

Grenfell Tower Regeneration Project NBS SPECIFICATION

Revisions:

30/01/2014 L20 (Doors) Revised

1279 Grenfell Tower

EMPLOYER'S REQUIREMENTS

30 January 2014

This document includes:

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GRENFELL TOWER

STUDIOE LLP

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C
Demolition/ Alteration/ Renovation

C20
Demolition

C20 Demolition

TO BE READ WITH PRELIMINARIES/GENERAL CONDITIONS

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.

GENERAL REQUIREMENTS

110 DESK STUDY/ 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: Refer to Architect's 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:
 - Details of services supplied by the Statutory Authority;
 - Disposal methods for gypsum-based products;
 - Results of tests to determine the precise nature of hazardous materials;
 - Site waste management plan development and proposals; and - Structural calculations in support of method statements .
- Format of report: Digital and at least one hardcopy .

120 EXTENT OF DECONSTRUCTION/ DEMOLITION

- General: Subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to levels as shown on Architect's drawings .

130 GROUNDWORKS

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

140 BENCH MARKS

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

150 FEATURES TO BE RETAINED

- General: Keep in place and protect the following: Refer to Architect's drawings and existing TV cables.

SERVICES AFFECTED BY DECONSTRUCTION/ DEMOLITION**210 SERVICES REGULATIONS**

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

220 LOCATION OF SERVICES

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

230 SERVICES DISCONNECTION ARRANGED BY CONTRACTOR

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

240 DISCONNECTION OF DRAINS

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

250 LIVE FOUL AND SURFACE WATER DRAINS

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

260 SERVICE BYPASS CONNECTIONS

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

270 SERVICES TO BE RETAINED

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

DECONSTRUCTION/ DEMOLITION WORK

- 310 WORKMANSHIP
- Standard: Demolish structures in accordance with BS 6187.
 - Operatives:
 - Appropriately skilled and experienced for the type of work.
 - Holding, or in training to obtain, relevant CITB Certificates of Competence.
 - Site staff responsible for supervision and control of work: Experienced in the assessment of risks involved and methods of deconstruction/ demolition to be used.
- 320 GAS OR VAPOUR RISKS
- Precautions: Prevent fire and/ or explosion caused by gas and/ or vapour from tanks, pipes, etc.
- 330 DUST CONTROL
- General: Reduce airborne dust by periodically spraying deconstruction/ demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.
 - Lead dust: Submit method statement for control, containment and clean-up regimes.
- 340 HEALTH HAZARDS
- Precautions: Protect site operatives and general public from hazards associated with vibration, dangerous fumes and dust arising during the course of the Works.
- 350 ADJOINING PROPERTY
- Temporary support and protection: Provide. Maintain and alter, as necessary, as work proceeds. Do not leave unnecessary or unstable projections.
 - Defects: Report immediately on discovery.
 - Damage: Minimize. Repair promptly to ensure safety, stability, weather protection and security.
 - Support to foundations: Do not disturb.
- 360 STRUCTURES TO BE RETAINED
- Extent: As indicated on Architect's drawings.
 - Parts which are to be kept in place: Protect.
 - Interface between retained structures and deconstruction/ demolition: Cut away and strip out with care to minimize making good.
- 370 PARTLY DEMOLISHED STRUCTURES
- General: Leave in a stable condition, with adequate temporary support at each stage to prevent risk of uncontrolled collapse. Make secure outside working hours.
 - Temporary works: Prevent overloading due to debris.
 - Access: Prevent access by unauthorized persons.
- 380 DANGEROUS OPENINGS
- General: Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
 - Access: Prevent access by unauthorized persons.
- 390 ASBESTOS-CONTAINING MATERIALS – KNOWN OCCURRENCES
- General: Materials containing asbestos are known to be present in: Refer to TMO asbestos report.
 - Removal: By contractor licensed by the Health and Safety Executive, and prior to other works starting in these locations.

391 ASBESTOS-CONTAINING MATERIALS – UNKNOWN OCCURRENCES

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

410 UNFORESEEN HAZARDS

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

MATERIALS ARISING**510 CONTRACTOR'S PROPERTY**

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

520 RECYCLED MATERIALS

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

C40

Cleaning masonry/ concrete

C40 Cleaning masonry/ concrete

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers must provide evidence that the VOC emission level/content of their products are tested in accordance with BS EN13300:2001.

GENERAL/ PREPARATION**110 SCOPE OF WORK**

- Refer to Architect's drawings.

120 RELATED REPAIR AND REMEDIAL WORKS

- Work to be carried out before cleaning work: Grouting/ filling to cracks in concrete, as section C42.

142 REMOVAL OF FITTINGS

- Timing: Before commencement of cleaning work.
- Disturbance to surfaces: Minimize.
- Items for disposal:
 - Bird preventive devices from ledges;
 - Brackets;
 - Fasteners;
 - Metal clips; and
 - Vine eyes.
- Items to be kept for reuse: TBC.

160 PROTECTION

- Surfaces not designated for cleaning: Prevent damage, including marking and staining.
- Openings: Prevent ingress of water, cleaning agents and detritus.
 - Vents and grilles: Seek instructions before sealing up.
- Temporary mechanical fastenings:
 - In masonry: Locate in joints.
 - In other surfaces: Seek instructions.
- Additional protection: Submit proposals .

175 CONTROL AND DISPOSAL OF WASH WATER AND DETRITUS

- Disposal: Safely. Obtain approvals from relevant Authority.
- Control of wash water: Collect and divert to prevent ingress and damage to building fabric and adjacent areas.
- Above and below ground drainage systems: Keep free from detritus and maintain normal operation.

180 COLD WEATHER

- Cleaning procedures using water: Do not use when air temperature is at or below 5°C. Protect damp surfaces from frost.
- Chemical cleaning agents: Do not use when surface temperatures are below those recommended by manufacturer.

190 CLEANING GENERALLY

- Operatives: Appropriately trained and experienced for each type of cleaning work.
 - Evidence of training: Submit on request.
- Control of cleaning: Confine cleaning processes and materials to designated areas. Prevent wind drift.
- Detritus: Remove regularly. Dispose of safely.
- Monitoring: Frequently check results of cleaning compared to approved trial samples. If results established by trials are not achieved, seek instructions.
- Modifications to cleaning methods and materials: Seek instructions.

215 RECORD OF CLEANING WORKS

- Written report: Record cleaning methods and procedures used for each type of surface and deposit.
 - Content: Relevant attributes of cleaning methods used including:
 - Equipment and settings.
 - Dwell times.
 - Number of applications.
 - Ambient temperatures.
- Additional documentation: Survey before cleaning: Photogrammetric drawings of each elevation.
- Submission: At completion of cleaning works.

PRODUCTS/ EQUIPMENT

300 COMPATIBILITY OF CHEMICAL PRODUCTS

- Products: Compatible and produced by the same manufacturer.

312 SURFACE BIOCIDES

- Types: Registered by the Health and Safety Executive (HSE) and listed on the HSE website under non-agricultural pesticides.
- Compatibility with surface: Free from staining or other harmful effects.

322 ABRASIVE CLEANING EQUIPMENT

- Manufacturer/ Supplier: Contractor's choice.
 - Product reference: Submit proposals.
- Nozzle types: Subject to site trials.
- Abrasives: Subject to site trials.

332 WATER SPRAY (MOUNTED NOZZLES)

- Equipment:
 - Spray/ Nozzle types: Subject to site trials .
 - Nozzles: Position and direction adjustable, relative to surfaces and profiles.
 - Controls: Submit proposals .

342 PRESSURIZED WATER CLEANING EQUIPMENT

- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Operational pressure: Submit proposals.
- Nozzles: Subject to site trials.

352 STEAM CLEANING EQUIPMENT

- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .

362 CHEMICAL AGENTS FOR GRAFFITI REMOVAL

- Manufacturer: Contractor's choice.
- Product reference: Submit proposals.

APPLICATION**412 REMOVAL OF LOOSELY ADHERED DEPOSITS**

- Timing: Before commencement of other cleaning methods.
- Surfaces: Prevent damage, including abrasion.

422 BIOCIDES APPLICATION

- Preparation: Dampen dry growths and Remove loose growths.
- Surfaces: Prevent damage, including abrasion.
- Biocide treatment: Appropriate solutions to kill growths and inhibit further growths.
 - Dead growths: Remove.

452 ABRASIVES CLEANING

- Surfaces: Minimize abrasion.
 - Ingrained deposits: Seek instructions.
- Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.
- Detritus: Remove with clean water.

462 WATER SPRAY CLEANING (MOUNTED NOZZLES)

- Surfaces: Minimize water run-off. Prevent damage.
- Adjustment of washing cycle and nozzle positions: Regularly to achieve optimum cleaning performance.

472 PRESSURIZED WATER CLEANING

- Surfaces: Prevent damage, including abrasion.
- Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.

482 STEAM CLEANING

- Surfaces: Prevent damage, including abrasion.
- Equipment settings (including nozzle type and distance from surface): Adjust regularly to achieve optimum cleaning performance for each surface.

495 TESTING pH VALUES FOR CHEMICAL CLEANING

- pH indicator: To distinguish pH values between 1-14.
- Testing before cleaning:
 - Clean rinsing water, wetted surfaces and joints: Test for pH. Record as 'control' values.
- Testing after water rinsing and neutralization:
 - Wetted surfaces and joints: Record pH values.
 - Acceptance criteria: Seek instructions.

500 CHEMICAL CLEANING

- Surfaces: Prevent damage, including discolouration, bleaching and efflorescence.
- Product variables (including concentrations, dwell times and number of applications):
Adjust for each surface to achieve optimum cleaning performance.
- Application: To wetted surfaces.
 - Drying out: Prevent unless recommended otherwise by cleaning product manufacturer.
- Removal of chemicals and neutralization: As recommended by product manufacturer, including rinsing with clean water.
 - Additional treatment: Where water rinsing is insufficient to neutralize surface, apply compatible neutralizing agent.
 - Surfaces and joints: Minimize absorption of chemicals. Prevent damage, including abrasion.

C42

Repairing/ Renovating/ Conserving concrete

C42 Repairing/ Renovating/ Conserving concrete

TO BE READ WITH PRELIMINARIES/GENERAL CONDITIONS.

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GENERAL

105 INFORMATION REQUIRED WITH TENDER

- Details of repair system including manufacturer and product references; data sheets; third party product certification.

110 SURVEY REPORT

- Report available for inspection from Curtins Consulting.

125 INVESTIGATIONS BY CONTRACTOR

- Purpose: To confirm location and extent of defects before repairs undertaken.
- Tests/ Observations: Condition and test methods from BS EN 1504-10 table 4 - 1 (delamination); 40 (cover meter); 11 (carbonation depth); 12 (chloride content); 36 (compressive strength; core and crushing test).
 - Location: At agreed locations.
- Period of notice to allow inspections (minimum): TBC.

135 TEST RECORDS

- Submittals: Comprehensive records of results for each test including locations/ date/ time.
 - Timing of submissions following testing: Submit proposals.
 - Photographic records: Digital.
- Testing authority: United Kingdom Accreditation Service (UKAS) approved independent laboratory.

140 COORDINATION OF TEMPORARY WORKS

- Standard: To BS 5975.
- Falsework coordinator: Appoint a suitably qualified and experienced person.
- Responsibilities: In addition to those listed in BS 5975, clause 6.3.1.3, to ensure that:
 - Relevant requirements for temporary supports, whether known at the outset or discovered in the course of the repair works, are fully considered.
 - Removal of concrete/ reinforcement is only undertaken when it is safe to do so and temporary supports are in place.
- Period of appointment: From commencement of Contract until completion of repair works.

150 CONCRETE REPLACEMENT REPAIRS CONCRETE FRAME

- Location: As pre-tender survey report.
- Concrete removal:
 - Extent: Loose concrete and Severely cracked concrete.
 - Limitations on removal: Submit proposals.
 - Method: Submit proposals.
- Reinforcement replacement:
 - Extent: Not required.
 - Jointing: Not required.
- Reinforcement treatment: Submit proposals.
- Concrete replacement: Hand applied mortar.
- Finish: Surface regularity compatible with existing adjacent concrete.
- Other requirements: Abseiling to carry out repairs not permitted.

155 CRACK REPAIRS EXPOSED SURFACES INTERNALLY AND EXTERNALLY

- Location: As survey report.
- Crack types/ widths: As survey report.
- Primary function: Sealing against water and other adverse agents.
- Grouting material: Water based, polymer modified cementitious mortar.
- Application method: Submit proposals.
 - Finish: Flush.
- Other requirements: None.

180 CONTRACTOR DESIGNED REPAIRS CONCRETE FRAME

- Type of structure: In situ concrete frame and slabs with large pre-cast structural spandrel panels.
- Location of defects: As survey report.
- Condition of structure: As survey report.
- Design life: Minimum as design life of surrounding concrete.
- Other requirements: Internal surfaces to achieve even and smooth finish prior to emulsion paint coating.

PRODUCTS**305 PROPRIETARY REPAIR SYSTEMS**

- Products: Compatible and supplied by the same manufacturer as part of a total repair system.

311 REPAIR MORTAR

- Type: Polymer modified cementitious mortar and Part of Agrément certified repair system.
- Manufacturer: Ronacrete Ltd., Ronac House, Flex Meadow, Merring Way, Harlow, Essex CM19 5TD,
Tel.: [REDACTED] Fax: [REDACTED]
Web: www.ronacrete.co.uk, Email: tech@ronacrete.co.uk.
 - Product reference: Ronafix Pre-packed Concrete Repair Mortar .
 - Compressive strength: 53.0 N/mm²
 - Tensile: 8.4 N/mm²
 - Flexural: 19.1 N/mm²
 - ISAT: 0.0 ml/m²/sec
 - Shrinkage: 0.01%
- Description: Ronafix Pre-packed Concrete Repair Mortar is a high performance, water based, polymer for repairing concrete and protecting reinforcing steel. The repair mortar will last at least the life of the surrounding concrete and is suitable for structural repairs. It is waterproof, frost proof and very durable..
- Uses:
 - Concrete repairs to horizontal and vertical surfaces
 - Suitable for internal and external use
 - For structural and cosmetic repairs
 - Provides additional protection to steel reinforcement
 - Slows rate of carbonation
 - Can be applied in thin section from 650mm per layer.
- Application:
 - Apply mortar on to wet or tacky primer
 - Build multiple layers as required.
 - Prime between layers
 - Finish with float or trowel.
- Other requirements: The primer for steel and concrete to be Ronacrete Standard Primer.

