagger joints between layers.

• Partitions/ walls:

- Vertical joints: Centre on studs. Stagger joints on opposite sides of studs.

Two layer boarding: Stagger joints between layers.

- Horizontal joints:

Two layer boarding: Stagger joints between layers by at least 600 mm. Support edges of outer layer.

• Joint widths (maximum): 3 mm.

630 BEADS/ STOPS FOR INTERNAL USE

• Material: Galvanized steel to BS 13658-1.

640 BEADS/ STOPS GENERALLY

• Location: External angles and stop ends, except where specified otherwise.

• Corners: Neat mitres at return angles.

• Fixing: Secure, using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.

- Beads/ stops for external render: Fix mechanically.

• Finishing: After coatings have been applied remove surplus material, while still wet, from surfaces of beads/ stops exposed to view.

659 PLASTERBOARD JOINTS

• Joints and angles (except where coincident with metal beads): Reinforce with continuous lengths of jointing tape.

**MOULDINGS/ DECORATIVE PLASTERWORK**

**INTERNAL PLASTERING**

710 APPLICATION GENERALLY

• Application of coatings: Firmly and in one continuous operation between angles and joints. Achieve good adhesion.

• Appearance of finished surfaces: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.

- Accuracy: Finish to a true plane, to correct line and level, with angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.

• Drying out: Prevent excessively rapid or localised drying out.

715 FLATNESS/ SURFACE REGULARITY

• Sudden irregularities: Not permitted.

• Deviation of plaster surface: Measure from underside of a straight edge placed anywhere on surface.

- Permissible deviation (maximum) for plaster not less than 13 mm thick: 3 mm in any consecutive length of 1800 mm.

720 DUBBING OUT

• General: Correct substrate inaccuracies.

• New smooth, dense concrete and similar surfaces: Dubbing out prohibited unless total plaster thickness is within range recommended by plaster manufacturer.

• Thickness of any one coat (maximum): 10 mm.

• Mix: As undercoat.

• Application: Achieve firm bond. Allow each coat to set sufficiently before the next is applied. Cross scratch surface of each coat.

725 UNDERCOATS GENERALLY

• General: Rule to an even surface. Cross scratch to provide a key for the next coat.

• Undercoats on metal lathing: Work well into interstices to obtain maximum key.

• Undercoats gauged with Portland cement: Do not apply next coat until drying shrinkage is substantially complete.

777 SMOOTH FINISH

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

778 WOOD FLOAT FINISH

• Appearance: An even overall texture. Finish with a dry wood float as soon as wet sheen has disappeared.

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

**TYPES OF COVERING**

155A PVC SHEET FLOORING – BATHROOMS

• Location: Bathrooms.

• Base: Replace with 6mm marine ply (or suitable equivalent) to suspended timber floors and to existing screed to solid floors.

* Preparation: Remove existing vinyl sheeting.

• Fabricated underlay: Marine grade Plywood (or suitable equivalent)

• Flooring roll: PVC to BS EN 13553.

- Manufacturer: **Polyflor Ltd**.

Product reference: **Polysafe Mosaic PUR**.

- Identity code: N/A.

- BS EN 685 class: N/A.

- Slip potential:

Slip resistance value (SRV) (minimum)/ Pendulum test value (PTV) (minimum) to BS 7976: Not applicable.

Surface roughness (Rz) (minimum) to BS 1134: Not applicable.

- Recycled content: None permitted.

- Width: 2000 mm.

- Thickness: Not applicable.

**Note:**  **Tenants are to be offered a choice of two floor covering colour options for standard bathrooms.**

- Colour/ pattern: **Grey Fusion 4105 or Akoya 4125 – TENANT’S CHOICE.**

• Adhesive (and primer if recommended by manufacturer): As clause .

• Seam welding: Hot welding with complimentary coloured rod.

• Accessories: PVC skirtings as clause .

• Finishing: Where skirtings abut tiled walls the “Z trim” clip must cover the skirting by at least 20mm so as the water runs to the flooring.

• Other requirements: The vinyl must be laid prior to the fixing of the basin pedestal and toilet.

155B PVC SHEET FLOORING - WET ROOMS (SHOWER ROOMS)

• Location: Shower/wet rooms.

• Base: Replace with marine ply to suspended timber floors and to existing screed to solid floors.

- Preparation: Remove existing vinyl sheeting.

• Fabricated underlay: 6mm Marine grade Plywood.

• Flooring roll: PVC to BS EN 13553.

- Manufacturer: **Polyflor Ltd**.

Product reference: **Polysafe Hydro Evolve Safety Floor - 4256 - Blue Nile**.

- Identity code: N/A.

- BS EN 685 class: N/A.

- Slip potential:

Slip resistance value (SRV) (minimum)/ Pendulum test value (PTV) (minimum) to BS 7976: Not applicable.

Surface roughness (Rz) (minimum) to BS 1134: Not applicable.

- Recycled content: None permitted.

- Width: 2000 mm.

- Thickness: Not applicable.

- Colour/ pattern: As colour.

• Adhesive (and primer if recommended by manufacturer): As clause .

• Seam welding: Hot welding with complimentary coloured rod.

• Accessories: PVC skirtings as clause .

• Finishing: Where skirtings abut tiled walls the “Z trim” clip must cover the skirting by at least 20mm so as the water runs to the flooring.

• Other requirements: The vinyl must be laid prior to the fixing of the basin pedestal and toilet.

**GENERAL REQUIREMENTS**

210 WORKMANSHIP GENERALLY

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

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

Where the flooring abuts the door there must be an aluminium threshold that is securely screwed down.

330 COMMENCEMENT

• Required condition of works prior to laying materials:

- Building is weathertight and well dried out.

- Wet trades have finished work.

- Paintwork is finished and dry.

- Conflicting overhead work is complete.

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

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

340 CONDITIONING

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

on a supporting surface.

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

than 10°C immediately prior to laying.

350 ENVIRONMENT

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

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

**PREPARING BASES**

410 NEW BASES

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

420 EXISTING BASES

• Notification: Before commencing work, confirm that existing bases will, after preparation, be suitable to receive coverings.

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

430 NEW WET LAID BASES

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

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

Annexe A.

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

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

460 SMOOTHING/ LEVELLING UNDERLAYMENT COMPOUND

• Type: Latex cement.

• Manufacturer: Contractor's choice.

- Product reference: Contractor's choice.

460A SMOOTHING/ LEVELLING UNDERLAYMENT COMPOUND

• Type: Latex cement.

• Manufacturer: Chemical Building Products Ltd, Warple Works, Cleveland Road, Hemel Hempstead, Herts or other approved.

* Product reference: Screedex.

Floor screeds are to be composed of one part Portland Cement to four parts of sand, by volume, mixed with 'Screedex' screed plasticising and hardening additives (as manufactured by

Chemical Building Products Ltd, Warple Works, Cleveland Road, Hemel Hempstead, Herts) or other approved at the rate of 1 litre 'Screedex' per 50 kg of cement inclusive of the moisture

content of the sand.

Sub-bases and backgrounds are to be brushed free of all dust, well wetted and coated with cement slurry before applying the screeds. Beds are to be laid in alternate bays not exceeding 3.50 m

in any direction and the surface finished off in a manner to receive the appropriate finish. Any new areas of screed to be well tamped, levelled and consolidated prior to receiving floor finishes.

The contractor shall also check all existing screed and hack up and relay any loose or hollow areas. Latex or other treatments applied in patching or levelling old screeds or floor shall be deemed

to be included in the relevant rate for renewing tiling, etc, thereon.

470 BASES FROM WHICH EXISTING FLOOR COVERINGS HAVE BEEN REMOVED

• Substrate: Clear of covering and as much adhesive as possible. Skim with smoothing underlayment compound to give smooth, even surface.

480 EXISTING FLOOR COVERINGS TO BE OVERLAID

• Substrate: Make good by local re-sticking and patching or filling with smoothing underlayment compound to give smooth, even surface.

520 TIMBER BOARDING/ STRIP FLOORING

• Substrate: Boards/ strips securely fixed and acceptably level with no protruding fasteners. Plane, sand or apply smoothing underlayment compound to give a smooth, even surface.

560 PLYWOOD UNDERLAY

• Standard: An approved national standard.

• Bonding quality: To BS EN 314-2 class 1.

• Appearance: To BS EN 635 class I.

• Finish: Sanded.

• Thickness: 6 mm.

• Sheet size: 1200 x 1200 mm.

• Substrate: Existing floor boards securely fixed and acceptably level with no gross irregularities or protruding fasteners.

• Laying sheets: Stagger cross joints such that no joint within base and underlay is coincident and with a 0.5-1 mm gap between sheets.

• Fasteners: 25 mm ringed shank or twisted shank nails or divergent staples.

- Spacing: Commencing at centre of one side of each sheet, at 150 mm grid centres over area of each sheet and at 100 mm centres

along perimeter, set in 12 mm from edge.

- Placement: Driven with heads set flush with surface, and not projecting through underside of base. Not deformed.

**LAYING COVERINGS**

610 SETTING OUT TILES

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

- Tiles along opposite edges are of equal size.

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

640 ADHESIVE FIXING GENERALLY

• Adhesive type: As specified, as recommended by covering/ underlay manufacturer or as approved.

• Primer: Type and usage as recommended by adhesive manufacturer.

• Application: As necessary to achieve good bond.

• Finished surface: Free from trowel ridges, high spots caused by particles on the substrate, and other irregularities.

720 DOORWAYS

• Joint location: On centre line of door leaf. An appropriate metal threshold is to be securely fixed to the floor with steel screws.

**COMPLETION**

820 FINISHINGLINOLEUM FLOORING

• Cleaning operations:

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

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

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

880 WASTE

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

**M60 Painting/ clear finishing**

**Note: All preparation works and making good to wall and ceiling surfaces (including patch repairs to artex, removal of polystyrene tiles and other finishes, including excess wall tiles) are deemed to be included within your pricing. No variations reflecting additional works will be permitted. No variations will be permitted for additional coats of paint to achieve the desired finish. An allowance for this element must be included within your pricing.**

**COATING SYSTEMS**

130 GLOSS PAINT TO INTERNAL EXPOSED SOFTWOOD SURFACES

• Manufacturer: **Dulux Trade.**

- Product reference: High Gloss.

• Surfaces: Previously decorated.

- Preparation: Degrease and abrade to provide key.

• Initial coats: As recommended by manufacturer.

- Number of coats: 1.

• Undercoats: As recommended by manufacturer.

- Number of coats: 1.

• Finishing coats: Full gloss.

Number of coats: 1.

130A GLOSS PAINT

• Manufacturer: Dulux Trade, brand of ICI Paints/AkzoNobel.

- Web: www.duluxtrade.co.uk.

- Product reference: High Gloss

• Colour: White

150 EGGSHELL/ SATIN PAINT **TO INTERNAL PLASTERED WALL SURFACES**

**•**  Manufacturer: **Dulux Trade.**

- Product reference: **Diamond Eggshell.**

• Surfaces: Uncoated.

- Preparation: Degrease and abrade to provide key and Remove existing gloss paint .

• Initial coats: As recommended by manufacturer.

- Number of coats: 1.

• Undercoats: As recommended by manufacturer.

- Number of coats: 1.

• Finishing coats: 1.

**• Colour: White or Magnolia - depending on tenant choice.**

150A WATER BASED PAINT

• Manufacturer: Dulux Trade, brand of ICI Paints/AkzoNobel.

- Web: www.duluxtrade.co.uk.

- Product reference: Diamond Eggshell Light and Space.

**• Colour: White or Magnolia - depending on tenant choice.**

155 WALL TILING

Wall tiling to be 150 x 150 mm N&C Nicobond Plain White tiles as manufactured by:

**N&C Nicobond:**

**Unit 4 Waterloo Industrial Estate**

**Flanders Road**

**Hedge End**

**Southampton**

**SO30 2QT**

**Tel: 01489 779700**

Tiles to be laid with straight joints and fixed with an approved adhesive, to BS 5385-1: 1995, suitable for the particular background and grouted with an approved bacteria-

resisting grouts to BS 5385 Part 1:14: (Walls), colour to be white. Adhesive beds should be allowed to dry out for a minimum of 24 hours before grouting. All tiles to be true in

shape and free from blemishes, fixed strictly in accordance with the manufacturer's instructions and cleaned down after grouting. There are to be no cut tiles in corner locations

and when a cut is required it is to be a minimum of 75mm, there is also to be one tile extending the width of the bath at both ends.

Where tiles or boxing is fitted over a stop cock, access panels **must be** fitted with cupped and capped steel screws for quick access.

**GENERAL**

215 HANDLING AND STORAGE

• Coating materials: Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number.

• Materials from more than one batch: Store separately.

240 SURFACES NOT TO BE COATED

Radiator valves and stop valves.

280 PROTECTION

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

**PREPARATION**

400 PREPARATION GENERALLY

• Standard: In accordance with BS 6150.

• Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and

obtain approval before commencing work.

• Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.

• Substrates: Sufficiently dry in depth to suit coating.

• Efflorescence salts: Remove.

• Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.

• Surface irregularities: Remove.

• Joints, cracks, holes and other depressions: Fill flush with surface, provide smooth finish.

• Dust, particles and residues from preparation: Remove and dispose of safely.

• Water based stoppers and fillers:

- Apply before priming unless recommended otherwise by manufacturer.

- If applied after priming: Patch prime.

• Oil based stoppers and fillers: Apply after priming.

• Doors, opening windows and other moving parts:

- Ease, if necessary, before coating.

- Prime resulting bare areas.

420 FIXTURES AND FITTINGS

• Removal: Before commencing work remove: Tenant's surface mounted fixtures .

• Replacement: Refurbishment as necessary, refit when coating is dry.

440 PREVIOUSLY COATED SURFACES GENERALLY

• Preparation: In accordance with BS 6150, clause 11.5.

• Contaminated or hazardous surfaces: Give notice of:

- Coatings suspected of containing lead.

- Substrates suspected of containing asbestos or other hazardous materials.

• Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before

commencing work.

• Significant rot, corrosion or other degradation of substrates.

• Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.

• Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.

• Alkali affected coatings: Completely remove.

• Retained coatings:

- Thoroughly clean to remove dirt, grease and contaminants.

- Gloss coated surfaces: Provide key.

• Partly removed coatings:

- Additional preparatory coats: Apply to restore original coating thicknesses.

- Junctions: Provide flush surface.

• Completely stripped surfaces: Prepare as for uncoated surfaces.

456 PREVIOUSLY COATED SURFACES - BURNING OFF

• Risk assessment and method statement: Prepare and obtain approval before commencing work.

• Adjacent areas: Protect from excessive heat and falling scrapings.

• Exposed resinous areas and knots: Apply two coats of knotting.

• Removed coatings: Dispose of safely.

461 PREVIOUSLY COATED WOOD

• Degraded or weathered surface wood: Take back to provide suitable substrate.

• Degraded substrate wood: Repair with sound material of same species.

• Exposed resinous areas and knots: Apply two coats of knotting.

471 PREPRIMED WOOD

• Areas of defective primer: Take back to bare timber.

481 UNCOATED WOOD

• General: Provide smooth, even finish with arrises and moulding edges lightly rounded or eased.

• Heads of fasteners: Countersink sufficient to hold stoppers/fillers.

• Resinous areas and knots: Apply two coats of knotting.

580 UNCOATED PLASTER

• Nibs, trowel marks and plaster splashes: Scrape off.

• Over trowelled 'polished' areas: Key lightly.

601 UNCOATED PLASTERBOARD - TO RECEIVE TEXTURED COATING

• Joints: Fill, tape and feather out with materials recommended by textured coating manufacturer.

611 WALL COVERINGS

• Retained wall coverings: Check that they are in good condition and well adhered to substrate.