321 LEVELLING/ SMOOTHING COATS

- Type: Pre-packed water-based, acrylic polymer modified slurry coat and pore filler for concrete surfaces. It is suitable for levelling, filling blowholes and filling pebble nests in concrete surfaces.
- Manufacturer: Ronacrete Ltd., Ronac House, Flex Meadow, Merring Way, Harlow, Essex CM19 5TD,
Tel.: [REDACTED] Fax: [REDACTED]
Web: www.ronacrete.co.uk, Email: tech@ronacrete.co.uk.
 - Product reference: RonaBond Slurry Coat.
 - Minimum application depth: 1mm
 - Maximum application depth: 10mm
 - Bond strength: 1.38N/m²
 - ISAT: 0.0ml/m²/sec.
- Description:
RonaBond Slurry Coat is a pre-packed slurry coat for surface finishing prior to coating; It can be applied to concrete to fill blemishes and blow holes, pebble nests and larger static cracks;
Also apply over the entire surfaces to achieve a textured or smooth surface prior to application of paint applied coatings.
- Uses:
 - Fill blowholes and pebble nests up to 10mm
 - Form even surfaces prior to application of paint applied coating
 - Apply by brush or trowel to achieve textured or smooth finish.
- Application:
Apply the mixed material to the prepared and dampened surface by brush, roller or airless spray ensuring total coverage and a uniform surface appearance;
Application method and technique will determine the finished texture;
Avoid application of RonaBond Slurry Coat in severe drying conditions;
If this is unavoidable then use mist spray to maintain a damp environment during the first 24 hours of application, to ensure proper and even curing;
Typical application thickness is 1mm - 3mm per coat;
If a second coat is required allow the first to dry for 24 hours before applying the second coat.
- Other requirements: RonaBond Slurry Coat can be used in most weather conditions and in a wide temperature range, from +3°C to 25°C and above. At high ambient and material temperature the working time of the mix will be reduced; it will be increased at lower temperatures.

EXECUTION

605 EXECUTION GENERALLY

- Standard: To BS EN 1504-10.
- Operatives' skill and experience: Appropriate for the types of preparation and application.
 - Evidence: Submit on request.

620 TRIAL SAMPLES

- Location/ Size: Exposed horizontal and vertical concrete surface 1m².
- Trial type/ purpose: Coating system - colour, texture and flatness.

630 CLEANING CONCRETE SURFACES

- Extent: To reveal surface condition and aid investigation work. Minimize disruption to concrete surfaces and materials. Leave no harmful residual cleaning agents.
- Methods: Refer to clause 311 and 321.

645 CLEANING REINFORCEMENT

- Standard of cleaning: Submit proposals.

660 PREPARATION OF CONCRETE SUBSTRATES

- Soundness: Remove loose or otherwise defective material and repair significant cracks and gaps.
- Preparation:
 - Roughening for key: Refer to clause 311 and 321.
 - Wetting of substrate: Refer to clause 311 and 321.
- Condition immediately before placing replacement material:
 - Cleanliness: Free from loose material, with no debris, tying wire clippings, and other matter that could adversely affect bond.
 - Surface condition: Refer to clause 311 and 321.

670 GROUTING CRACKS/ VOIDS

- Substrates: Clean. Keep free of detritus.
- Pressure: Minimum necessary to fill cracks completely. Leave no voids and prevent disruption to structure.

675 CURING CONCRETE/ MORTAR

- Requirement: Keep surface layers of concrete/ mortar moist throughout curing period, including perimeters and abutments, by either restricting evaporation or continuously wetting surfaces of concrete/ mortar.
 - Surfaces covered by formwork: Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking.
 - Top surfaces: If covering is removed for finishing operations, replace it immediately afterwards

COMPLETION**710 RECORD OF LOCATION/ EXTENT OF REPAIRS**

- Repair record forms:
 - Content: Unique repair reference number for cross-referencing to record drawings; details of repair including dimensions and explanatory sketches; agreements and special requirements.
 - Copies: TBC.
 - Source of record forms: Contractor's standard.
- Record drawings: Required on marked up contract drawings.

F
Masonry

F10
Brick/ block walling

F10 Brick/ block walling

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- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF WALLING

255 CONCRETE FACING BLOCKWORK BOXING CLUB

- Blocks: To BS EN 771-3.
 - Manufacturer: Topblock.
 - Product reference: Hemelite Paint Quality.
 - Configuration: Group 1.
 - Compressive strength:
 - Mean value: 3.6 N/mm².
 - Characteristic value: 3.6 N/mm².
 - Category: I.
 - Freeze/ Thaw resistance: Not applicable.
 - Recycled content: 50% (minimum) to BS EN ISO 14021.
 - Work sizes (length x width x height): 440 x 140 x 215 mm.
 - Tolerance category: D1.
 - Finish/ Colour: unfinished.
 - Special shapes: N/A.
 - Additional requirements:
 - Regupal isolating strips as F30/185
 - Fair faced concrete lintels as F30/745.
- Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: 1:1:6 cement:lime:sand 4 N/mm² (mortar class 4).
 - Additional requirements: None.
- Bond: Half lap stretcher.
- Joints: Bucket handle.
- Features: None.

355 CONCRETE COMMON BLOCKWORK GENERAL

- Blocks: To BS EN 771-3.
 - Manufacturer: Tarmac Topblock Limited, Millfields Road, Ettingshall, Wolverhampton, WV4 6JP.
 - Technical enquiries:
Tarmac Topblock Limited, Linford, Stanford-le-Hope, Essex, SS17 0PY. Topblock
Technical Department: Tel: [REDACTED] Fax: [REDACTED] Topblock National
Sales: Tel: [REDACTED] Email: technical.services@tarmac.co.uk Web:
www.topblock.co.uk.
 - Product reference: Hemelite Standard Blocks.
 - Configuration: Solid.
 - Compressive strength:
Mean value: 7.3 N/mm².
Characteristic value: Not applicable.
Category: I.
 - Freeze/ Thaw resistance: Not applicable.
 - Thermal properties: Thermal conductivity at 3 % moisture content: 0.47 W/mK..
 - Recycled content: 50% (minimum) to BS EN ISO 14021.
 - Work sizes (length x width x height): 440 x 140 x 215 mm & 440 x 100 x 215 mm.
Tolerance category: D2.
 - Special shapes: None.
 - Additional requirements: -.
- Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: 1:1:6 cement:lime:sand 4 N/mm² (mortar class 4).
 - Additional requirements: None.
- Bond: Half lap stretcher.

356 CONCRETE COMMON BLOCKWORK - AIRCRETE PARTITIONS

- Blocks: To BS EN 771-4.
 - Manufacturer: Tarmac Topblock Limited, Millfields Road, Ettingshall, Wolverhampton, WV4 6JP.
 - Technical enquiries:
Tarmac Topblock Limited, Linford, Stanford-le-Hope, Essex, SS17 0PY. Topblock
Technical Department: Tel: [REDACTED] Fax: [REDACTED] Topblock National
Sales: Tel: [REDACTED] Email: technical.services@tarmac.co.uk Web:
www.topblock.co.uk.
 - Product reference: Toplite standard'.
 - Configuration: Solid.
 - Compressive strength:
Mean value: 3.6N/mm², to be confirmed by structural engineer.
Category: I.
 - Freeze/ Thaw resistance: Suitable for inner leaves, solid walls, internal partitions and walls below DPC.
 - Thermal properties: Thermal conductivity at 3 % moisture content: 0.47 W/mK.
 - Work sizes (length x width x height): 440 x 100 x 215 mm and 440 x 140 x 215 mm.
 - Special shapes: None.
 - Additional requirements: Dimensional stability - Moisture movement less than 0.70 mm/m.
- Mortar: As section Z21.
 - Standard: To BS EN 998-2 and BS 5628-3.
 - Mix: 1:1:6 cement:lime:sand.
 - Additional requirements: None.
- Bond: Half lap stretcher.

TESTING

410 COMPRESSIVE STRENGTH OF MORTAR FOR EACH WALLING TYPE

- Testing authority: A UKAS Accredited laboratory.
- Test method: BS 5628-1 Appendix A1 and BS 4551-1.
- Preliminary tests procedure: As follows:
 - Specimens:
 - Number of specimens: 6.
 - Type: 40 x 40 x 160 mm prisms.
 - Preparation: At least six weeks before walling commences.
 - Specimen testing: Half of specimens at 7 days. Remainder at 28 days.
 - Retarded mixes: Extend curing periods to include retardation period.
 - Response to result: If mean compressive strength at 28 days is not within the range given below repeat tests with more suitable sand or next higher mortar class.
- Site tests procedure: As follows.
 - Number of specimens: Six per 150m² of walling or per storey whichever the more frequent.
 - Specimen types: As preliminary test, but prepared during construction.
 - Specimen testing: Half of specimens at 7 days. Remainder at 28 days.
 - Retarded mixes: Extend curing periods to include retardation period.
- Required test mean compressive strength at 28 days (N/mm²): To be within the following range:
 - Walling type: F10/356.
 - Preliminary tests minimum (N/mm²): 3.6 N/mm².
 - Preliminary tests maximum (N/mm²): 6.5 N/mm².
 - Site tests minimum (N/mm²): 2.5 N/mm².
 - Site tests maximum (N/mm²): 4.5 N/mm².
- Results: Submit.

WORKMANSHIP GENERALLY

440 CONDITIONING OF CONCRETE BRICKS/ BLOCKS

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

460 MORTAR GROUPS

- Mix proportions: For a specified group select a mix design from the following:
 - Group 1:
 - 1:0–0.25:3 (Portland cement:lime:sand with or without air entraining additive).
 - 1:3 (Portland cement:sand and air entraining additive).
 - Group 2:
 - 1:0.5:4–5 (Portland cement:lime:sand with or without air entraining additive).
 - 1:3 (masonry cement:sand containing Portland cement and lime in approximate ratio 1:1, and an air entraining additive).
 - 1:2.5–3.5 (masonry cement:sand containing Portland cement and inorganic materials other than lime and air entraining additive).
 - 1:3–4 (Portland cement:sand and air entraining additive.)
 - Group 3:
 - 1:1:5–6 (Portland cement:lime:sand with or without air entraining additive).
 - 1:3.5–4 (masonry cement:sand containing Portland cement and lime in approximate ratio 1:1, and an air entraining additive).
 - 1:4–5 (masonry cement:sand containing Portland cement and inorganic materials other than lime and air entraining additive).
 - 1:5–6 (Portland cement:sand and air entraining additive).
 - Group 4:
 - 1:2:8–9 (Portland cement:lime:sand with or without air entraining additive).
 - 1:4.5 (masonry cement:sand containing Portland cement and lime in approximate ratio 1:1, and an air entraining additive).
 - 1:5.5–6.5 (masonry cement:sand containing Portland cement and inorganic materials other than lime and air entraining additive).
 - 1:7–8 (Portland cement:sand and air entraining additive).
- Batching: Mix proportions by volume.
- Mortar type: Continuous throughout any one type of masonry work.

500 LAYING GENERALLY

- Mortar joints: Fill vertical joints. Lay bricks, solid and cellular blocks on a full bed.
- AAC block thin mortar adhesive and gypsum block adhesive joints: Fill vertical joints. Lay blocks on a full bed.
- Clay block joints:
 - Thin layer mortar: Lay blocks on a full bed.
 - Interlocking perpend: Butted.
- Bond where not specified: Half lap stretcher.
- Vertical joints in brick and concrete block facework: Even widths. Plumb at every fifth cross joint.

520 ACCURACY

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

- 535 HEIGHT OF LIFTS IN WALLING USING CEMENT GAUGED OR HYDRAULIC LIME MORTAR
- Quoins and advance work: Rack back.
 - Lift height (maximum): 1.2 m above any other part of work at any time.
 - Daily lift height (maximum): 1.5 m for any one leaf.
- 545 LEVELLING OF SEPARATE LEAVES
- Locations for equal levelling of cavity wall leaves: As follows:
 - Every course containing vertical twist type ties or other rigid ties.
 - Every third tie course for double triangle/ butterfly ties.
 - Courses in which lintels are to be bedded.
- 595 LINTELS
- Bearing: Ensure full length masonry units occur immediately under lintel ends.
- 610 SUPPORT OF EXISTING WORK
- Joint above inserted lintel or masonry: Fully consolidated with semidry mortar to support existing structure.
- 620 BLOCK BONDING NEW WALLS TO EXISTING
- Pocket requirements: Formed as follows:
 - Width: Full thickness of new wall.
 - Depth (minimum): 100 mm.
 - Vertical spacing:
 - Brick to brick: 4 courses high at 8 course centres.
 - Block to block: Every other course.
 - Pocket joints: Fully filled with mortar.
- 635 JOINTING
- Profile: Consistent in appearance.
- 645 ACCESSIBLE JOINTS NOT EXPOSED TO VIEW
- Jointing: Struck flush as work proceeds.
- 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.

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

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

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

CAVITIES

121 CLEANLINESS

- Cavity base and faces and ties: Free from mortar and debris.

185 TRANSMITTED NOISE REDUCTION SYSTEM SEPARATING WALLS

- Type: Party wall system.
- Manufacturer: CMS Danskin Acoustics Ltd
Unit 2 Lyncastle Road, Appleton, Warrington WA4 4SN
Tel: [REDACTED], Fax: [REDACTED]
Web.:www.cmsdanskin.co.uk.
- Product reference: Regupol® 6010XHT Isolating Strip.
- Components: Composite rubber/ PUR strip designed to sit beneath block work partitions and walls to reduce structure borne noise.

REINFORCING/ FIXING ACCESSORIES

220 WALL TIES SEPARATING CONCRETE BLOCK CAVITY WALLS

- Manufacturer: Ancon Building Products, President Way, President Park, Sheffield S4 7UR.
Tel: [REDACTED] Fax: [REDACTED]
Email: info@ancon.co.uk, Web site: www.ancon.co.uk.
- Product reference: Staifix HRT4 Housing Wall Tie
- Standard: To PD6697
- Type: 4, Masonry light duty.
- Material/ finish: Austenitic stainless steel - Grade 1.4301 (304) / Austenitic stainless steel - Grade 1.4401 (316).
- Sizes: 200 mm.