• Previously covered walls: Wash down to remove paper residues, adhesive and size.

622 ORGANIC GROWTHS

• Dead and loose growths and infected coatings: Scrape off and remove from site

• Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.

• Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.

**APPLICATION**

711 COATING GENERALLY

• Application standard: In accordance with BS 6150, clause 9.

• Conditions: Maintain suitable temperature, humidity and air quality during application and drying.

• Surfaces: Clean and dry at time of application.

• Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.

• Overpainting: Do not paint over intumescent strips or silicone mastics.

• Priming coats:

- Thickness: To suit surface porosity.

- Application: As soon as possible on same day as preparation is completed.

• Finish:

- Even, smooth and of uniform colour.

- Free from brush marks, sags, runs and other defects.

- Cut in neatly.

• Doors, opening windows and other moving parts: Ease before coating and between coats.

**N13 Sanitary appliances and fittings**

**Note:**

1. **The reversal of the bath orientation (i.e. alterations to the end to which the taps are situated) is deemed to be included within your pricing.**
2. **The removal and re-fixing of tenant’s own existing shower units is deemed to be included within your pricing.**

**PRODUCTS**

300 WCS AND CISTERNS to bathrooms and separate WC's/cloakrooms

• Type: Low Level WC.

• **Pan**:

- Standards: To BS EN 33 and BS EN 997.

- Manufacturer: **Armitage Shanks**.

Product reference: **Sandringham 21**.

- Material: Vitreous china, white.

• Seat and cover:

- Standard: To BS 1254.

- Manufacturer: As Pan.

Product reference: Contractor's choice.

- Material: Plastics.

- Finish/ Colour: White.

• Pan connector:

- Standard: To BS 5627.

- Manufacturer: Armitage Shanks.

Product reference: Submit proposals.

- Colour: To match pan.

• **Cistern** :

- Standard: Not applicable.

- Manufacturer: **Armitage Shanks**.

Product reference: **Sandringham 21 Dual Flush**.

- Material: Vitreous china.

- Finish/ Colour: To match pan.

• Flushing arrangement: Plastics diaphragm type float operated valve and siphon, to BS

1212-3 and float to BS 2456.

- Manufacturer: Armitage Shanks.

Product reference: Contractor's choice.

- Operating control: Lever handle, chrome plated.

- Water supply connection: Bottom.

- Flush volume: 6L with 4L reduced flush.

• Flush pipe: Exposed.

- Manufacturer: As Pan.

Product reference: Armitage Shanks.

- Material: Plastics, white.

• Accessories:

- Cistern support brackets;

- Concealed installation frame; and

- Tundish overflow assembly.

335 WASH BASINS and PEDESTAL

• Manufacturer: **Armitage Shanks**.

- Product reference: **Sandringham 21**.

• Size: 550mm by 460mm.

• Material: Vitreous china, white.

• Tap/ Chain stay/ Overflow holes: One tap hole and Overflow hole.

• Water supply fittings: Bristan Frenzy Basin Mixer taps.

- Water supply temperature (maximum): 43°C.

- Flow rate (maximum): 5 L/ min. at 3 bar.

- Manufacturer: Bristan 1/4 turn.

Product reference: Ref: FRZ BAS C.

- Operation: Lever handle.

• Wastes: Clicker waste.

- Standards: To BS EN 274-1, -2 and -3.

- Manufacturer: Contractor’s choice.

Product reference: Contractor’s choice.

- Size: DN 30.

- Material: Plastics, self-colour.

- Tail: Slotted.

• Traps: Tubular, P type.

- Standards: To BS EN 274-1, -2 and -3.

- Manufacturer: Contractor’s choice.

Product reference: Contractor’s choice.

- Size: DN 40.

- Material: Plastics, self-colour.

- Depth of seal (minimum): 75 mm.

**Note:**

1. **Pipework within each room to be cut back to bathroom perimeter walls and completely replaced within the bathroom or separate WC.**

**2. An access panel to concealed pipework is to be provided and is deemed to be included within your pricing.**

345 WASH BASINS – cloakroom/WC’S (ground floor)

• Hand wash basin to be provided to ground floor WC’s/cloakrooms.

355 BATHS

• Standard: BS EN 198.

• Manufacturer: Armitage Shanks

-Product reference**: Armitage Shanks** **Sandringham 21**

• Size: 1700mm by 700mm anti slip with twin handgrips, or where this size will not fit available space

- the Imperial 1500mm by 700mm anti slip with twin handgrips (or equivalent approved).

• Volume to overflow (maximum): Manufacturer's standard.

• Material: Carronite.

• Tap/ Chain stay/ Overflow holes:

- Two tap holes;

- Chain stay hole; and

- Overflow hole. )

• Water supply fittings:

* Tap; Bristan Frenzy Mixer Tap

Product reference; FRZ BF C

**Where water pressure allows for over bath mixer shower:**

**Bristan Frenzy bath shower mixer tap with ¼ turn taps and shower set, complete with 1300mm shower hose and shower head, this is to be attached to an adjustable bracket on a 600mm vertical rising rail (ref B9420AA) so as the shower head height can be adjusted. This vertical rail is to be securely screwed at the top and bottom to the wall as the manufacturer’s instructions.**

- Water supply temperature (maximum): 43°C.

- Flow rate (maximum): 6 L/ min. at 3 bar.

- Manufacturer: Bristan.

Product reference: FRZ BSM C.

• Wastes: Chain and plug.

- Standards: To BS EN 274-1, -2 and -3.

- Manufacturer: Contractor's choice.

Product reference: Contractor's choice.

- Size: DN 40.

- Material: Plastics, self-colour.

- Tail: Slotted.

• Traps: Tubular, P type.

- Standards: To BS EN 274-1, -2 and -3.

- Manufacturer: As Baths.

Product reference: Contractor's choice.

- Size: DN 40.

- Material: Plastics, self-colour.

- Depth of seal (minimum): 50 mm.

• Accessories: Handgrips and shower rail the full length of the bath with each end screwed to the walls and a shower curtain.

**BATH PANELS**

These are to be 9mm white MDF boards securely screwed to a bath framework, the screws are to be cupped and have white capping.

**SHOWER RAIL & CURTAIN**

The rail is to be a curved chrome telescopic secured by two brackets, Croydex reference AD108441, the curtain is to be a Croydex

1800mm x 1800mm, white reference number AE100022, attached with 12 white hooks, Croydex reference AK142122.

**GENERAL**

Note : Where baths require turning around 180 degrees, this will be deemed to be included within the pricing provided within Appendix C3.

357A SHOWER ROOMS - SANITARY WARE

**Sanitary Appliances – Shower Rooms**

Where the NFDC Occupational Therapist has carried out an assessment and stipulated that a tenant/resident has specific need for a shower or other particular requirement, the

following sanitary appliances/equipment may either in part or as a whole package be specified.

The following shower room appliances and associated products are to be supplied by:

**AKW Medicare Ltd**

**Pointon Way**

**Hampton Lovett**

**Droitwich Spa**

**WR9 0LR**

**Tel: 01905 823299**

Tuff-Form wet floor former (of appropriate size, as directed by OT) fitted with AKW TF75 gravity waste to provide complete level

access. Where the existing floor construction and/or soil pipe position prevents the use of the gravity fed waste it may be permitted to

use the AKW DigiPump 4 with PGTF pumped waste (Ref: 25254). Prior approval must be obtained from the Client in such instances.

Shower waste pump to be AKW MediCare 'DigiPump 4'. Pumps are to be installed in strict accordance with the manufacturer's written

instructions, current IEE wiring regulations (BS7671: 2008) and Building Regulations.

(In some cases, where a concrete first or second floor flat requires a 'wet room' a quieter pump may be required, such as the Nichols

and Clark - Whale Pump. This would be added as a variation, where required)

Mira Advance All Flex Electric Shower (Ref: 25104) complete with a suitably placed double poled isolation switch with pull chord and

indicator light. Shower position to be as indicated on the drawings at a suitable height for individual tenant's ease of use. Exact position

to be confirmed by NFDC Occupational Therapist on site.

'L' shaped curtain rail (of appropriate size) and 1800 x 2100 mm drop white shower curtains x 2 (Ref: 24079).

450 x 32 mm and/or 300 x 32 mm plastic fluted white grab rails/s (Ref: 01410/01400) number and position/s to be directed by the

occupational Therapist (OT).

4000 series fold-up shower seat to be fitted in position as directed by OT.

**In most cases a basic plan will be provided by the Occupational Therapist in advance of the works.**

436 HANDRAILS AND GRAB BARS to baths

• Manufacturer: Contractor's choice.

- Product reference: Contractor's choice.

• Diameter: 35 mm.

• Material: plastic.

• Finish/ Colour: blue.

441 PAPER ROLL DISPENSERS

• Manufacturer: Contractor's choice.

- Product reference: Contractor's choice.

• Material: plastic.

- Width: as per manufacturer's dimensions.

- Finish/ Colour: white.

**EXECUTION**

610 INSTALLATION GENERALLY

• Assembly and fixing: Surfaces designed to falls to drain as intended.

• Fasteners: Nonferrous or stainless steel.

• Supply and discharge pipework: Fix before appliances.

• Fixing: Fix appliances securely to structure. Do not support on pipework.

• Jointing and bedding compounds: Recommended by manufacturers of appliances, accessories and pipes being jointed or bedded.

• Appliances: Do not use. Do not stand on appliances.

• On completion: Components and accessories working correctly with no leaks.

• Labels and stickers: Removed.

620 NOGGINGS AND BEARERS

• Noggings, bearers, etc. to support sanitary appliances and fittings: Position accurately. Fix securely.

630 TILED BACKGROUNDS OTHER THAN SPLASHBACKS

• Timing: Complete before fixing appliances.

• Fixing appliances: Do not overstress tiles.

670 INSTALLING CISTERNS

• Cistern operating components: Obtain from cistern manufacturer.

- Float operated valve: Matched to pressure of water supply.

• Overflow pipe: Fixed to falls and located to give visible warning of discharge.

- Location: Agreed, where not shown on drawings.

710 INSTALLING TAPS

• Fixing: Secure against twisting.

• Seal with appliance: Watertight.

• Positioning: Hot tap to left of cold tap as viewed by user of appliance.

720 INSTALLING WASTES AND OVERFLOWS

• Bedding: Waterproof jointing compound.

• Fixing: With resilient washer between appliance and backnut.

765 BATHROOM SEALANT

The sealant is to be a low modular white dow corning silicone or equivalent, when applied to the bath it is filled with water.

775 DAMAGED FITTINGS

All sanitary ware and accessories, etc, chipped, scratched, cracked, defaced or otherwise damaged during the execution of the works shall be replaced with new fittings at the

Contractor's own cost unless evidence is presented to the Client that the damage is the responsibility of the supplier or courier and the same is found to be true.

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

**Note: The boxing in and all trims around pipework is deemed to be included within your pricing**.

110 SOFTWOOD SKIRTINGS GENERALLY

• Quality of wood and fixing: To BS 1186-3.

- Species: Contractor's choice.

- Class: CSH.

• Moisture content at time of fixing: 10-14%.

• Preservative treatment: Water-based micro emulsion as section Z12, service life 30 years.

• Fire rating: Not applicable.

• Profile: Bull nosed.

- Finished size: 19 x 70 mm.

• Finish as delivered: Prepared and primed as M60/130.

• Fixing: Nailed at 300mm centres.

510 INSTALLATION GENERALLY

• Joinery workmanship: As section Z10.

• Metal workmanship: As section Z11.

• Methods of fixing and fasteners: As section Z20 where not specified.

• Straight runs: To be in one piece, or in long lengths with as few joints as possible.

• Running joints: Location and method of forming to be agreed where not detailed.

• Joints at angles: Mitre, unless shown otherwise.

• Position and level: To be agreed where not detailed.

**P31 Holes, chases, covers and supports for services**

**PRODUCTS**

**EXECUTION**

620 HOLES AND CHASES IN IN SITU CONCRETE

• Cast in: Holes larger than 10 mm diameter and chases.

• Cutting and drilling:

- Permitted for holes not larger than 10 mm diameter.

Not permitted for holes larger than 10 mm diameter except as indicated on drawings.

650 HOLES, RECESSES AND CHASES IN MASONRY

• Locations: To maintain integrity of strength, stability and sound resistance of construction.

• Sizes: Minimum needed to accommodate services.

- Holes (maximum): 300 x 300 mm.

• Walls of hollow or cellular blocks: Do not chase.

• Walls of other materials:

- Vertical chases: No deeper than one third of single leaf thickness, excluding finishes.

- Horizontal or raking chases: No longer than 1 m. No deeper than one sixth of the single leaf thickness, excluding finishes.

• Chases and recesses: Do not set back to back. Offset by a clear distance at least equal to the wall thickness.

• Cutting: Do not cut until mortar is fully set. Cut carefully and neatly. Avoid spalling, cracking and other damage to surrounding structure.

670 NOTCHES AND HOLES IN STRUCTURAL TIMBER

• General: Avoid if possible.

• Sizes: Minimum needed to accommodate services.

• Position: Do not locate near knots or other defects.

• Notches and holes in the same joist: Minimum 100 mm apart horizontally.

• Notches in joists: Locate at top. Form by sawing down to a drilled hole.

- Depth (maximum): 0.125 x joist depth.

- Distance from supports: Between 0.07 and 0.25 x span.

• Holes in joists: Locate on neutral axis.

- Diameter (maximum): 0.25 x joist depth.

- Centres (minimum): 3 x diameter of largest hole.

- Distance from supports: Between 0.25 and 0.4 of span.

• Notches in roof rafters, struts and truss members: Not permitted.

• Holes in struts and columns: Locate on neutral axis.

- Diameter (maximum): 0.25 x minimum width of member.

- Centres (minimum): 3 x diameter of largest hole.

- Distance from ends: Between 0.25 and 0.4 of span.

690 INSTALLING PIPE SLEEVES

• Sleeves: Fit to pipes passing through building fabric.

• Material: Match pipeline.

• Size: One or two sizes larger than pipe to allow clearance.

• Finish: Install sleeves flush with building finish. In areas where floors are washed down, install protruding 100 mm above floor finish.

• Masking plates: Fit at visible penetrations, including through false ceilings of occupied rooms.

**R11 Above ground foul drainage systems**

**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.

**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.

615 FIXING VERTICAL PIPEWORK - MUPVC OR PVC-C

• Bracket fixings: Plugged and screwed into masonry.

• Distance between bracket fixing centres (maximum): 900 mm.

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.

**R12 Below ground drainage systems**

**GENERAL**

In the event that underground drainage works are required the specification shall be as follows:

**Drainage**

All drainage work to comply with BS8000 Part 14: 1989 Code of Practice for below ground, BS8301: 1985 Code of Practice for building drainage and BS EN 752: Drain and sewer

systems outside buildings.

The whole of the drainage work shall be in accordance with the requirements of the By- Laws and Building Regulations and submission of all notices for inspection and testing

must be complied with.

All underground drainage pipes and fittings shall be PVCu Osma Drain to BS EN 1456-1: 001 and all ring seals and gaskets to be from the same manufacturer and conform to BS

2494: 1990 and BS EN 681-1: 1996. All pipes to be laid to a fall of 1:40. All new drainage runs shall be complete with couplers, sockets, sleeves, bends and

junctions.

The Contractor is to ascertain and make due allowances for the position of various mains including existing surface water and foul water drainage prior to commencement of work.

Allow to remove any redundant drainage pipework as necessary and provide suitable diversions before cutting into any live drains.

Underground foul and surface water drainage pipework and fittings to be 110 mm dia. Flexibly jointed PVCu type as manufactured by Osma Drain with matching gulley units.

The drains shall be jointed and granular bedding and surround to consist of normal single sized aggregate to BS 882 Table 4:10 mm size in strict accordance with manufacturers

recommendations.