225 FIXING TIES IN MASONRY CAVITY WALLS

- 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: 750 mm .
- Vertical centres: 450 mm .
- Additional ties: Provide within 225 mm of reveals of unbonded openings.
- Spacing: At not more than 300 mm centres vertically .

241 WALL STARTERS/ CONNECTORS

- Manufacturer: Ancon Building Products, President Way, President Park, Sheffield S4 7UR
Tel: [REDACTED] Fax: [REDACTED]
Email: info@ancon.co.uk, Web site: www.ancon.co.uk.
- Product reference: 36/8 Wall Extension System with PP36 ties including debonding sleeves.
- Material/ finish: Austenitic stainless steel.
- Sizes: Varies.

250 SLIDING ANCHOR RESTRAINT SLIP TIES BLOCK WORK

- Manufacturer: Ancon Building Products, President Way, President Park, Sheffield S4 7UR
Tel: [REDACTED] Fax: [REDACTED]
Email: info@ancon.co.uk, Web site: www.ancon.co.uk.
- Product reference: Ancon IHR-V head restraints.
- Material/ finish: Austenitic stainless steel.
- Sizes: To suit 100mm block work.

FLEXIBLE DAMP PROOF COURSES/ CAVITY TRAYS

330 DAMP PROOF COURSE - POLYMERIC

- Manufacturer: RIW Limited, Arc House, Terrace Road South, Binfield, RG42 4PZ,
Tel : [REDACTED] Fax : [REDACTED]
E-mail : technical@riw.co.uk, Web : www.riw.co.uk.
- Product reference: RIW Sheetseal 9000 DPC.

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.

445 SILL DPCS

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

455 COPING/ CAPPING DPCS

- Placement: Bed in one operation to ensure maximum bond between masonry units, mortar and dpc.
- Dpcs crossing cavity: Provide rigid support to prevent sagging.

465 SEALING DPCS GENERALLY

- Overlaps and junctions: Seal with Seal with RIW Jointing Tape .

JOINTS

630 UNEXPOSED CONTRACTION JOINTS

- Formation: Close butt as work proceeds.

650 POINTING IN FLASHINGS

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

670 TOPS OF NONLOADBEARING WALLS

- Restraints: Refer to Clause 250 .
 - Fixing: Secure to soffit.
- Joint filler: Mineral wool
 Joint sealant: Arbo XL 1075 Fire Retardant Acrylic Sealant
 Colour: White
 Manufacturer: Adshead Ratcliffe, Derby Road, Belper, Derbyshire, DE56 1WJ. Tel: [REDACTED]
 [REDACTED] Fax: [REDACTED] Email: tech@arbo.co.uk Web: www.arbo.co.uk .
 - Placement: Full, no gaps.

PROPRIETARY SILLS/ LINTELS/ COPINGS/ DRESSINGS

745 PRESTRESSED CONCRETE LINTELS

- Standard: To BS EN 845-2.
- Manufacturer: Naylor Lintels, Longlands Industrial Estate, Milner Way, Ossett, West Yorkshire, WF5 9JE
 Tel: [REDACTED] Fax: [REDACTED]
 Email: lintels@naylor.co.uk, Web: www.naylorlintels.co.uk.
 - Product reference: Refer to Engineer's schedule.
- Types: As schedule.
- Sizes: As schedule.
- Additional requirements: Fair faced unless specified otherwise on schedule.
- Placement: Bed on mortar used for adjacent work. Prop at not more than 1.2 m centres to prevent displacement during construction. Retain props in position for not less than 14 days or until mortar has matured, whichever is longer.
 - Bearing length (minimum): As schedule.

755 PREFABRICATED STEEL LINTELS

- Standard: To BS EN 845-2.
- Manufacturer: Naylor Lintels, Longlands Industrial Estate, Milner Way, Ossett, West Yorkshire, WF5 9JE
 Tel: [REDACTED] Fax: [REDACTED]
 Email: lintels@naylor.co.uk, Web: www.naylorlintels.co.uk.
 - Product reference: Refer to Engineer's schedule.
- Types: As schedule.
- Material/ finish: Austenitic stainless steel.
- Sizes: As schedule.
- Additional requirements: Consult engineer for allowable deflection under load.
- Placement: Bed on mortar used for adjacent work.
 - Bearing length (minimum): 100 mm.

MISCELLANEOUS ITEMS

830 BUILDING IN FRAMES

- Preparation: Remove horns and provide support.
- Fixing cramps: Fully bed in mortar.

840 OPENINGS FOR FRAMES

- Formation: Use accurate, rigid templates to required size.

G

Structural/Carcassing metal/timber

G20
Carpentry/ timber framing/ first fixing

G20 Carpentry/ timber framing/ first fixing

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers/suppliers of plywood must provide evidence that their product is tested in accordance with EN 13986:2004 and complies with Formaldehyde class E1. They must verify that regulated wood preservatives are absent from their product as defined by the standard.

GENERAL**105 TIMBER PROCUREMENT**

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

150 STRENGTH GRADING OF TIMBER

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

160 GRADING AND MARKING OF SOFTWOOD

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

PRODUCTS**270 UNGRADED SOFTWOOD FOR NONSTRUCTURAL USE GENERALLY**

- 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: Planed all round.
- Treatment:
 - Preservative treatment:
 - Organic solvent impregnation to NBS section Z12 and Wood Protection Association Commodity Specification C8;
 - Evidence must be provided that the softwood is free of any regulated wood preservatives
 - Design service life: 40 years.
 - Fire retardant treatment: None required.

- 310 STRUCTURAL PLYWOOD TO ENTRANCE LOBBY ROOF STRUCTURE & AS
PATTRESS IN STUD WALLS
- Standard: To the relevant national standards and quality control procedures specified in BS 5268-2, and so marked.
 - Type: To BS 5268-2 from FSC source.
 - Grade: Sheathing.
 - Nominal thickness/ number of plies: 18mm.
 - Finish: Unsanded.
 - Treatment: Refer to General conditions the start of this section.
 - Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood protection Association Commodity Specification C5.
Design service life: 40 years.
 - Fire retardant treatment: None required.
- 311 NON-STRUCTURAL PLYWOOD GENERALLY
- Standard: To an approved national standard.
 - Thickness: 18mm.
 - Appearance class to BS EN 635: E1.
 - Bond quality to BS EN 314-2: Class 1.
 - Finish: Unsanded.
 - Treatment:
 - Preservative treatment: Organic solvent impregnation to NBS section Z12 and Wood protection Association Commodity Specification C5.
Design service life: 40 years.
 - Fire retardant treatment: None required.

WORKMANSHIP GENERALLY

- 402 CROSS SECTION DIMENSIONS OF NONSTRUCTURAL SOFTWOOD
- Dimensions: Dimensions in this specification and shown on drawings are finished sizes.
 - Maximum permitted deviations from finished sizes: As stated in BS EN 1313-1:
 - Clause 6 for sawn sections.
 - Clause NA.2 for further processed sections.
- 420 WARPING OF TIMBER
- Bow, spring, twist and cup: Not greater than the limits set down in BS 4978 or BS EN 14081-1 for softwood, or BS 5756 for hardwood.
- 430 SELECTION AND USE OF TIMBER
- Timber members damaged, crushed or split beyond the limits permitted by their grading: Do not use.
- 435 NOTCHES, HOLES AND JOINTS IN TIMBER
- Notches and holes: Position in relation to knots or other defects such that the strength of members will not be reduced.
 - Scarf joints, finger joints and splice plates: Do not use without approval.
- 440 PROCESSING TREATED TIMBER
- Cutting and machining: Carry out as much as possible before treatment.
 - Extensively processed timber: Retreat timber sawn lengthways, thickened, planed, ploughed, etc.
 - Surfaces exposed by minor cutting/ drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

451 MOISTURE CONTENT TESTING

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

510 PROTECTION

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

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.

ERECTION AND INSTALLATION**900 EAVES SOFFIT VENTILATORS**

- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Type: Continuous strip.
- Colour: TBC.
- Airway: The equivalent of a continuous opening of not less than 25 mm for full length of eaves.

H Cladding/Covering

H11
Curtain walling

H11 Curtain walling

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TENDERING

10 INFORMATION TO BE PROVIDED WITH TENDER

- Submit the following curtain walling particulars:
 - Typical plan, section and elevation drawings at suitable scales.
 - Typical detailed drawings at large scales, including insulated glass units, Trespa spandrel panels and louvre units .
 - Technical information and certification demonstrating compliance with specification of proposed incorporated products and finishes, including insulated glass units, Trespa spandrel panels, louvre units and flanking construction .
 - Certification, reports and calculations demonstrating compliance with specification of proposed curtain walling.
 - Proposals for connections to and support from the building structure and building components.
 - Proposals for amendments to primary supporting structure and for secondary supporting structure additional to that shown on preliminary design drawings.
 - Schedule of builder's work, special provisions and special attendance by others.
 - Examples of standard documentation from which project quality plan will be prepared.
 - Preliminary fabrication and installation method statements and programme.
 - Schedule of products and finishes with a design life expectancy less than that specified in clause 440, with proposals for frequencies and methods of replacement.
 - Proposals for replacing damaged or failed products.
 - Areas of non-compliance with the specification.

TYPES OF CURTAIN WALLING

110 CURTAIN WALLING GENERALLY

- Supporting structure: New reinforced concrete bunt, existing reinforced concrete slab, New steel structure to SE's design .
- Curtain walling system:
 - Manufacturer: Wicona
 - Contact: Stuart Pollard (Specification Manager London)
 - HBS Centre, Silkwood Park, Wakefield WF5 9TG
 - M: [REDACTED]
 - T: [REDACTED]
 - F: [REDACTED]
 - E: stuart.pollard@hydro.com .
 - Product reference: WICONA WICTEC 50 .
- Type: Stick system, pressure equalised zone and mullion drained .
- Internal framing member:
 - Material: Extruded aluminium as clause 710 .
 - Finish: Permacover polyester powder coated to BS 6496 .
 - Colour/ texture: RAL colour and gloss level TBC .
 - Minimum film thickness: To manufactures recommendations but no less than 40 microns
- External cover cap:
 - Material: Extruded aluminium as clause 710 .
 - Finish: Permacover polyester powder coated to BS 6496 .
 - Colour/ texture: RAL colour and gloss level TBC .
 - Minimum film thickness: To manufactures recommendations but no less than 40 microns
- Glazing: Argon filled insulating glass units to achieve minimum U-value 1.6W/m²K .
 - Inner pane: 6mm low E clear toughened glass .
 - Outer pane:
 - Generally: 6mm clear toughened glass
 - GF/Mezzanine: Min 8mm laminated toughened glass as per Secure by Design guidance 55.5 & 66.1 to areas of high risk. Glazing to pass P2A Category of resistance under BS EN 356. Translucent glass (film or etching TBC) to areas as indicated on the drawings to provide privacy .
- Glazing system: Gaskets, cover plate fixed. .
- Panel/ facing type: Ceramic coated argon filled insulated glass units, foil backed insulation and aluminium lining panel to hide structural elements where required. Colour TBC .
 - External material: Ceramic coated argon filled insulating glass units comprising Ceramic coated glass, RAL colour and gloss level TBC, as inner pane and clear toughened laminated glass as outer pane .
 - External finish: Not required .
 - Internal material: Aluminium sheet .
 - Internal finish: Not required .
 - Core insulation: Foil backed insulation to comply with thermal performance requirements of clause 370; foil backing to act as vapour barrier and fully air-sealed to surrounding framing sections .
- Accessories: As determined by the sub-contractor to fully complete the installation and interfaces with other installations, including but not limited to; sill/head/abutment flashings (insulated and non-insulated), corner/angle pressings, movement joints, vapour barriers and air seals, gaskets, insulation, lightning conductors, M&E equipment, penetrations for cabling and its concealed routing, fire and acoustic stopping, ironmongery including suitable opening devices for all opening lights as well as restrictors with tamper proof release .
- Incorporated components: Opening lights, doors, louvres .
- Other requirements: Secondary structure to multi storey spaces by others. Manifestation to comply with Building Regulations Approved Document Part N and M. Note requirement to achieve Class 0 spread of flam. Note A Technal Approved dealer is to verify that any

proposed glass types are suitable to take all applied loads including wind, snow and guarding loads .

135 DOORS

Manufacturer: Wicona

Contact: Stuart Pollard (Specification Manager London)

HBS Centre, Silkwood Park, Wakefield WF5 9TG

M:

T:

F:

E: stuart.pollard@hydro.com .

- Product reference: WICSTYLE 65, WICSTYLE 75 or submit proposals including supporting documentation to demonstrate suitability for intensive use in high traffic/high wear environment. .
- Material: Aluminium .
- Finish: Permacover polyester powder coated to BS 6496 .
 - Colour/ texture: RAL colour and gloss level to be confirmed .
 - Minimum film thickness: To manufactures recommendations but no less than 40 microns
- Fixing: Submit proposals for concealed fixings into curtain walling .
- Other requirements: Door furniture as determined by the sub-contractor and suitable for intensive use in high traffic/high wear environment. Provide evidence of certification that doors pass under PAS 24:2012. Door design to prevent fingertrapping - submit proposals. Installation to be fully completed including, but not limited to: Pull handle/push plate, lever handles, locks, closers, kickplates, hinges, thresholds and perimeter seals as well as maglocks, security contacts and fully automatic electro-hydraulic swing door operators including their wire ways. Provide smoke vent(s), including actuators, fully automated in line with Engineer's specification. Double glazed sealed units to conform to parts K, M, & N of the building regulations and to achieve a U value to meet part L2 of the building regulations, based on energy model calculations .

136 WINDOWS

Manufacturer: Wicona

Contact: Stuart Pollard (Specification Manager London)

HBS Centre, Silkwood Park, Wakefield WF5 9TG

M:

T:

F:

E: stuart.pollard@hydro.com .

- Product reference: WICLINE 65 evo, WICLINE 75 evo .
- Material: Aluminium .
- Finish: Permacover polyester powder coated to BS 6496 .
 - Colour/ texture: RAL colour and gloss level to be confirmed .
 - Minimum film thickness: To manufactures recommendations but no less than 40 microns
- Fixing: Submit proposals for concealed fixings into curtain walling .
- Other requirements: Glazing: Double glazed sealed units to conform to parts K, M, & N of the building regulations and to achieve a U value to meet part L2 of the building regulations, based on energy model calculations .