Any new underground pipework to be laid and surrounded in 150 mm of 10 mm pea shingle and conform to BS EN 1610 Annex B Table B.15. All backfilling material shall be

selected to fill, free from stones larger than 40 mm and compacted in 150 mm layers. No backfilling shall be allowed until testing is complete and satisfactorily approved. Where

shallow drains are laid under ground floor slabs, hardcore should be first compacted then the drainage trenches formed and suitable material laid for bedding and backfilling.

Upon completion, clean up terminals, fittings, gulleys, manholes, etc and thoroughly flush through the entire drainage system, leave all clean and in working order. Allow for

providing all necessary equipment and for carrying out tests of all drainage works to the satisfaction of the Contract Administrator and Statutory/Legal Authorities as necessary.

329 PIPES, BENDS AND JUNCTIONS – SUPPLY

• Pipes and fittings: From same manufacturer for each pipeline.

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.

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.

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.

**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.

**T90 Heating systems - domestic**

**PLUMBING AND HEATING -**

**Code of Practice**

All work in this section shall be in accordance with BS 8000-13: 1989 Code of Practice for above ground drainage and sanitary

appliances. BS Product Assessment Specification 33:

1999 Specification for the design, installation and commissioning of gas fired central heating systems in domestic premises. BS

7593:1992 Code of Practice for treatment of water in domestic hot water and heating systems. BS 6700: 1997 Specification for design,

installation, testing and maintenance of services supplying water for domestic use in

buildings. BS 6465-1: 1994 Sanitary Installations – Code of Practice for scale of provision, selection and installation of sanitary

appliances. Water supply (Water Fittings) Regulations

1999. BS 6891 Gas Installations. BS 5449-1 Forced circulation hot water systems. BS 5449-5: 1990 (Commissioning).

**Installation Generally**

All installation work to be carried out by qualified operatives.

Store all equipment, pipework components and accessories in original packaging in dry conditions. Protect plastic pipework from

prolonged exposure to sunlight. Wherever practicable retain protective wrappings until completion.

Securely fix equipment, components and accessories in specified/approved locations, parallel or perpendicular to the structure of the building unless specified otherwise, using fixing brackets/mountings, etc, recommended for the purpose by the equipment manufacturer.

In locations where moisture is present or may occur, use corrosion resistant fittings/fixings and avoid contact between dissimilar metals by use of suitable washers, gaskets, etc.

All equipment, pipework components, valves, etc, forming the installation to be fully accessible for maintenance, repair or replacement.

Installation to be fitted with vents at high points and draining taps at low points to facilitate purging and draining.

**Radiators**

Where suitable, radiators which require replacement should be replaced with Stelrad Home Series straight towel radiator.

Towel rails should be supplied in factory finished RAL9016 Traffic White gloss finish along with all necessary fixing brackets.

Where towel rail radiators are not suitable any replacement radiators are to be to BS 3528 and to be produced by either Myson or Quinn Barlow. Each radiator is to be fitted with a Danfoss RAS-C thermostatic radiator

valve and a Danfoss RLV-D lockshield valve (or approved equivalents to BS6284). Radiators are to be sited where possible on external walls under windows. Note: throughout all individual properties/systems the installation shall be executed using the same company's radiators or valves as described above.

The Contractor is to install low surface temperature (LST) radiators within New Forest District Council Sheltered Schemes, bungalows

and to all shower/wet room options.

No mixing of brand types will be permitted under any circumstances within any given dwelling. The same criteria shall also apply to

radiator valves. Radiators are to be

supplied with factory finished white gloss finish and all necessary fixing brackets.

Note – It is the responsibility of the Contractor to ensure that radiators will fit in the positions as specified above prior to ordering.

If the existing radiators are found to be in appropriate locations and the moving of the radiator will be beneficial, the Contractor is to

agree all new sittings with the Contract Administrator prior to commencement.

Following replacement of radiators (where applicable), heating systems are to be mechanically flushed using the SENTINEL JET

FLUSH 4 or a system of similar performance. The Contract Administrator must approve the mechanical flushing device if not the JET

FLUSH 4. SENTINEL X800 JETFLO is to be used with the mechanical flushing device.

The time taken to carry out the jet flush operation will depend upon the severity of contamination with the system. All works to be

carried out in accordance with guidelines

within BS7593 1992 Treatment of Water in domestic hot water heating systems and the manufacturer's instructions.

A typical system with ten radiators and standard 15 mm twin pipe configuration will take at least four hours to complete the job.

X800 Jetflo should be dosed at 1% of system volume. Where systems are badly fouled a 2% solution can be dosed. If systems are

greater than 50,000 BTU's a 2% solution should also be used. X800 Jetflo should be circulated at normal operating temperature with

all valves open and the pump turned to maximum flow for a minimum period of 1 hours or until satisfactory performance is restored.

After chemically flushing the system in accordance with guidelines using the above cleanser, on final refilling SENTINEL X100 Inhibitor

is to be added as manufacturer's instructions.

After treatment to both new and existing systems the sticker supplied with SENTINEL X100 must be apparent on the system. The

sticker will advise not to drain the system and the date at which the X100 inhibitor had been installed.

The Contractor must obtain 'Sentinel System Check' packs, so that samples can be submitted to Sentinel for quality control purposes.

This must be carried out to achieve a 15% record of all systems installed.

The Sentinel Analysis Results will show whether the systems are correctly flushed and inhibited. Where systems fail this testing penalty

charges may apply and will be deducted from monies owed to the Contractor and will apply for every subsequent failing re-test until the

water quality is found to be acceptable.

The Sentinel Hotline can be contacted on 0151 4245351, alternatively contact can be made through:

Sentinel Performance Solutions Ltd

Foundry Lane

Widnes

Cheshire

WA8 8UD

Contact: Paul Friend - Key Account Manager

Tel: (01514) 209 585

Fax: (01514) 225 860

Mobile: (07795) 542 154

E-mail: paul.friend@sentinel-solutions.net

**Dezincification**

All brass fittings which are in contact with water to be DZR alloy CZ 132 and so marked, or gunmetal.

**Equipment Manufacturers**

Only materials and products listed in the current Water Research Council (WRC) \_Water Fittings and Materials Directory\_ or holding

a current WRC approval shall be used.

Only products and equipment from the following manufacturers shall be used:

**Valves and Fittings:**

IMI Yorkshire Fittings Ltd

PO Box 166

Leeds

West Yorkshire LS10 1NA

Tel: 0113 2706945 Pegler Ltd

St Catherine’s Ave

Doncaster

South Yorkshire DN4 8DF

Tel: 0870 1200285

Crane Fluid Systems

Nacton Road

Ipswich

SuffolkIP3 9QH

Tel: 01473 277300

Delta Capillary Products Ltd

Alexander Street

Dundee

DD3 7DT

Tel: 0121 5572831

**Insulation**

Armstrong

Insulation Division

Armstrong House

38 Market Square

Uxbridge

Middlesex

UB8 1NG

Tel: 0800 371849

NMC Kenmore (UK) Ltd

Industrial Estate Crook

Co Durham

DL15 8JN

Tel: 01388 760200

**Pipe Supports**

IMI Yorkshire Fittings Ltd

PO Box 166

Leeds

West Yorkshire

LS10 1NA

Tel: 0113 2706945

Greenway Pipeline Products

Vigo Place

Aldridge

West Midlands

WS9 8VG

Tel: 01922 743322

Copper Pipelines for Hot and Cold Water Supplies:

Tube: to BS EN 1057: 2006 Kitemark certified.

Jointing generally: Integral lead free solder ring capillary fittings to BS EN 1256: 1998, Kitemark certified.

Connections to equipment and fittings: Compression fittings to BS EN 1254: 1998, Kitemark certified.

Supports: Plastic wrap over.

**Pipe Runs**

Runs to be straight and parallel or perpendicular to walls, floors, ceilings, etc, as appropriate.

Locate runs to facilitate installation of equipment, accessories and insulation and allow access for maintenance.

Run hot pipes above cold where routed together horizontally; space well away from pipes containing drinking water.

Do not run pipes through electrical enclosures or above switch gear distribution boards or the like.

Allow sufficient space around pipes to fit insulation without compression.

**Pipe Fixing**

Fix pipes securely and neatly with the minimum number of joints, bends and offsets.

All pipework shall be securely supported by means of approved clips and brackets.

Allow for thermal movement of pipelines and isolate from structure where necessary to prevent noise or abrasion of pipe caused by movement. Pipes passing through walls to be

sleeved with a compatible material and all runs must have sufficient space between surfaces to ensure full thickness of insulation.

Temporarily seal open ends of pipes with purpose made plugs or blanking caps to prevent ingress of dirt during installation. Completed pipelines to be of smooth, consistent bore,

clean and free from external scratching, toolmarks, distortion, wrinkling, cracks and other defects.

**Supports for Copper Pipelines**

Fix securely and true to line at not more than the following centres:

Pipe od (mm) Horizontal (mm) Vertical

15 & 22 1000 1000

28 & 35 1200 1200

Within 150 mm of connections, junctions and changes of direction.

**Pipe Spacing**

Minimum clearance to face or 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

**Joints in Copper Pipelines**

Cut pipes square using a wheel cutter, remove burrs and make neat, clean fully sealed joints, ensuring that pipe ends enter joint fittings to full depth.

Do not use formed bends on exposed pipework except for small offsets. Form changes of direction with radius fitting unless otherwise approved.

Use purpose designed adaptors for connecting dissimilar materials: do not improvise.

Protect background and plastic pipes and fittings from heat damage when forming soldered joints. Clean off all flux residue. Do not use 'self-cleaning' fluxes.

**Insulation to Pipelines**

Material:

Preformed flexible closed cell or mineral fibre split tube with thermal conductivity not exceeding 0.035 W/mk.

Thickness:

All pipework in unheated areas:

Pipework of mm Insulation Thickness mm

15 25

22 - 28 19

35 - 42 19

Performance:

Class 1 spread of flame when tested to BS476: Part 7: 1997.

Fit insulation to hot and cold water pipelines in uninsulated spaces.

Fix securely and neatly in accordance with the manufacturer's recommendations, ensuring continuity over fittings and at supports, leaving no gaps and with the split on 'blind' side of

pipeline. Do not fit insulation until completion of testing.

Controls

Valves Generally:

Types approved for the purpose by the local water company and of the appropriate pressure/temperature ratings.

Provision for isolation and regulation of all equipment and sub-circuits.

Locate where they can be readily operated and maintained and adjacent to equipment which is to be isolated.

Fitted with joints to suit the pipe material.

Fitted with handwheels where required for control purposes and lock shields where required for isolation or regulation of circuits or equipment.

Stop valves and Draw-off Taps for above ground use:

Copper alloy to BS1010: Part 2, Kitemark certified.

Gate Valves:

Copper alloy to BS5154: 1991, Service B, Kitemark certified.

Double Check Valve Assemblies:

Copper alloy check valves to BS6282: Part 1: 1982.

Draining Taps:

Copper alloy to BS2879, Type 1, hose connection pattern, Kitemark certified.

Servicing Valves :

Brass to BS6675, Kitemark certified.

Type: Straight or in line, screwdriver slot.

Finish: Chrome Plate

Location: Provide to every appliance outlet.

Operating Tools

Provide all necessary tools for operation, maintenance and cleaning purposes, including keys for valves and vents. Hand over to tenant on completion.

Labelling

Label all isolating and regulating valves on primary circuits, stating their function.

Holes/Chases/Covers/Supports for Services

Where pipes are to pass through the floor, any precast concrete beams must not be cut or damaged.

Holes, recesses and chases in masonry: notwithstanding BS8000: Part 3: 2001.

Holes and recesses and chases to be in locations which will least affect the strength, stability and sound resistance of the construction and to be of the smallest practicable size.

Do not set chases in walls of hollows or cellular blocks without approval.

In wall or other materials:

Vertical chases must not be deeper than one third of the single leaf thickness.

Horizontal or raking chases must be not larger than 1m and not deeper than one sixth of the single leaf thickness.

Do not set chases or recesses back to back; offset by a clear distance not less than the wall thickness.

Completion

Testing:

Carry out before fixing pipework insulation. Ensure that all pipework and equipment is secure and clean.

Thoroughly flush out all parts of the system, fill with water, remove all air and check for leaks.

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 three hours. At both hot and cold

conditions all joints, fittings and components must be free from leaks and signs of physical distress when tested for at least one hour as follow:

Systems fed directly from the mains - apply a test pressure equal to either the full mains water pressure or, where fitted, the pressure control valve setting.

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 working pressure. If leaks are evident, repair and repeat test.

Check and adjust operation of all equipment, controls and safety devices.

Check operation of all outlets for satisfactory rate of flow and temperature.

Testing Service Pipeline:

Disconnect from the mains, fill with potable water, excluding all air and test by applying at least twice the working pressure for one hour, during which there must be no leakage.

Documentation

Hand over to the Contract Administrator before Practical Completion - copies of manufacturers' operating and maintenance instructions for all equipment and controls.

Operating Instructions for the system as a whole giving optimum settings for all controls must be provided.

As installed drawings showing the location of all circuits and operating controls must be provided.

610 INSTALLATION GENERALLY

• Standard: To BS EN 14336.

• Performance: Free from leaks and the audible effects of expansion, vibration and water hammer.

• Fixing of equipment, components and accessories: Fix securely, parallel or perpendicular to the structure of the building.

• Preparation: Immediately before installing tanks and cisterns on a floor or platform, clear the surface completely of debris and projections.

• Corrosion resistance: In locations where moisture is present or may occur, use corrosion resistant fittings/ fixings and avoid contact between dissimilar metals by use of suitable washers, gaskets, etc.

620 INSTALLATION OF FEED AND EXPANSION CISTERNS

• Outlet positions: Connect lowest outlets at least 30 mm above bottom of cistern.

• Water level (minimum): 25 mm below the overflow level of the warning pipe.

• Access: Fix cistern with a minimum clear space of 350 mm above, or 225 mm if the cistern does not exceed 450 mm in any dimension.

• Mounting height above the highest point of the circulation system (minimum): 1 m.

• Location: Provide sufficient space for cleaning and maintenance, with enough clearance above the cistern to service the valve and accommodate the expansion pipe.

• Plinth: Firm, level and continuous.

• Jointing pipes to thermoplastics cisterns: To BS 6700 or BS EN 806-4.

• Insulation: Where the space below the cistern is heated do not insulate the underside.

630 PIPELINE INSTALLATION

• Appearance: Install pipes straight, and parallel or perpendicular to walls, floors, ceilings, and other building elements.

• Pipelines finish: Smooth, consistent bore, clean, free from defects, e.g. external scratching, toolmarks, distortion, wrinkling, and cracks.

• Concealment: Generally conceal pipelines within floor, ceiling and/ or roof voids.

• Access: Locate runs to facilitate installation of equipment, accessories and insulation and allow access for maintenance.

• Arrangement of hot and cold pipelines: Run hot pipelines above cold where routed together horizontally. Do not run cold water pipelines near to heating pipelines or through heated spaces.

• Electrical equipment: Install pipelines clear of electrical equipment. Do not run pipelines through electrical enclosures or above switch gear distribution boards or the like.

• Insulation allowance: Provide space around pipelines to fit insulation without compression.

640 PIPELINE FIXING

• Fixing: Secure and neat.

• Joints, bends and offsets: Minimize.

• Pipeline support: Prevent strain, e.g. from the operation of taps or valves.

• Drains and vents: Fix pipelines to falls. Fit draining taps at low points and vents at high points.

• Thermal expansion and contraction: Allow for thermal movement of pipelines. Isolate from structure. Prevent noise or abrasion of pipelines caused by movement. Sleeve pipelines

passing through walls, floors or other building elements.