- 141 LOUVRES TO COVER OPENING VENTS as indicated on the drawings
- Manufacturer: Submit proposals .
 - Product reference: Submit proposals .
 - Material: Aluminium .
 - Finish: Permacover polyester powder coated to BS 6496 .
 - Colour/ texture: RAL colour and gloss level TBC .
 - Minimum film thickness: 40 micrometres .
 - Louvre blade pitch and angle:
 - Pitch: 50mm
 - Angle: 45°.
 - Fixing: Surface fixed to window frame. Secure and vandal proof fixing. Submit proposals .
 - Other requirements:
 - Free area to Environmental Engineer's requirement
 - Bird mesh
 - Secure to withstand manual attack .

- 150 MATERIALS SPECIFICATION
- Minimum 'BRE Green Guide to Specification Online' rating: Submit proposals.

GENERAL REQUIREMENTS/ PREPARATORY WORK

- 210 DESIGN
- Curtain walling and associated features: Complete the detailed design. Submit before commencement of fabrication.
 - Related works: Coordinate in the detailed design.
- 220 SPECIFICATION
- Compliance standard: The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
 - Reference information: For the duration of the contract, keep available at the design office, workshop and on site copies of:
 - The CWCT 'Standard for systemised building envelopes'.
 - Publications invoked by the CWCT 'Standard for systemised building envelopes'.
- 230 INFORMATION TO BE PROVIDED DURING DETAILED DESIGN STAGE
- Submit the following curtain walling particulars:
 - A schedule of detailed drawings and dates for submission for comment.
 - A schedule of loads that will be transmitted from the curtain walling to the structure.
 - Proposed fixing anchor details relevant to structural design and construction.
 - A detailed testing programme in compliance with the Main Contract master programme.
 - A detailed fabrication and installation programme in compliance with the Main Contract master programme.
 - Proposals to support outstanding applications for Building Regulation consents or relaxations.

232 QUALITY PLAN

- Requirement: Submit during detailed design.
- Content: In accordance with BS 5750, BS EN ISO 9001 and including the following:
 - Name of the quality manager.
 - Quality assessment procedures.
 - Inspection procedures to be adopted in checking the work.
 - Stages at which check lists will be used and samples of the lists.
 - List of work procedures on the correct use of materials or components, both off site and on site.
 - List of product information with latest revisions.
 - Subcontractors involved in the work.
 - Subcontractors' quality plans.
 - Storage, handling, transport and protection procedures.
 - Procedure for registering and reporting non compliances.
 - Maintenance procedures and calibration records.
 - Certification that completed work complies with specification.
 - Check list register to ensure all items have been inspected and non compliances discharged.

235 INFORMATION TO BE PROVIDED BEFORE COMMENCEMENT TESTING OR FABRICATION OF CURTAIN WALLING

- Submit the following curtain walling particulars:
 - Detailed drawings to fully describe fabrication and installation.
 - Detailed calculations to prove compliance with design/ performance requirements.
 - Project specific fabrication, handling and installation method statements.
 - Certification for incorporated components manufactured by others confirming their suitability for proposed locations in the curtain walling.
 - Recommendations for spare parts for future repairs or replacements.
- Recommendations for safe dismantling and recycling or disposal of products.

250 PRODUCT SAMPLES

- General: Before commencing detailed design, submit labelled samples of:
 - Ceramic coated glass panel, HPL panel, typical mullion with pressure plate cap and typical mullion with retention toggle and structural silicon seal.
 - Coated samples should be in specified RAL colour and gloss level .

260 SAMPLES OF FIXINGS

- General: During detailed design, submit labelled samples of each type of fixing anchor, including casting-in restraints and shims, together with manufacturers' recommended torque figures.

270 FABRICATION SAMPLES

- General: During detailed design, submit samples of: 600x600mm assembly comprising; mullion, transom and ceramic coated glass panel with insulation and plasterboard framing .
 - Obtain approval of appearance before proceeding.

DESIGN/ PERFORMANCE REQUIREMENTS

- 305 CWCT 'STANDARD FOR SYSTEMISED BUILDING ENVELOPES'
- General: Unless specified or agreed otherwise comply with:
 - Part 2 - Loads, fixings and movement.
 - Part 3 - Air, water and wind resistance.
 - Part 4 - Operable components, additional elements and means of access.
 - Part 5 - Thermal, moisture and acoustic performance.
 - Part 6 - Fire performance
 - Part 7 - Robustness, durability, tolerances and workmanship.
 - Project performance requirements specified in this subsection: Read in conjunction with CWCT performance criteria.
- 312 INTEGRITY
- Requirement: The curtain walling must resist wind loads, dead loads and design live loads, and accommodate deflections and movements without damage.
 - Design wind pressure: Calculate in accordance with BS 6399-2, Standard Method:
 - Basic wind speed (Vb): 21m/s.
 - Altitude factor (Sa): 1.004.
 - Direction factor (Sd): 1.0.
 - Seasonal factor (Ss): 1.
 - Probability factor (Sp): 1.
 - Terrain and building factor (Sb): 1.89.
 - Size effect factor (Ca): 1.
 - External pressure coefficients (Cpe): -2.0 to +0.2 (roofs). -0.5 to +0.85 (walls).
 - Internal pressure coefficients (Cpi): -0.3 to +.2.
 - Dominant opening: Sub-contractor to establish.
 - Hard body impact loads: To BS 8200:
 - Location and category: Sub-contractor to establish.
 - Soft body impact loads - curtain walling to BS EN 14019:
 - Location and classification: Sub-contractor to establish.
 - Soft body impact loads - glass to BS EN 12600:
 - Location and classification: Sub-contractor to establish.
 - Permanent imposed loads: Glazing, spandrel panels, internal lining.
 - Temporary imposed loads: Maintenance, occupants, impact.
- 320 DEFLECTION UNDER DEAD LOADS
- Requirement: Framing members parallel to the curtain walling plane must not:
 - Reduce glass bite to less than 75% of design dimension.
 - Reduce edge clearance to less than 3 mm between members and immediately adjacent glazing units, panel/ facing units or other fixed units.
 - Reduce clearance to less than 2 mm between members and movable components such as doors and windows.
- 325 DEFLECTION UNDER WIND LOAD
- Requirement: To CWCT 'Standard for systemised building envelopes' clause 3.5 2 and the following additional requirements: Consult structural engineer.
 - Additional stiffness to CWCT 'Standard for systemised building envelopes' clause 3.5 4.2: Consult structural engineer.
- 330 GENERAL MOVEMENT
- Requirement: Curtain walling must accommodate anticipated building movements as follows: Consult structural engineer for any information required .

332 APPEARANCE AND FIT

- Requirement: Design curtain walling system:
 - To ensure position and alignment of all parts and features as shown on preliminary design drawings.
 - To accommodate deviations in the primary support structure.
- Primary support structure: Before commencing installation of curtain walling system, carry out survey sufficient to verify that required accuracy of erection can be achieved.
 - Give notice: If the structure will not allow the required accuracy or security of erection.
 - Design tolerances: Refer to Preliminaries and Section E05.
- Curtain wall envelope zone tolerances:
 - Width: Submit proposals.
 - Critical reference location: Submit proposals.
- Maximum permitted component and installation tolerances: Submit proposals.

340 AIR PERMEABILITY

- Requirement: Permissible air leakage rates of 1.5m³/hr/m² for fixed lights and 2.0 m³/hr/lin.m for opening lights must not be exceeded when the curtain walling is subjected to the peak test pressure.
- Permeability class to BS EN 12152: A4.
 - Peak test pressure: 600 Pa.

345 AIR PERMEABILITY EXFILTRATION

- Requirement: The maximum permissible air exfiltration rate through the curtain walling system must not exceed: 5 m³/(h.m²) at a test pressure of 50 Pa.

350 WATER PENETRATION

- Watertightness class to BS EN 12154: R7.
 - Peak test pressure: 600 Pa.
- Additional requirements: Underside of any transom not to be wetted at peak test pressure.

370 THERMAL PROPERTIES

- Method of calculating the thermal transmittance (U-value) of curtain walling/ each zone of curtain walling: Weighted U-value.
- Average U-value of curtain walling: Minimum 1.5 W/m²K as per Service Engineer's performance requirements.
- Curtain wall zone interfaces: Co-ordinate to achieve required average U-value.
- Method for assessing thermal transmittance (U-value) of assemblies: By calculation.

380 SOLAR AND LIGHT CONTROL

- Total solar energy transmission:
 - Maximum g-value - glazing only: not greater than 40%.
 - Maximum effective g-value - glazing with shading devices: Not applicable.
- Visible light transmission:
 - Minimum light transmission - glazing only: not less than 70%.
 - Minimum effective light transmission - glazing with shading devices: Not applicable.

385 THERMAL STRESS IN GLAZING

- Glass panes/ units: Must have adequate resistance to thermal stress generated by orientation, shading, solar control and construction.

- 390 AVOIDANCE OF CONDENSATION
- Requirement: Notional psychrometric conditions under which condensation must not form on building interior surfaces of framing members or any part of infill panels/ facings are:
 - Notional outdoor psychrometric conditions as BS 6229, table A1.
 - Notional indoor psychrometric conditions:
 - Temperature: 20°C.
 - Relative humidity: 50%.
 - Vapour pressure: 1.28 kPa .
- 410 SOUND TRANSMITTANCE
- Minimum weighted sound reduction index (Rw) to BS EN ISO 717-1:
 - Between internal and external surfaces of curtain walling: 32dB.
 - Minimum weighted standardized level difference (DnTw) to BS EN ISO 717-1:
 - Between adjacent floors abutting curtain walling: 45dB Dn,f,w.
 - Between adjacent rooms on same floor abutting curtain walling: 45dB Dn,f,w.
- 420 FIRE RESISTANCE OF CURTAIN WALLING
- Standard: To BS 476-22.
 - Minimum periods and criteria: Not required .
- 425 INTERNAL SURFACE SPREAD OF FLAME OF CURTAIN WALLING
- Standard: To BS 476-7.
 - Class 0.
- 430 FIRE STOPPING
- Locations: At junctions of curtain walling with compartment walls and floors.
 - Materials and methods of fixing: To ensure fire resistance not less than that specified for compartment walls and floors.
- 435 OPENING LIGHTS (WINDOWS)
- Performance criteria: To CWCT 'Standard for systemised building envelopes' Part 3.
 - Security:
 - Applicable opening lights: All.
 - Security rating: To LPS 1175 security rating classification (submit proposals).
 - Opening lights restrictive catches to CWCT 'Standard for systemised building envelopes' clause 4.2.5: To all opening lights in windows to floors above ground level with sill below 1500mm or windows at ground level presenting a collision hazard.
 - Ventilation requirement: To comply with Building Regulations AD Part F 2010.
 - Windows to be cleaned from inside of the building: As schedule.
 - Fasteners: Concealed multipoint, operated by an internal handle.
 - Integral locks: TBC.
- 436 DOORS AND OTHER ACCESS FACILITIES
- Performance criteria: To CWCT 'Standard for systemised building envelopes' Part 3.
 - Access facilities designated for use by disabled persons: All main entrance doors.
 - Strength and durability: To CWCT 'Standard for systemised building envelopes' clause 4.3.3.
 - Forces and tests: Submit proposal.
 - Security:
 - Applicable doors: All external doors.
 - Security rating: To LPS 1175 security rating classification or equivalent (submit proposals).

437 LOUVRES

- Performance classification to BS EN 13030.
 - Discharge operation: Inlet.
 - Water penetration class: B.
 - Discharge/ entry loss coefficient class: 4.

440 DURABILITY

- Relevant agents or degradation mechanisms: Sub-contractor to establish.
- Design life of the curtain walling system: Not less than 40 years.
- Secondary components: Submit details together with required maintenance regime, replacement periods and methods of replacement.

445 LIGHTNING PROTECTION SYSTEM

- Curtain wall components used as part of lightning protection system: Consult Service Engineer.

450 SAFETY

- Finished surfaces of curtain walling: Accessible internal and external areas must not:
 - Have irregularities capable of inflicting personal injury.
 - Release irritant or staining substances.

461 STRUCTURAL SEALANT REQUIREMENTS

- Structural sealant panel units: Installable, removable and replaceable without site application of structural bonding sealant.
- Structural sealant glazing design: Must limit design tensile stress of sealants to 138 kPa.

BREEAM PERFORMANCE REQUIREMENTS

475 DAYLIGHT PERFORMANCE

- Daylight calculations: In accordance with BS 8206-2, CIBSE 'Lighting guide LG10' and BRE 'Site layout guide'.
- BREEAM requirements:
 - Submit the following: Daylight performance schedule.
 - Calculations showing: Average daylight factor expressed as a percentage for each room/ area.

485 POTENTIAL FOR NATURAL VENTILATION

- Submit design plan and elevation drawings, and calculations confirming the following: A copy of the results from a software modelling tool recommended in CIBSE AM10 .

TESTING

510 COMPARISON (TYPE) TESTING

- Requirement: To CWCT 'Standard for systemised building envelopes', Part 8.
- Test results and reports: Before commencement of curtain walling fabrication and installation, submit proof of compliance with this specification.

520 PROJECT TESTING (SITE)

- Test results and reports: Before installation of general areas of curtain walling, submit proof of compliance with this specification.

530 TESTING AUTHORITY

- Requirement: Project testing must be carried out by a United Kingdom Accreditation Service (UKAS) approved independent laboratory.

635 SITE HOSE TEST

- Requirement: To CWCT 'Standard for systemised building envelopes', 'Standard test methods for building envelopes' Section 9.
- Joints to be tested: 5% of facade area in agreed locations.

PRODUCTS

710 ALUMINIUM ALLOY FRAMING SECTIONS

- Standard: To relevant parts of BS EN 515, BS EN 573, BS EN 755 and BS EN 12020.
- Alloy, temper and thickness: Suitable for the application and specified finish.
- Structural members: To BS 8118.

712 ALUMINIUM ALLOY SHEET

- Standards: To relevant parts of BS EN 485, BS EN 515 and BS EN 573.
- Alloy, temper and thickness: Suitable for the application and specified finish.