• Dirt, insects or rodents: Prevent ingress.

650 JOINTS IN COPPER PIPELINES

• Preparation: Cut pipes square. Remove burrs.

• Joints: Neat, clean and fully sealed. Install pipe ends into joint fittings to full depth.

• Bends: Do not use formed bends on exposed pipework, except for small offsets. Form changes of direction with radius fittings.

• Adaptors for connecting dissimilar materials: Purpose designed.

• Substrate and plastics pipes and fittings: Do not damage, e.g. by heat when forming soldered joints.

• Flux residue: Clean off.

810 TESTING

• Standard: To BS EN 14336.

• Notice (minimum): 3 days.

• Preparation: Secure and clean pipework and equipment. Fit cistern/ tank covers.

• Leak testing: Start boiler and run the system until parts are at normal operating temperatures and then allow to cool to cold condition for a period of 3 h.

• Pressure testing: At both hot and cold conditions joints, fittings and components must be free from leaks and signs of physical distress when tested for at least 1 h as follows:

- Systems fed directly from the mains and systems downstream of a booster pump: Apply a test pressure equal to 1.5 times the maximum pressure to which the installation or

relevant part is designed to be subjected in operation.

- Systems fed from storage: Apply a test pressure equal to the pressure produced when the storage cistern is filled to its normal maximum operating level.

-Inaccessible or buried pipelines: Carry out hydraulic pressure test to twice the working pressure.

820 SETTING TO WORK AND COMMISSIONING

• Equipment: Check and adjust operation of equipment, controls and safety devices.

• Outlets: Check operation of outlets for satisfactory rate of flow and temperature.

830 TESTING GAS PIPELINES

• Testing and purging: To BS 6891.

840 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.

850 LABELS

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

**V90 Electrical systems – domestic**

**Note: Alterations to the consumer unit to facilitate the works are deemed to be included within your pricing.**

**GENERAL**

110 LOW VOLTAGE SUPPLY

• Nature of current: Alternating.

• Phase: Single.

• Voltage: 230 V.

• Source: Local electricity distribution company.

• Metering: Analogue or digital.

• Accessories: n/a.

131 LV CABLING to extractor fans

• Cable: Flat PVC insulated and sheathed cable.

**SYSTEM PERFORMANCE**

210 GENERAL DESIGN

• Standards: To BS 7671 and the requirements of the electricity distributor.

• Design: Complete the design and detailing of the electrical installation.

• Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

220 DESIGN OF LOW VOLTAGE INCOMING SUPPLY

• Capacity: Determine the anticipated maximum demand of the installation.

• Proposals: Submit drawings showing equipment positions and routes, technical information and calculations.

• Evidence of agreement with Electricity Distributor: Submit.

• General: Manage and liaise with the Electricity Distributor and determine:

- Maximum demand of the installation.

- Nature of the supply, its suitability for the installation and type of earthing arrangement.

- Location of the incoming supply.

- Space requirements and location of the switches, fuses and meters.

• Electricity supplier: SEC (or equivalent) .

- Coordination: Liaise with the electricity supplier, complete an application for supply of electricity and manage installation of metering equipment

280 EARTHING AND BONDING DESIGN

• Earthing, main bonding, supplementary bonding and protective conductors: In accordance with BS 7430.

**PRODUCTS**

310 PRODUCTS GENERALLY

• Standard: To BS 7671.

• CE Marking: Required.

330 CABLE TRAYS to extractor fans

• Standard: To BS EN 61537.

• Manufacturer: Contractor's choice.

- Product reference: Contractor's choice.

• Width: 100 mm.

• Material: Stainless steel.

• Type: Contractor's choice.

• Duty: Medium duty.

• Finish: Contractor's choice.

• Accessories and fittings: Factory made of the same material type, pattern, finish and thickness as cable tray.

340 CONDUIT

• Standard: To BS EN 61386-1.

• Type: Suitable for location and use.

410A CABLES

• Standard: To BS 7671.

• Approval: British Approvals Service for Cables (BASEC) certified.

• Mineral insulated copper sheathed cables: To BS EN 60702-1.

- Mineral insulated copper sheathed cable terminations: To BS EN 60702-2.

• Cable sizes not stated: Submit proposals and calculations.

Contractor to ensure that no replacement or additional cables are embedded within loft insulation materials. All wiring laid in roof space to be adequately clipped to ceiling joists in

straight runs.

420 PROTECTIVE CONDUCTORS

• Type: Cable conductors with yellow/ green sheath.

430 ELECTRICAL ACCESSORIES

• Standard: To BS 5733.

- Switches: To BS EN 60669-1.

• Manufacturer: MK

- Product reference: Contractor's choice .

• Finish: White plastic.

• Mounting: Surface.

510 LUMINAIRES to bathroom ceilings

• Standards: To BS EN 60598-1 and BS EN 55015.

- Approval: Kitemark certified.

• Manufacturer: **Thorn.**

- Product reference: **Leopard.**

• Mounting: Ceiling surface.

• Lamp: **Linear fluorescent.**

Wattage: **28W.**

**SHAVER SOCKETS**

Where existing bathrooms have a shaver socket the Contractor is **to supply and install** a dual voltage 113/250v shower socket with galvanised steel flush mounting box, wired into lighting circuit.

Shower socket to be fitted in a suitable position beside new wash hand basin, all in accordance with IEE Regulations (preferably existing position) and for tenant's ease of use.

510B EXTRACTOR FANS to bathroom walls or ceiling mounted

• Standards: To BS EN 60598-1 and BS EN 55015.

- Approval: IP rated.

• Manufacturer: **Vectaire**.

- Product reference: **ES100/3 3 speed continuous running fan c/w all ducting for wall or ceiling mounted units**.

• Mounting:

·The Contractor is to ensure that no replacement or additional cables are covered by loft insulation materials. All wiring laid in roof

space to be adequately clipped to ceiling joists in straight runs.

511 LAMPS GENERALLY

• Standards:

- Compact fluorescent lamps: To BS EN 60901 and BS EN 61199.

- 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: **Thorn.**

Lamps of the same type and rating: Same manufacturer.

515 LUMINAIRE SUPPORTING COUPLERS

• Standard: To BS 6972.

580 EARTHING AND BONDING EQUIPMENT

• Earth electrodes: In accordance with BS 7430.

• Earth clamps: To BS 951.

**EXECUTION**

610 ELECTRICAL INSTALLATION GENERALLY

• Standard: To BS 7671.

645 INSTALLING CABLE TRAY

• Support: Submit proposals.

• Access: Provide space encompassing cable trays to permit access for installing and maintaining cables.

• Supports and fasteners: Avoid contact between dissimilar metals. Use corrosion resistant components in locations where moisture may

occur.

• Cutting: Along an unperforated line. Minimize. Make good edges. Treat surface as the tray.

**OTHER – Service centre call switches**

• Redundant call centre service pull cords/switches are to be removed and isolated. These works are deemed to be included within the priced works.

660 INSTALLING PVC CONDUIT AND FITTINGS

• Fixing:

- Spacing of conduit saddles (maximum): 0.9 M on horizontal, 1.25 M on vertical. Reduce spacing in areas of high ambient

temperature in accordance with manufacturer's instructions.

- Fix boxes independently of conduit.

- At fittings and changes of direction: Fit conduit saddles 150 mm either side.

- Thermal expansion: Allow for expansion couplings in accordance with manufacturer's recommendations.

• Conduit drainage: Provide drainage outlets at lowest points.

• 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.

- Movement joints in structure: Manufactured expansion coupling.

- Adhesive: Use water resistant solvent cement to form watertight joints. Use water resistant lubricant sealant at expansion

couplers.

• Changes of direction: Circular conduit boxes.

• Connections to boxes, trunking, equipment and accessories: Use threaded adaptors.

• Mounting and support: Conduit clips.

680 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.

685 INSTALLING CABLES

• General: Install cables neatly and securely. Protect against accidental damage, adverse environmental conditions, mechanical stress

and deleterious substances.