730 MECHANICAL FIXINGS

- Stainless steel: To BS EN ISO 3506, grade A2 generally, grade A4 when used in severely corrosive environments.
- Carbon steel: To BS 4190 and suitable for galvanizing or other protective coating.
- Aluminium brackets, rivets and shear pins: To relevant parts of BS EN 755.

732 ADHESIVES

- General: Not degradable by moisture or water vapour.

735 FIXING ANCHORS

- Type and use: Reviewed and approved by fixing manufacturers. Submit confirmatory information on request.
- Dimensions: Not less than recommended by their manufacturers.
- Adjustment capability: Sufficient in three dimensions to accommodate building structure and curtain walling fabrication/ installation tolerances.

737 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 for borosilicate glass.
 - BS EN 1863 for heat strengthened soda lime silicate glass.
 - BS EN 12150 for thermally toughened soda lime silicate glass.
 - BS EN 13024 for thermally toughened borosilicate glass.
 - BS EN ISO 12543 for laminated glass.
- Glass quality: Clean and free from obvious scratches, bubbles, cracks, rippings, dimples and other defects.
- Glass 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.

739 DIMENSIONAL TOLERANCES ON GLASS

- Measurement of tolerances: Before any thermal toughening/ heat strengthening.
- Pane dimensions less than 1500 mm:
 - For 3 to 6 mm thick glass: ± 1.0 mm.
 - For 8 to 12 mm thick glass: ± 1.5 mm.
 - For 15 mm thick glass: ± 2.0 mm.
 - For 19 mm and 25 mm thick glass: ± 2.5 mm.
- Pane dimensions more than 1500 mm:
 - For 3 to 6 mm thick glass: ± 1.5 mm.
 - For 8 to 12 mm thick glass: ± 2.0 mm.
 - For 15 mm thick glass: ± 2.5 mm.
 - For 19 mm and 25 mm thick glass: ± 3.0 mm.
- Pane squareness: Not more than 4 mm difference in diagonal measurements.

741 DISTORTIONAL TOLERANCES ON GLASS

- Measurement of tolerances: After any thermal toughening/ heat strengthening.
- Maximum bow: 0.2% of pane dimension.
- Maximum roller wave:
 - For 3 to 5 mm thick glass: 0.5 mm.
 - For 6 to 10 mm thick glass: 0.3 mm.
 - For 12 mm and thicker glass: 0.15 mm.
- Maximum edge dip:
 - For 3 to 5 mm thick glass: 0.8 mm.
 - For 6 to 10 mm thick glass: 0.5 mm.
 - For 12 mm and thicker glass: 0.25 mm.

745 INSULATING GLASS UNITS

- Standard and labels for hermetically sealed units: To BS EN 1279.
- Label: Each pane.
- Colour of aluminium perimeter spacers: Natural.
- Perimeter taping: Not to be used.
- Perimeter seals:
 - Resistant to UV light degradation on exposed edges.
 - Compatible with structural, assembly and weather sealants.

750 INFILL PANELS/ FACINGS

- Tolerances:
 - Deviation in size (maximum): ± 1 mm.
 - Deviation in flatness from plane per 2 m length (maximum): ± 1 mm.
- Rigidity: Adequate to comply with design/ performance requirements.

760 GASKETS

- Material:
 - Noncellular rubber to BS 4255-1.
 - Cellular rubber to ASTM-C509.
- Continuity: Outer gaskets of single front sealed curtain walling systems and inner gaskets of drained and ventilated or pressure equalized curtain walling systems must be formed in a complete frame with sealed joints. Vulcanized rubber gaskets must have factory moulded corner joints.
- Durability: Resistant to oxidation, ozone and UV degradation.

765 WEATHERSTRIPPING OF OPENING UNITS

- Material:
 - Noncellular rubber to BS 4255-1.
 - Cellular rubber to ASTM-C509.
 - Polypropylene woven pile, silicone treated.
- Attachment: Fixed in undercut grooves in framing sections using preformed corners, with any joints in the length.

770 GENERAL SEALANTS

- Selection: In accordance with BS 6213 from:
 - Silicone.
 - One part polysulfide.
 - Two part polysulfide.
 - One or two part polyurethane.
- Classification and requirements: To BS EN ISO 11600.
- Reaction to contact products and finishes: Stable and compatible.

772 CURTAIN WALLING JOINT ASSEMBLY SEALANTS

- Material: One part, low modulus silicone to BS EN ISO 11600, type F or G. Neutral curing where in contact with or close proximity to other products that may be adversely affected by acetoxy curing.
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.

780 THERMAL INSULATION

- Material: Submit proposal.
 - Recycled content: Contractor's choice.
 - Properties: Durable, rot and vermin proof and not degradable by moisture or water vapour.
- Fixing: Attached to or supported within the curtain walling so as not to bulge, sag, delaminate or detach during installation or in situ during the life of the curtain walling.

785 VAPOUR CONTROL LAYER

- Acceptable materials:
 - Aluminium alloy.
 - Carbon steel, galvanized or protective coated.
 - Stainless steel.
 - Reinforced membranes: Foil, plastics or rubbers, protected both sides by rigid facings/linings.
- Location: Warm side of thermal insulation.
- Integrity: Continuous, free from gaps and sealed at joints.

FINISHES

830 POWDER COATING

- Requirement: As section Z31.

FABRICATION AND INSTALLATION

910 GENERALLY

- Electrolytic corrosion: Prevent. Submit proposed methods.
- Fixings: Concealed unless indicated on detailed drawings. Where exposed they must match material and finish of the products fixed.
- Fabrication: Machine cut and drill products in the workshop wherever possible.
- Identification of products: Mark or tag to facilitate identification during assembly, handling, storage and installation. Do not mark surfaces visible in the completed installation.

- 912 METALWORK
 - Requirement: As section Z11, unless specified otherwise in this section.
- 915 GLAZING
 - Requirement: As section L40, unless specified otherwise in this section.
 - Directional patterned/ wired glass: Generally fix parallel to surround and align adjacent panes where seen together at close quarters.
- 917 FIXINGS/ ADHESIVES APPLICATION
 - Requirement: As section Z20, unless specified otherwise in this section.
- 920 SEALANT APPLICATION
 - Requirement: As section Z22, unless specified otherwise in this section.
- 930 ASSEMBLY
 - General: Carry out as much assembly as possible in the workshop.
 - Joints (other than movement joints): Rigidly secured, reinforced where necessary and fixed with hairline abutments.
 - Displacement of components in assembled units: Submit proposals for reassembly on site.
- 955 FIXING ANCHOR INSTALLATION
 - Site drilling or cutting into structure: Submit proposals for positions other than shown on detailed drawings.
 - Concrete supporting structure:
 - Cast-in inserts: Provide detailed locational information. Protect cavities in inserts from entry of concrete.
 - Edge fixing distances: Not less than recommended by fixing anchor manufacturers.
 - Corrective fabrication: Minimize. Where necessary, submit proposals.
- 965 PRELIMINARY CURTAIN WALLING INSTALLATION
 - Requirement: Complete an area for inspection and approval of appearance as follows: One bay .
- 970 CURTAIN WALLING INSTALLATION
 - Securing to fixing anchors: Through holes formed during fabrication only.
 - Tightening mechanical fasteners: To manufacturer's recommended torque figures. Do not overtighten fasteners intended to permit differential movement.
 - Protective coverings: Remove only where necessary to facilitate installation and from surfaces that will be inaccessible on completion.
- 975 WELDING
 - In situ welding: Not permitted. .
- 980 INTERFACES
 - Flashings, closers, etc: Locate and form correctly to provide weathertight junctions with the curtain walling.
- 982 IRONMONGERY
 - Assembly and fixing: Accurately, using fasteners with matching finish supplied by ironmongery manufacturer.
 - Completion: Check, adjust and lubricate as necessary to ensure correct functioning.
- 985 MAINTENANCE
 - Maintenance manual: Incorporate details within the Building Manual in accordance with CWCT 'Standard for systemised building envelopes' clause 7.6.1.
 - Materials certification and test reports to be included: Consult main contractor.

H40

Glass fibre reinforced concrete cladding/ components

H40 Glass fibre reinforced concrete cladding/ components

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF CLADDING/ COMPONENTS

130 PROPRIETARY GRC COMPONENTS COLUMN CLADDING

- Primary support structure: Existing reinforced concrete columns .
- GRC components:
 - Manufacturer: Hering UK LLP Wessex House, Oxford Road, Newbury Berkshire RG14 1PA
T: [REDACTED] Fax: [REDACTED]
Email: info@hering-uk.com, Web: www.heringinternational.com.
Product reference: betoShell XXL.
 - Construction: Manufacturer's standard.
 - Finish: To Architect's approval. Smooth with colour neutral anti-graffiti coating.
 - Fire rating: External surfaces: Class 1 surface spread of flame to BS 476-7.
- Fixings and fasteners: Facade panel fixing system to component manufacturer's recommendation.
- Joints: Open.
- Accessories/ Other requirements:
 - As required to complete installation of GRC components
 - Insulation to be installed prior to installation of GRC components in accordance with environmental engineer's requirements
 - Panel support system to be suitable for high traffic area with high risk of vandalism.

131 PROPRIETARY GRC COMPONENTS COLUMN CLADDING - ALTERNATIVE

- Primary support structure: Existing reinforced concrete columns .
- GRC components:
 - Manufacturer: BCM GRC Ltd. Unit 22, Civic Industrial Park, Whitchurch. Shropshire SY13 1TT .
Product reference: Grade 18P Hand Spray Glass Reinforced Concrete.
 - Construction: single skin panel to be nominally 15- 18mm thickness. (To include GRC backing and stone face). Panels to incorporate edge returns as required to meet the design specification..
 - Finish: To Architect's approval. Smooth with colour neutral anti-graffiti coating such as Hydron Nu-Cryl A.G. HDC - exact specification to manufacturer's recommendation.
 - Fire rating: External surfaces: Class 1 surface spread of flame to BS 476-7.
- Fixings and fasteners: Facade panel fixing system to component manufacturer's recommendation.
- Joints: Open.
- Accessories/ Other requirements:
 - As required to complete installation of GRC components
 - Insulation to be installed prior to installation of GRC components in accordance with environmental engineer's requirements
 - Panel support system to be suitable for high traffic area with high risk of vandalism
 - Panels to be manufactured in accordance with the Specification for the Manufacture and Testing of Glass Reinforced Concrete published by Glass Reinforced Concrete Association (as Clause see 610) and the Approved Manufacturers Scheme..

GENERAL REQUIREMENTS/ PREPARATORY WORK

205 CONTRACTOR'S DESIGN OF CLADDING TO COLUMNS

- Design responsibility: Determine sizes and thickness of cladding panels and type size, number and spacing of fixings to suit architect's panel layout.
- Structural and fire requirements:
 - Generally: As section B50.
 - Modifications: None.
 - Design: Complete the design in accordance with the designated code of practice to satisfy specified performance criteria.
- Functional requirements: As specified in this section.
- Additional requirements: Comply with the recommendations of GRCA publications 'Specification for the manufacture, curing and testing of GRC products' and 'Guide to fixings for glass fibre reinforced concrete cladding'.

225 FIXINGS AND FASTENERS TO COMPONENTS

- Fixing type: Submit proposals.
 - Material: Austenitic stainless steel, grade 1.4401 (316).
 - Isolation of fixings: Separate dissimilar metals at risk of bimetallic corrosion with suitable plastic washers, sleeves etc.

240 INFORMATION TO BE PROVIDED DURING DETAILED DESIGN

- Submit the following GRC particulars:
 - A schedule of detailed drawings and dates for submission for comment.
 - A schedule of loads that will be transmitted from GRC to the support structure/ background.
 - Proposed fixing details and systems relevant to structural design and construction with methods of adjustment and tolerances.
 - A schedule of fabrication tolerances/ size tolerances.
 - A schedule of mix details with design limit of proportionality (LOP) and modulus of rupture (MOR) for each mix.
 - A detailed testing programme in compliance with Main Contract master programme.
 - A detailed fabrication and installation programme in compliance with Main Contract master programme.
- Timing of submissions: Consult main contractor.

250 PRODUCT CONTROL SAMPLES

- GRC samples: Before general manufacture obtain approval of appearance of fully tested compliant control samples of: A typical cladding panel.
 - Finish: Include all variations of face mix and applied surface finish

260 FIXING SAMPLES

- Fixings: At an agreed stage during detailed design, submit samples of: All proposed GRC fixings.

DESIGN/ PERFORMANCE REQUIREMENTS

330 PANEL ACCURACY

- Finished dimensions of completed panels: Within the permissible deviations given in BS 8297, table 11.
- Accuracy of moulds: Check overall dimensions, straightness, squareness, twist and flatness of moulds immediately before each reuse, and of each unit as soon as possible after demoulding. Make adjustments to moulds as necessary.

TESTING

410 QUALITY CONTROL

- Production control standard: To BS EN 1169.
- Quality control standard: To BS EN ISO 9001 or the GRCA Approved Manufacturers Scheme.

420 DRY MATERIALS

- Production samples: Take during manufacture.
- Constituent samples: Take roving, sand, cement and facing material samples from each consignment. Store until test data has been processed.
- Admixtures, curing agents, formwork release agents: Retain manufacturers' certificates.

430 WET MATERIALS

- Production samples: Take before production starts and when mix or equipment settings are changed.
 - Matrix consistency standard: To BS EN 1170-1.
 - Roving delivery rate: Bag test to GRCA, 'Specification for the manufacture, curing and testing of GRC products'.
- Test boards: Take from each shift.
 - Fibre content standard: To BS EN 1170-2.
- Thickness tests: At regular intervals over area of each production panel.
- Values for compliance:
 - Minimum fibre content requirement (for all mixes): As mix design.