• Timing: Do not start internal cabling until building enclosure provides permanently dry conditions.

• Jointing: At equipment and terminal fittings only.

• Cables passing through walls: Sleeve with conduit bushed at both ends.

• Cables surrounded or covered by insulation: Derate.

690 INSTALLING CABLES IN PLASTER

• Protection: Cover with galvanized steel channel nailed to substrate.

695 INSTALLING CABLES IN VERTICAL TRUNKING/ DUCTS

• Support: Pin racks or cleats at each floor level or at 5 m vertical centres, whichever is less.

• Heat barrier centres (maximum): 5 m.

• Heat barriers: Required except where fire resisting barriers are not provided.

700 INSTALLING CABLES IN ACCESSIBLE ROOF SPACES

• Cables running across ceiling joists: Fix to timber battens which are nailed to joists.

720 INSTALLING ELECTRICAL ACCESSORIES AND EQUIPMENT

• Location: Light switches - pull cord switch.

• 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: Surface.

• Mounting heights (finished floor level to underside of equipment/ accessory): ceiling mounted.

725 FINAL CONNECTIONS

• Size: Determine.

• Cable: Heat resisting white flex.

• Length: Allow for equipment removal and maintenance.

735 INSTALLING LUMINAIRES

• Location: ceiling mounted.

• Orientation: Parallel with ceiling.

• Supports: Adequate for weight of luminaire.

810 FINAL FIX

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

820 CLEANING

• Electrical equipment: Clean immediately before handover.

• Equipment not supplied but installed and electrically connected: Clean immediately before handover.

830 INSPECTION AND TESTING GENERALLY

• Standard: To BS 7671.

• Notice before commencing tests (minimum): 24 hours.

• Labels and signs: Fix securely before system is tested.

• Inspection and completion certificates: Submit.

- Number of copies: 1 .

880 DOCUMENTATION

• Timing: Submit at practical completion.

• Contents:

- Full technical description of each system installed.

- Manufacturer's operating and maintenance instructions for fittings and apparatus.

- Manufacturer's guarantees and warranties.

- As-installed drawings showing circuits and their ratings and locations of fittings and apparatus.

**Z10 Purpose made joinery**

110 FABRICATION

• Standard: To BS 1186-2.

• Sections: Accurate in profile and length, and free from twist and bowing. Formed out of solid unless shown otherwise.

- Machined surfaces: Smooth and free from tearing, wooliness, chip bruising and other machining defects.

• Joints: Tight and close fitting.

• Assembled components: Rigid. Free from distortion.

• Screws: Provide pilot holes.

- Screws of 8 gauge (4 mm diameter) or more and screws into hardwood: Provide clearance holes.

- Countersink screws: Heads sunk at least 2 mm below surfaces visible in completed work.

Adhesives: Compatible with wood preservatives applied and end uses of timber.

120 CROSS SECTION DIMENSIONS OF TIMBER

• General: Dimensions on drawings are finished sizes.

• Maximum permitted deviations from finished sizes:

- Softwood sections: To BS EN 1313-1:-

Clause 6 for sawn sections.

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

Clause 6 for sawn sections.

Clause NA.3 for further processed sections.

130 PRESERVATIVE TREATED WOOD

• Cutting and machining: Completed as far as possible before treatment.

• Extensively processed timber: Retreat timber sawn lengthways, planed, ploughed, etc.

• Surfaces exposed by minor cutting and/ or drilling: Treat as recommended by main treatment solution manufacturer.

140 MOISTURE CONTENT

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

250 FINISHING

• Surfaces: Smooth, even and suitable to receive finishes.

- Arrises: Eased unless shown otherwise on drawings.

• End grain in external components: Sealed with primer or sealer as section M60 and allowed to dry before assembly.

**Z20 Fixings and adhesives**

**PRODUCTS**

310 FASTENERS GENERALLY

• Materials: To have:

- Bimetallic corrosion resistance appropriate to items being fixed.

- Atmospheric corrosion resistance appropriate to fixing location.

• Appearance: Submit samples on request.

320 PACKINGS

• Materials: Non compressible, corrosion proof.

• Area of packings: Sufficient to transfer loads.

340 MASONRY FIXINGS

• Light duty: Plugs and screws.

• Heavy duty: Expansion anchors or chemical anchors.

350 PLUGS

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

390 ADHESIVES GENERALLY

• Standards:

- Hot-setting phenolic and aminoplastic: To BS 1203.

- Thermosetting wood adhesives: To BS EN 12765.

- Thermoplastic adhesives: To BS EN 204.

410 POWDER ACTUATED FIXING SYSTEMS

• Types of fastener, accessories and consumables: As recommended by tool manufacturer.

**EXECUTION**

610 FIXING GENERALLY

• Integrity of supported components: Select types, sizes, quantities and spacings of fixings, fasteners and packings to retain supported

components without distortion or loss of support.

• Components, substrates, fixings and fasteners of dissimilar metals: Isolate with washers/sleeves to avoid bimetallic corrosion.

• Appearance: Fixings to be in straight lines at regular centres.

620 FIXING THROUGH FINISHES

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

630 FIXING PACKINGS

• Function: To take up tolerances and prevent distortion of materials and components.

• Limits: Do not use packings beyond thicknesses recommended by fixings and fasteners manufacturer.

• Locations: Not within zones to be filled with sealant.

640 FIXING CRAMPS

• Cramp positions: Maximum 150 mm from each end of frame sections and at 600 mm maximum centres.

• Fasteners: Fix cramps to frames with screws of same material as cramps.

• Fixings in masonry work: Fully bed in mortar.

670 PELLETED COUNTERSUNK SCREW FIXING

• Finished level of countersunk screw heads: Minimum 6 mm below timber surface.

• Pellets: Cut from matching timber, match grain and glue in to full depth of hole.

• Finished level of pellets: Flush with surface.

680 PLUGGED COUNTERSUNK SCREW FIXING

• Finished level of countersunk screw heads: Minimum 6 mm below timber surface.

• Plugs: Glue in to full depth of hole.

• Finished level of plugs: Projecting above surface.

690 USING POWDER ACTUATED FIXING SYSTEMS

• Powder actuated fixing tools: To BS 4078-2 and Kitemark certified.

• Operatives: Trained and certified as competent by tool manufacturer.

700 APPLYING ADHESIVES

• Surfaces: Clean. Adjust regularity and texture to suit bonding and gap filling characteristics of adhesive.

• Support and clamping during setting: Provide as necessary. Do not mark surfaces of or distort components being fixed.

• Finished adhesive joints: Fully bonded. Free of surplus adhesive.

**Z22 Sealants**

To be read with Preliminaries/General conditions.

**PRODUCTS**

310 JOINTS to sanitary ware and flooring

• Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.

**EXECUTION**

610 SUITABILITY OF JOINTS

• Pre-sealing checks:

- Joint dimensions: Within limits specified for the sealant.

- Substrate quality: Surfaces regular, undamaged and stable.

• Joints not fit to receive sealant: Submit proposals for rectification.

620 PREPARING JOINTS

• Surfaces to which sealant must adhere:

- Remove temporary coatings, tapes, loosely adhering material, dust, oil, grease, surface water and contaminants that may affect

bond.

- Clean using materials and methods recommended by sealant manufacturer.

• Vulnerable surfaces adjacent to joints: Mask to prevent staining or smearing with primer or sealant.

• Backing strip and/ or bond breaker installation: Insert into joint to correct depth, without stretching or twisting, leaving no gaps.

• Protection: Keep joints clean and protect from damage until sealant is applied.

630 APPLYING SEALANTS

• Substrate: Dry (unless recommended otherwise) and unaffected by frost, ice or snow.

• Environmental conditions: Do not dry or raise temperature of joints by heating.

• Sealant application: Fill joints completely and neatly, ensuring firm adhesion to substrates.

• Sealant profiles:

- Butt and lap joints: Slightly concave.

- Fillet joints: Flat or slightly convex.

• Protection: Protect finished joints from contamination or damage until sealant has cured.