440 CURED MATERIALS

- Test board frequency: Take from each production team at each shift.
 - Curing: Under water.
- Test for structural requirements:
 - Bending strength standard: To BS EN 1170-5.
 - Time: 28 days after production.
- Tests for other requirements:
 - Absorption and dry density standard: To BS EN 1170-6.
 - Time: Daily.
- Values for compliance: Minimum test board requirements are:
 - Vibration cast (grade 5):
 - Average limit of proportionality (LOP) of 4 consecutive test samples: 6.5 N/mm².
 - Minimum LOP of individual test sample: 5.0 N/mm².
 - Average modulus of rupture (MOR) of 4 consecutive test samples: 7.0 N/mm².
 - Minimum MOR of individual test sample: 5.0 N/mm².
 - Minimum bulk density (dry): 1800 kg/m³.
 - Minimum bulk density (wet): 2000 kg/m³.
 - Vibration cast (grade 10 or 10P):
 - Average LOP of 4 consecutive test samples: 7.25 N/mm².
 - Minimum LOP of individual test sample: 5.0 N/mm².
 - Average MOR of 4 consecutive test samples: 12.0 N/mm².
 - Minimum MOR of individual test sample: 8.50 N/mm².
 - Minimum bulk density (dry): 1800 kg/m³.
 - Minimum bulk density (wet): 2000 kg/m³.
 - Spray-up (grade 18 or 18P):
 - Average LOP of 4 consecutive test samples: 8.0 N/mm².
 - Minimum LOP of individual test sample: 6.0 N/mm².
 - Average MOR of 4 consecutive test samples: 21.0 N/mm².
 - Minimum MOR of individual test sample: 15.0 N/mm².
 - Minimum bulk density (dry): 1800 kg/m³.
 - Minimum bulk density (wet): 2000 kg/m³.
- Other tests:
 - Full scale load tests, minimum two panels taken at random, age 28 days
 - Weathering type tests as BS EN 1170-8, at 10, 25 and 50 ageing cycles.

450 PRODUCTION NON-COMPLIANCE

- Extent of GRC at risk:
 - Failure of single test board: Material produced between previous complying test board and next complying test board.
 - Failure of consecutive groups of four boards: First and fourth test boards together with all intervening material.
- Action in the event of production non-compliance: Submit proposals.

MATERIALS

510 ALKALI-RESISTANT GLASS FIBRE

- Standard: To BS EN 15422.
 - Type: Alkali-resistant, continuous filament glass fibre.
- Manufacturer: Contractor's choice.
 - Product reference: Submit proposal.

520 CEMENT

- Standard: To BS EN 197-1, CEM 1 Portland cement.
 - Type: Ordinary Portland cement, 52.5N.

- 530 SAND
 - Type: Silica sand to GRCA 'Specification for the manufacture, curing and testing of GRC products'.
- 540 MIXING WATER
 - Standard: To BS EN 1008.
- 550 ADMIXTURES
 - Type: Submit proposals.
 - Calcium chloride based admixtures: Do not use if GRC contains cast-in steel.
- 580 SURFACE COATING
 - Coating: Anti-graffiti coating, colour neutral.
 - Manufacturer: Submit proposal.
 - Product reference: Submit proposal.
 - Application: As recommended by manufacturer.

MANUFACTURE

- 610 GENERALLY
 - Standard: To GRCA 'Specification for manufacture, curing and testing of GRC products' and BS EN 1169 for factory production.
- 615 MOULDS
 - Material and construction: To accommodate the panel size, complexity and detail incorporated in the product.
- 620 CEMENTITIOUS SLURRY
 - Mixing: In high shear mixer in accordance with the mixer manufacturer's instructions and loading sequence.
- 625 PREMIX GRC
 - Mixing: In forced pan mixer, gradually incorporating AR fibres into cementitious slurry.
- 630 SPRAY-UP GRC
 - Spraying: Use proprietary equipment that incorporates simultaneous deposition of known quantities of matrix and chopped glass fibre.
- 640 MIST COAT
 - Mix: As backing mix without fibres
 - Additives: Acrylic polymer may be included in mist coat slurry.
 - Thickness: As thin as practicable.
 - Pigments: As backing mix.
- 645 FACE MIX
 - Consolidation: To a uniform, consistent thickness appropriate for proposed finish and to prevent backing mix being visible once unit has cured.
 - Thickness measurement: Check and record at regular intervals over entire unit.
- 650 BACKING MIX
 - Consolidation: In thin layers of 3-4 mm to achieve the required thickness.
 - Thickness measurement: Check and record total thickness of GRC at same locations as facing mix.

660 CONSOLIDATION

- Method: By trowelling, tamping, rolling or vibration, combinations of these or by vacuum de-watering.
- Layers: Compact each sprayed layer and final layer before matrix has set.

680 CURING NON-POLYMER GRADE GRC

- Before demoulding: Cover filled mould with polyethylene immediately after spraying and compacting.
 - Temperature: Minimum 5°C, maximum 50°C.
 - Duration: Until component has gained sufficient strength for demoulding and transporting.
- After demoulding:
 - Temperature: Minimum 16°C, maximum 30°C.
 - Duration: Minimum seven days.
 - Humidity: 95% relative humidity.

INSTALLATION

710 GENERALLY

- Prefabrication: Complete products and attach fixings in workshop wherever possible.
- Identification: Mark or tag products. Do not mark surfaces visible in the complete installation.
- Electrolytic corrosion: Isolate dissimilar metals.

720 SUITABILITY OF STRUCTURE

- Contractor's survey:
 - Programme: Not less than two weeks before commencement of cladding installation.
 - Scope: Geometric survey of supporting structure, checking line, level and fixing points.
 - Coordinate: With surveys for adjacent cladding.
 - Give notice: If the structure will not allow the required accuracy or security of erection.
- Setting out: Establish erection datum points, lines and levels for a complete elevation at a time unless otherwise agreed.

730 INSTALLATION OF INTERFACES

- General: Locate flashings, closers etc. correctly with neat overlaps to cladding to form weatherproof junctions.

740 METALWORK

- Material standards and fabrication: As section Z11.

750 WELDING

- In situ welding: Not permitted.

765 ACCURACY OF ERECTION OF GRC COMPONENTS

- Joint widths: Within joint lengths, including in-line continuations across transverse joints, as follows:
 - Tolerance: Greatest width not to exceed least width by more than 15% width of joint.
 - Variations: Evenly distribute, with no sudden changes.
- Offset in elevation: Between component edges across transverse joints not to exceed 10% width of joint.
- Offset in plan or section: Between flat faces of adjacent units across joints not to exceed 10 % width of joint.
- Sealant joints width limitations: To recommendations of sealant manufacturer.
- Finished work: True to line and plane with satisfactory fit at junctions.

770 FIXING

- Torque figures and shim dimensions: Do not exceed fixing manufacturer's recommendations.
- Grouting: Fill at dowel positions to panel base supports with resilient filler as recommended by GRC manufacturer.
- Give notice: Before covering up loadbearing fixings.

H92
Rainscreen cladding

H92 Rainscreen cladding

TO BE READ WITH PRELIMINARIES/GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TENDERING

10 INFORMATION TO BE PROVIDED WITH TENDER

- Submit the following cladding particulars:
 - Typical plan, section and elevation drawings at suitable scales.
 - Typical detailed drawings at large scales, including flashing and abutment details .
 - Technical information and certification demonstrating compliance with specification of proposed incorporated products and finishes, including thermal insulation .
 - Certification, reports and calculations demonstrating compliance with specification of proposed cladding.
 - Proposals for connections to and support from the primary support structure.
 - Proposals for primary support structure additional to that shown on preliminary design drawings.
 - Schedule of builder's work, special provisions and special attendance by others.
 - Examples of standard documentation from which project quality plan will be prepared.
 - Preliminary fabrication and installation method statements and programme.
 - Proposals for replacing damaged or failed products.
 - Areas of non-compliance with specification.

11 INFORMATION TO BE PROVIDED WITH TENDER

- In addition to the cladding spcified in the below clauses 120 & 123 submit comparative supply and install costs per m2 of the whole cladding system for the following alternative materials:

Reynobond - Duragloss 5000:

- o Metallic std & non-std (Satin gloss)
- o Chameleon
- o Anodised Look (Satin gloss)

Alucobond:

- o Spectra, Sakura 917.

Zinc:

- o QUARTZ ZINC composite polymer panel by VM Zinc

Note: Face fastened solutions permitted.

TYPE(S) OF RAINSCREEN CLADDING

- 120 RAINSCREEN CLADDING TO COLUMNS & EXTERNAL ENVELOPE OF MAIN ENTRANCE CANOPY
- Primary support structure: Reinforced concrete half column with precast concrete cladding.
 - Rainscreen cladding system:
 - Manufacturer: Submit proposals.
 - Type: Drained and back ventilated.
 - Rainscreen panel:
 - Manufacturer:

KME Architectural Solutions
C/O KME Yorkshire Limited
East Lancashire Road
Kirkby
<http://www.kmearchitectural.com>.
Product reference: PROTEUS HR honeycomb rainscreen panel.
 - Material: aluminium honeycomb core structurally bonded between two lightweight zinc skins.
zinc sheets manufacturer:
NedZink B.V., Postbus 2135, 6020 AC Budel, Hoofdstraat 1, 6024 AA Budel-Dorplein, Netherlands
Tel: [REDACTED]
web: nedzink.com
 - zinc sheets supplier:
SIG Zinc & Copper, Warnell, Welton, Carlisle, Cumbria, CA5 7HH
Contact:
Simon Walker
Category Manager
simonwalker@sigdandt.co.uk
[REDACTED]
 - Thickness: To be confirmed by manufacturer. Provide backing panels to easy-to-reach locations if required to pass Category A under BS8200: 1985.
 - Finish/ Colour: NedZink NOVA, pre-weathered.
 - Fasteners: Concealed as recommended by panel manufacturer.
Number and location: As recommended by panel manufacturer to suite location and panel layout.
 - Joint type: TBC.
 - Joint width: 20mm.
 - Air gap: min 25 mm.
 - Secondary support/framing system: Vertical rails with fixing brackets on thermal break spacers.
 - Manufacturer: Submit proposals.
Product reference: As recommended by panel manufacturer to suit location and panel layout.
 - Material: Aluminium.
 - Fasteners: As recommended by panel manufacturer.
Number and location: As recommended by panel manufacturer to suite location and panel layout.
 - Backing wall: Existing diamond shaped reinforced concrete half column with precast concrete cladding.
 - Vapour control layer: As clause 780.
 - Thermal insulation: As clause 776.
 - Breather membrane: As clause 785.
 - Accessories: Include products, fixings and interfaces necessary to complete the fabrication and installation.
 - Incorporated components: Flashings, insect mesh.
 - Other requirements: None.

123 RAINSCREEN CLADDING TO SPANDREL PANELS

- Primary support structure: Precast structural reinforced concrete spandrel panel.
- Rainscreen cladding system:
 - Manufacturer: Submit proposals.
 - Type: Drained and back ventilated.
- Rainscreen panel:
 - Manufacturer:

KME Architectural Solutions
C/O KME Yorkshire Limited
East Lancashire Road
Kirkby
<http://www.kmearchitectural.com>.
Product reference: PROTEUS HR honeycomb rainscreen panel.
 - Material: aluminium honeycomb core structurally bonded between two lightweight zinc skins.
zinc sheets manufacturer:
NedZink B.V., Postbus 2135, 6020 AC Budel, Hoofdstraat 1, 6024 AA Budel-Dorplein, Netherland
Tel: [REDACTED]
web: nedzink.com
 - zinc sheets supplier:
SIG Zinc & Copper, Warnell, Welton, Carlisle, Cumbria, CA5 7HH
Contact:
Simon Walker
Category Manager
simonwalker@sigdandt.co.uk
[REDACTED]
 - Thickness: To be confirmed by manufacturer.
 - Finish/ Colour: NedZink NOVA, pre-weathered.
 - Fasteners: Concealed as recommended by panel manufacturer.
Number and location: As recommended by panel manufacturer to suite location and panel layout.
 - Joint type: TBC.
 - Joint width: 20mm.
- Air gap: min 25 mm.
- Secondary support/framing system: Vertical rails with fixing brackets on thermal break spacers.
 - Manufacturer: Submit proposals.
Product reference: As recommended by panel manufacturer to suite location and panel layout.
 - Material: Aluminium.
 - Fasteners: As recommended by panel manufacturer.
Number and location: As recommended by panel manufacturer to suite location and panel layout.
- Backing wall: Structural RC spandrel panel.
 - Vapour control layer: As clause 780.
 - Thermal insulation: As clause 776.
 - Breather membrane: As clause 785.
- Accessories: Include products, fixings and interfaces necessary to complete the fabrication and installation.
- Incorporated components: Copings, cill pressings, window head drip pressings, other flashings, insect mesh.
- Other requirements: None.

- 125 RAINSCREEN CLADDING GENERALLY. FIRST FOUR FLOORS ELEVATIONS & INTERNAL ENVELOPE OF MAIN ENTRANCE CANOPY & CANOPIES IN GENERAL.
- Primary support structure: Reinforced concrete, existing brickwork, new SFS.
 - Rainscreen cladding system:
 - Manufacturer: Submit proposals.
 - Type: Drained and back ventilated.
 - Rainscreen panel:
 - Manufacturer: CGL Systems, 2 Young Place, Kelvin Industrial Estate, East Kilbride, Glasgow, G75 0TD, Tel: [REDACTED] Email: sales@cglsystems.co.uk.
Product reference: CGL Wallplank System
Provide backing panels to ground floor and easy to reach locations if required to pass Category A under BS8200: 1985. Description: Readily accessible to public and others with little incentive to exercise care. Prone to vandalism and abnormally rough use. Example: External walls of housing and public buildings in vandal prone areas.
 - Material: coil-coated aluminium.
 - Thickness: To suit application.
 - Finish/ Colour: PvdF paint finish, colour TBC.
 - Fasteners: Concealed as recommended by panel manufacturer.
Number and location: As recommended by panel manufacturer to suite location and panel layout.
 - Joint type: Labyrinth.
 - Joint width: As per Architect's design.
 - Air gap: 25 mm.
 - Secondary support/framing system: Vertical or horizontal rails with fixing brackets on thermal break spacers. Provide proposal of secondary structure to support ventilation shafts roofs - coordination required with support of louvre panels.
 - Manufacturer: Submit proposals.
Product reference: As recommended by panel manufacturer to suite location and panel layout.
 - Material: Aluminium.
 - Fasteners: As recommended by panel manufacturer.
Number and location: As recommended by panel manufacturer to suite location and panel layout.
 - Backing wall: Reinforced concrete, brickwork, SFS.
 - Vapour control layer: As clause 780.
 - Thermal insulation: As clause 776.
 - Breather membrane: As clause 785.
 - Accessories: Include products, fixings and interfaces necessary to complete the fabrication and installation.
 - Incorporated components: Flashings, window cill and head drip pressings, gutters to canopies insect mesh etc.
 - Other requirements: Include perforation as indicated on Architect's drawing 1279 (06) 121. Free area to Mechanical Engineer's requirement..
- 130 MAJOR NONSTANDARD COMPONENTS 'CROWN'
- Manufacturer: TBC.
 - Product reference: TBC.
 - Material: TBC.
 - Finish: TBC.
 - Fixing:

As recommended by panel manufacturer to suit environmental conditions;
Large wedge shaped elements fixed back to galvanized steel subframe to structural engineer's detail installed on top of existing RC columns.
 - Other requirements: Include products, fixings and interfaces necessary to complete the fabrication and installation.

GENERAL REQUIREMENTS/PREPARATORY WORK

210 DESIGN

- Rainscreen cladding system and associated features: Complete detailed design in accordance with this specification and the preliminary design drawings and submit before commencement of fabrication.
- Related works: Coordinate in detailed design.

215 DESIGN PROPOSALS

- Submission of alternative proposals: Preliminary design drawings indicate intent. Other reasonable proposals will be considered.

220 SPECIFICATION

- Compliance standards: The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
- Reference information: For the duration of the contract, keep available at the design office, workshop and on site copies of:
 - The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
 - Publications invoked by the CWCT 'Standard for systemised building envelopes'.

230 INFORMATION TO BE PROVIDED DURING DETAILED DESIGN

- Submit the following cladding particulars:
 - A schedule of detailed drawings and dates for submission for comment.
 - A schedule of loads that will be transmitted from the rainscreen cladding to the structure.
 - Proposed fixing details and systems relevant to the structural design and construction with methods of adjustment and tolerances.
 - A schedule of fabrication tolerances/ size tolerances.
 - A detailed testing programme in compliance with the Main Contract master programme.
 - A detailed fabrication and installation programme in compliance with the Main Contract master programme.
 - Proposals to support outstanding applications for Building Regulation consents or relaxations.

232 QUALITY PLAN

- Requirement: Submit during detailed design.
- Content: In accordance with BS EN ISO 9001 and including the following:
 - Name of the quality manager.
 - Quality assessment procedures.
 - Inspection procedures to be adopted in checking the work.
 - Stages at which check lists will be used and samples of the lists.
 - List of work procedures on the correct use of materials or components, both off site and on site.
 - List of product information with latest revisions.
 - Subcontractors involved in the work.
 - Subcontractors quality plans.
 - Storage, handling, transport and protection procedures.
 - Procedure for registering and reporting non compliances.
 - Maintenance procedures and calibration records.
 - Certification that completed work complies with specification.
 - Check list register to ensure all items have been inspected and non compliances discharged.

235 INFORMATION TO BE PROVIDED BEFORE COMMENCEMENT OF TESTING OR MANUFACTURE OF RAINSCREEN CLADDING SYSTEM

- Submit the following cladding particulars:
 - Detailed drawings to fully describe fabrication and installation.
 - Detailed calculations to prove compliance with design/ performance requirements.
 - Project specific fabrication, handling and installation method statements.
 - Certification for incorporated components manufactured by others confirming their suitability for proposed locations in the rainscreen cladding.
 - Recommendations for spare parts for future repairs or replacements.
 - Recommendations for safe dismantling and recycling or disposal of products.

240 PRODUCT SAMPLES

- General: Before commencing detailed design, submit labelled samples of: panels in clause 120, 123, 125 and 130 .

250 SAMPLES OF FIXINGS

- General: During detailed design, submit labelled samples of each type of fixing, together with manufacturers' recommended torque figures.

260 FABRICATION SAMPLES

- General: During detailed design, submit samples of: 600x600mm cladding incorporating horizontal and vertical joints for clause 120, 123, 125 and 130 .
Obtain approval of appearance before proceeding.

DESIGN/PERFORMANCE REQUIREMENTS

310 CWCT 'STANDARD FOR SYSTEMISED BUILDING ENVELOPES'

- General: Unless specified or agreed otherwise comply with:
 - Part 2 - Loads, fixings and movement.
 - Part 3 - Air, water and wind resistance.
 - Part 4 - Operable components, additional elements and means of access.
 - Part 5 - Thermal, moisture and acoustic performance.
 - Part 6 - Fire performance.
 - Part 7 - Robustness, durability, tolerances and workmanship.
- Project performance requirements specified in this subsection: Read in conjunction with CWCT performance requirements.

342 CONTRACTOR'S DESIGN OF RAINSCREEN GENERALLY

- Design responsibility: Determine sizes and thickness of panels and types, sizes and numbers of fixings to suit backing wall and the layout and details of supporting steelwork.
- Design standard: To CWCT 'Standard for systemised building envelopes'.
- Structural and fire requirements:
 - Generally: As section B50.
 - Modifications: None.
 - Design: Complete the design in accordance with the designated code of practice to satisfy specified performance criteria.
- Functional requirements: As specified in this section, with fire stopping to the requirements of the Building Regulations.
- Additional requirements: As specified in this section.

350 DEFLECTION UNDER WIND LOAD

- Requirement: For listed components, at positive and negative applications of the design wind pressure, normal deflections are not to exceed: - Panel support system to be suitable for high traffic area with high risk of vandalism.
- Additional stiffness to CWCT 'Standard for systemised building envelopes' clause 3.5.4.2: Not allowed.

360 WIND RESISTANCE - CYCLIC LOADING

- Requirement: No reduction in the integrity of the rainscreen cladding must occur when subjected to the test sequence given in CWCT 'Standard for systemised building envelopes', clause 8.14.6.
- Test method: As clause 665.
 - Effective wind pressure: To be established by sub-contractor.

370 APPEARANCE AND FIT

- Requirement: Design rainscreen wall:
 - To ensure position and alignment of all parts and features as shown on preliminary design drawings.
 - To accommodate deviations in the primary support structure.
- Primary support structure: Before commencing installation of rainscreen cladding system, carry out survey sufficient to verify that required accuracy of erection can be achieved.
 - Give notice: If the structure will not allow the required accuracy or security of erection.
 - Design tolerances: TBC.
- Rainscreen envelope zone tolerances:
 - Width: TBC.
 - Critical reference location: TBC.
- Maximum permitted component and installation tolerances:
 - Panel length ± 2 mm.
 - Panel width ± 1 mm.
 - Secondary support bracket length ± 1 mm.
 - Panel tolerance ± 2 mm, installation tolerance ± 2 mm, overall = ± 4 mm.

380 GENERAL MOVEMENT

- Requirement: Rainscreen cladding must accommodate anticipated building movements as follows: Consult Structural Engineer for information .

385 THERMAL MOVEMENT - SERVICE TEMPERATURE RANGES

- Requirement: To CWCT 'Standard for systemised building envelopes' clause 2.7.2 amended and/ or with the addition of the following: TBC.

390 AIR PERMEABILITY EXFILTRATION

- Requirement: The maximum permissible air exfiltration rate through the building envelope system must not exceed: $4 \text{ m}^3/(\text{h.m}^2)$ at a test pressure of 50 Pa.

410 AIR PERMEABILITY

- Permeability class to BS EN 12152: A4.
 - Peak test pressure: 600 Pa.

420 WATER PENETRATION

- Watertightness class to BS EN 12154: R7.
 - Peak test pressure: 600 Pa.
- Additional requirements: Insulation attached to backing wall not to be wetted at peak test pressure.

425 WIND LOAD SERVICEABILITY AND SAFETY OF RAINSCREEN PANELS - CYCLIC WIND LOADING

- Method of determination: By calculation: Submit verification performance.

430 THERMAL PROPERTIES

- Method for calculating the thermal transmittance (U-value) of the rainscreen wall: Weighted U-value.
- Average U-value of rainscreen wall: $0.15 \text{ W/m}^2\text{K}$.
- Method for assessing thermal transmittance (U-value) of assemblies: By calculation.

440 AVOIDANCE OF CONDENSATION

- Requirement: Psychrometric conditions under which condensation must not form within or on the interior surface of the rainscreen wall or any surface of the wall that is on the warm side of insulation are:
 - Notional outdoor psychrometric conditions as BS 6229, table A1.
 - Notional indoor psychrometric conditions:
 - Temperature: 20°C.
 - Relative humidity: 55%.
 - Vapour pressure: 1.28 kPa .
- Winter interstitial condensate:
 - Calculated amount (maximum): 0.35 kg/m².
 - Calculated annual net retention: Nil.

450 VAPOUR CONTROL LAYER

- Interstitial condensation risk within rainscreen wall: Determine using the method described in BS 5250 Annex D. If necessary, provide a suitable vapour control layer to ensure that damage and nuisance from interstitial condensation does not occur.

460 SOUND TRANSMITTANCE

- Minimum weighted sound reduction index (R_w) to BS EN ISO 717-1:
 - Between internal and external surfaces of rainscreen clad wall: 32 dB R_w.
- Minimum weighted standardized level difference (D_{nTw}) to BS EN ISO 717-1.
 - Between adjacent floors abutting rainscreen clad wall: 45 dB D_{nTw}.
 - Between adjacent rooms on same floor abutting rainscreen clad wall: 45 dB D_{nTw}.

480 FIRE RESISTANCE OF BACKING WALL TO BS 476- 21

- Minimum periods and criteria: 60 min. integrity, 60 min. insulation .

485 INTERNAL SURFACE SPREAD OF FLAME OF BACKING WALL TO BS 476-7

- Class: 0 .

490 CAVITY FIRE BARRIERS TO BS 476-20

- Requirement: To resist the passage of flame and smoke for not less than 30 min. integrity, 30 min, insulation .

495 DURABILITY

- Relevant agents or degradation mechanisms: To be determined by sub-contractor.
- Design life of the rainscreen cladding system: Not less than 50 years.
- Secondary components: Submit details together with required maintenance regime, replacement periods and methods of replacement.

497 LIGHTNING PROTECTION SYSTEM

- Rainscreen components used as part of lightning protection system: Consult services engineer.

TESTING

510 COMPARISON (TYPE) TESTING

- Verification of performance:
 - Submit: Certification and reports satisfying CWCT 'Standard for systemised building envelopes', clause 1.5.5 items a and b.
- Commencement of fabrication and installation of rainscreen cladding: Not until test results and reports showing compliance with this specification have been submitted.

685 SITE HOSE TEST

- Requirement: To CWCT 'Standard for systemised building envelopes', 'Standard test methods for building envelopes' Section 9.
 - Joints to be tested: Horizontal, vertical and corner joints over 5% of cladding area.
 - Location to be agreed.

PRODUCTS

710 ALUMINIUM ALLOY FRAMING SECTIONS

- Standards: To BS EN 755 alloy EN AW-6063 and suitable for the specified finish.
- Structural members: To comply with BS EN 1999-1-1, -3 and -4.

712 ALUMINIUM ALLOY SHEET

- Standards: To BS EN 485, BS EN 515 and BS EN 573.
- Alloy, temper and thickness: Suitable for the application and specified finish.

715 CARBON STEEL FRAMING SECTIONS/ REINFORCEMENT

- Standards: To the relevant parts of BS 7668, BS EN 10029, BS EN 10025, and BS EN 10210.
- Thickness: Suitable for the application, and for galvanizing or other protective coating.

730 MECHANICAL FIXINGS - MATERIAL REQUIREMENTS

- Stainless steel: To BS EN ISO 3506 grade A2 generally, grade A4 when used in severely corrosive environments.
- Carbon steel: To BS 4190 and suitable for galvanizing or other protective coating.
- Aluminium: To BS EN 755.

735 FIXINGS AND FASTENERS

- Type and use: Reviewed and approved by manufacturers. Submit confirmatory information on request.
- Dimensions: Not less than recommended by their manufacturers.
- Adjustment capability: Sufficient in three dimensions to accommodate primary support structure and rainscreen cladding fabrication/ installation tolerances.

760 GASKETS

- Material:
 - Noncellular rubber to BS 4255-1.
 - Cellular rubber to ASTM-C509.
- Durability: Resistant to oxidation, ozone and UV degradation.

765 WEATHERSTRIPPING OF OPENING UNITS

- Material:
 - Noncellular rubber to BS 4255-1.
 - Cellular rubber to ASTM-C509.
 - Polypropylene woven pile, silicone treated.
- Installation: Fixed in undercut grooves in framing sections using preformed corners with any joints in the length.

770 GENERAL SEALANTS

- Selection: In accordance with BS 6213 from:
 - Silicone.
 - One part polysulfide.
 - Two part polysulfide.
 - One or two part polyurethane.
- Classification and requirements: To BS EN ISO 11600.
- Reaction to contact products and finishes: Stable and compatible.

776 THERMAL INSULATION

- Material: Zero ODP rigid polyisocyanurate insulation board. BRE Green Guide rating A+.
- Manufacturer: Celotex Ltd, Lady Lane Industrial Estate, Hadleigh Ipswich Suffolk IP7 6BA
T: [REDACTED]
Web: celotex.co.uk, Email: technical@celotex.co.uk.
 - Product reference: FR5000 aluminium foil faced both sides.
 - Conductivity: 0.021W/mk.
- Thickness: Not less than 150mm for spandrel panels and 80mm for columns.
 - Required performance: Refer to clause 430.
- Recycled content: Manufacturer to confirm.
- Fixing: Attached to the outer face or supported within the backing wall so as not to bulge, sag, delaminate or detach during installation or in situ during the life of the rainscreen cladding.

780 VAPOUR CONTROL LAYER

- Material: Reinforced polyethylene with High Tensile scrim reinforcement.
 - Minimum vapour resistance: 250 MN s/g.
 - Manufacturer: Industrial Textiles & Plastics Ltd, Stillington Road, Easingwold, York, YO61 3FA. Tel: [REDACTED] Fax: [REDACTED] Email: info@itpltd.com Web: www.powerlon.com / www.itpltd.com.
Product reference: Powerlon® 150 VCL Reinforced Vapour Control Layer.
- Continuity: No breaks and with the minimum of joints.
 - Penetrations and abutments: Seal to vapour control layer. If necessary, prime substrates to achieve full bond.
 - Sheet laps: Not less than 150 mm, seal with tape. Prime substrates as necessary to achieve full bond.
- Sheet tape: Double sided sealant with vapour resistivity not less than the vapour control sheet.
 - Size (width and thickness): A continuous double row of 15mm x 1.5mm Powerbond butyl sealing tape spaced 75mm apart is recommended for overlap sealing. It is essential that all surfaces are clean and dry. The number of joints should be kept to a minimum by using the full width of the membrane.
All joints should be firmly pressed together using a hand-held pressure roller to ensure that the double sided tape has adhered properly to the barrier.
- Sheet repairs and punctures: Seal with lapped patch of vapour control membrane and continuous band of sealant tape along edges.

785 BREATHER MEMBRANE

- Material: Reinforced polyethylene with High Tensile scrim reinforcement.
- Manufacturer: Industrial Textiles & Plastics Ltd, Stillington Road, Easingwold, York, YO61 3FA. Tel: [REDACTED] Fax: [REDACTED] Email: info@itpltd.com Web: www.powerlon.com / www.itpltd.com.
 - Product reference: Powerlon® Airbarrier.
- Continuity: No breaks. Minimize joints.
 - Penetrations and abutments: Attach to breather membrane with tape. Achieve full bond.
 - Laps: Not less than 150 mm, bond with tape. Achieve full bond.
- Tape: As recommended by breather membrane manufacturer.
- Repairs: Lapped patch of breather membrane material secured with continuous band of tape on edges.
- Junctions at flashings, sills, gutters etc. Overlap and allow free drainage to exterior.

FABRICATION AND INSTALLATION

910 GENERALLY

- Electrolytic corrosion: Take necessary measures to prevent.
- Identification of products: Mark or tag to facilitate identification during assembly, handling, storage and installation. Do not mark surfaces visible in the complete installation.

- 912 METALWORK
- Requirement: As section Z11, unless specified otherwise in this section.
- 925 SEALANT APPLICATION
- Requirement: As section Z22, unless specified otherwise in this section.
- 930 ASSEMBLY
- Location: Carry out as much assembly as possible in the workshop.
 - Joints: Other than movement joints and designed open joints, must be rigidly secured, reinforced where necessary and fixed with hairline abutments.
 - Displacement of components in assembled units: Submit proposals for reassembly on site.
- 960 PRELIMINARY RAINSCREEN CLADDING INSTALLATION
- Requirement: Complete an area of cladding as set out below for inspection and approval of appearance.
Approved facade section .
- 970 RAINSCREEN CLADDING INSTALLATION
- Tightening mechanical fasteners: To manufacturer's recommended torque figures. Do not overtighten fasteners intended to permit differential movement.
 - Protective coverings: Remove only where necessary to facilitate installation and from surfaces which will be inaccessible on completion.
- 975 WELDING
- In situ welding: Not permitted.
- 980 INTERFACES
- Installation: Locate flashings, closers etc. correctly and neatly overlap cladding to form a weathertight junction.
- 985 DAMAGE
- Repairs: Do not repair cladding without approval.
 - Approval: Will not be given where the proposed repair will impair performance or appearance.
 - Record of repairs: Prepare schedule or record on drawings for inclusion in the maintenance manual.
- 995 MAINTENANCE
- Maintenance manual: Incorporate details within the Building Manual in accordance with CWCT 'Standard for systemised building envelopes', clause 7.6.1.
 - Materials certification and test reports to be included: As requested.

J
Waterproofing

J10
Cementitious mortar tanking/ damp proofing

J10 Cementitious mortar tanking/ damp proofing**TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS**

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF TANKING/ DAMP PROOFING**111 POLYMER MODIFIED CEMENTITIOUS SLURRY COATING GENERALLY**

- Substrate: Concrete.
- Manufacturer: RIW Limited, Arc House, Terrace Road South, Binfield, RG42 4PZ
Tel : [REDACTED] Fax : [REDACTED]
E-mail : technical@riw.co.uk, Web : www.riw.co.uk.
 - Product reference: RIW Cementseal.
- Coats (excluding dubbing out):
 - Number (excluding keying mixes): Two.
 - Thickness: 2mm.
- Other requirements: RIW Cementseal Primer required for horizontal surfaces.

- 121 CEMENT: SAND MORTAR WITH PROPRIETARY WATERPROOF ADMIXTURE BOXING SHOWERS, ACCESSIBLE CHANGE
- Substrate: Cement screed, Sand/cement render.
 - Waterproof admixture manufacturer: Mapei U.K. Ltd. Mapei House Steel Park Road - Halesowen, West Midlands, B62 8HD
Tel. [REDACTED] Fax [REDACTED]
Email: sales@mapei.co.uk, Web: www.mapei.com.
 - Product reference: Mapelastic Two-component Flexible Cementitious Mortar.
 - Preparation of substrates: [
 - Generally: All surfaces to be sound and perfectly clean; absorbent surfaces must be dampened beforehand with water;
 - Concrete: Remove all cement laitance, flaky parts and traces of powder, grease, oil and form release agents; remove damaged parts and rust and repair with Mapegrout or Planitop 400;
 - Cementitious screeds: Setting cracks or cracks by plastic or hygrometric shrinkage must be filled beforehand with Eporip; to level out deviations up to 3cm use Planitop Fast 330;
 - Gypsum plaster: To be sufficiently cured, well bonded and free from all dust and paint; surface to be treated with Primer G by Mapei UK Ltd prior to application of Mapelastic].
 - Mixing: [

Pour liquid component (B) into a suitable container, then slowly add powder component (A) while stirring with a mechanical mixer until perfectly homogeneous mix is achieved; low-speed mechanical mixer to be used to prevent too much air being dragged into mixture; make sure no powder remains stuck to sides or bottom of the container].
 - Application: [
 - Apply within 60 minutes of being mixed
 - Smooth off prepared surfaces by applying a thin first coat with smooth towel;
 - Second coat to be applied on top of first coat while this is still fresh;
 - Final thickness no less than 2mm].
 - Accessories: [
 - Mapeband TPE to be used to seal structural joints and joints subject to high dynamic stress;
 - Mapeband to be used to waterproof check joints, fillet joints between horizontal and vertical elements;
 - Special kit from Drain range to be used to seal drain holes].
 - Curing: [Allow for 5 days curing period before laying tiles].
 - Finishes: [
 - Ceramic tiles to be laid using MAPEI cementitious adhesives;
 - Grout joints between tiles with suitable cementitious grout;
 - Seal expansion joints with suitable flexible sealant from MAPEI range.].
 - Other requirements: [
 - Not to be used for thick coatings (more than 2mm per coat);
 - Not to be applied at temperatures below +8°C;
 - Cement, aggregates and water not to be added;
 - Protect from rain and water spillage for the first 24 hours of the application].

MATERIALS AND MAKING OF MORTAR

- 330 MOVEMENT JOINT SYSTEM
- Manufacturer: RIW Limited, Arc House, Terrace Road South, Binfield, RG42 4PZ
Tel : [REDACTED] Fax : [REDACTED]
E-mail : technical@riw.co.uk, Web : www.riw.co.uk.
 - Product reference: RIW Cementjoint, embedded between 2 1mm thick coats.
 - Application: As section Z22.

PREPARING SUBSTRATES

410 SUITABILITY OF SUBSTRATES

- Preparation generally: To tanking mortar/ admixture manufacturer's recommendations.
- Stability and soundness: Free from movement, and loose or weak areas that will cause failure of tanking.
- Key: To achieve firm adhesion of tanking.
- Contamination: Free from previous coatings and contaminants including dirt, dust, efflorescence, mould, oil, paint and plaster.
- Cracks, porous patches and other defective areas subject to water pressure and liable to admit water: Control and seal using waterproof mortar recommended by the tanking mortar manufacturer.
- Holes/ Recesses for fixings (where permitted): Prepared to receive fasteners.
- Openings and chases: Prepared, including sleeves for pipe penetrations and chases to receive waterproofing compounds/ sealants.

420 PREPARATION OF MORTAR JOINTS AND CAVITIES

- Mortar joints: Rake out to a depth of 12 mm (minimum).
 - Debris: Remove and flush out with water.
 - Fill: Repoint with waterproof mortar to the tanking mortar manufacturer's recommendations.
- Blow holes, cavities, cracks, etc: Remove loose material and fill flush using waterproof mortar recommended by the tanking mortar manufacturer.

430 TANKING INTEGRITY

- Penetrations for fixings, services, etc: Not permitted .

EXECUTION

510 APPLICATION GENERALLY

- Application methods and coating sequence: As recommended by the tanking mortar/ admixture manufacturer to achieve a water resistant structure.

520 JOINTS/ JUNCTIONS AND PENETRATIONS

- Abutments, joints and active cracks: Sealed and watertight.
 - Movement joints: Centred over joints in substrate and extended through waterproof coating and finishes.
 - Daywork joints in successive coatings: Staggered and lapped.
 - Angled joints: Not permitted.
- Penetrations: Watertight.

530 APPEARANCE OF TANKING

- Render/ Screed coatings: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
 - Accuracy: A true plane, to correct line and level. Walls and reveals plumb and square with neat arrises
- Thin slurry coatings: Consistent and free from hollows, cracks and crazing. Suitable to receive specified finish.

551 CURING AND DRYING

- General: Prevent premature setting, uneven drying and cracking of each coat.
- Curing coatings: Prevent evaporation from surface by the use of primer as recommended by tanking mortar manufacturer.
 - Curing period (minimum): Normally overnight, temperature dependent.

560 PROTECTION

- Mechanical damage: Prevent impact and abrasion.
- Application of protective coatings/ linings: After completion of curing.

J30

Liquid applied tanking/ damp proofing

J30 Liquid applied tanking/ damp proofing

TO BE READ WITH PRELIMINARIES/GENERAL CONDITIONS

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF TANKING/ DAMP PROOFING

130 COLD APPLIED DAMP PROOFING GENERALLY

- Substrate: In situ concrete slab.
- Primer: Not required.
- Coating: Epoxy resin.
 - Manufacturer: RIW Limited, Arc House, Terrace Road South, Binfield, RG42 4PZ
Tel : [REDACTED] Fax : [REDACTED]
E-mail : technical@riw.co.uk, Web : www.riw.co.uk.
Product reference: Toughseal.
 - Application: Two coats.
- Reinforcement: RIW Flexiseal in accordance with manufacturer's recommendations.
- Blinding:
 - Generally not required;
 - Key for mechanical bond: RIW aggregate, Grad 1 where required;
 - wearing surface: RIW Aggregate Grade 2 where required.

EXECUTION

205 SUITABILITY OF SUBSTRATE

- Substrates generally:
 - Smooth, even textured, clean, dry and frost free.
 - Within tolerances for level and surface regularity.
 - Vertical and horizontal surfaces: Correctly prepared and free from irregularities.
- 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 including:
 - Chases.
 - External angles.
 - Formation of upstands and kerbs.
 - Movement joints.
 - Penetrations/ Outlets.

211 COATING APPLICATION

- Preparation : Make good to surfaces to be coated.
- Adjacent surfaces exposed to view in finished work: Protect.
- Coatings:
 - Uniform, continuous coverage.
 - Do not allow to pool in hollows.
 - Firmly adhered to substrate and free from imperfections.
 - Prevent damage to finished coatings.
- Penetrations: Completely impervious.
- Final covering: Apply as soon as possible after coating has hardened.

220 COLD APPLIED COATINGS

- Thinning: Not permitted unless recommended by manufacturer.
- Successive coats:
 - Allow to dry before applying next.
 - Apply at right angles to previous.

235 MODIFIED COATINGS

- Air and surface temperatures: Do not apply if below minimum recommended by coating manufacturer.
- Curing: Keep dry until fully cured.

260 JUNCTIONS WITH DPCS

- Dpcs: Clean, all edges fully exposed.
- Application: Fully coat dpc and overlap adjacent surfaces by (minimum) 75 mm.

270 BLINDING

- Coatings: Blind whilst tacky .
- Surplus material: Remove when coatings are completely dry.

COMPLETION**310 INSPECTION**

- Interim and final inspections: Submit reports.

320 ELECTRONIC INTEGRITY TEST

- Testing authority: Submit proposals.
- Timing of test: Prior to, and on completion of access by other trades.
- Condition of coating prior to testing:
 - Complete to a stage where integrity can be tested.
 - Surface: Clean.
- Test results and waterproof integrity certificate: Submit on completion of testing.

340 BACKFILLING TO EXTERNAL COATINGS

- Timing: Carry out as soon as possible after tanking and protection are complete.

J31

Liquid applied waterproof roof coatings

J31 Liquid applied waterproof roof coatings

TO BE READ WITH PRELIMINARIES/GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF COATING

120 WARM DECK ROOF COATING EXISTING ROOF AREAS

- Substrate: Existing reinforced bitumen membrane, TBC.
 - Preparation:
 - Make good existing membrane to act as vapour barrier
 - Surface to be clean dry and firm.
 - Vapour control layer: Existing reinforced bitumen membrane.
 - Insulation: Rigid polyisocyanurate foam core faced, both sides, with a perforated mineral coated glass fibre tissue.
 - Overlay to insulation: Not required.
 - Carrier membrane: As clause 352.
- Waterproof coating: Polyurethane.
 - System manufacturer: 3M United Kingdom PLC, 3M Centre, Cain Road, Bracknell RG12 8HT
 - Tel.: [REDACTED] Fax: [REDACTED]
 - Web: www.3m.co.uk.
 - Primer reference: None required.
 - Coating reference:
 - Embedment coat: 3M Scotchkote Roofing Poly-Tech EC 661
 - Top coat: 3M Scotchkote Roofing Poly-Tech UV 662.
 - Application: Embedment coat 2x1.0 l/m², Top coat 1x0.5l /m²; apply in accordance with system manufacturer's recommendation.
 - Reinforcement: 3M Scotchkote Roofing Premier Plus Reinforcing Mat 055 & 3M 1900 Duct Tape.
 - Minimum dry film thickness: System manufacturer's standard.
 - Colour: Light grey.
- Surface protection: Walkways.
- Accessories: As recommended by system manufacturer to complete installation.

PERFORMANCE

210 ROOF PERFORMANCE

- General: Firmly adhered, free draining and weathertight.

220 AVOIDANCE OF INTERSTITIAL CONDENSATION IN WARM AND INVERTED ROOFS

- Interstitial condensation risk of roof construction: Assess as recommended in BS 6229.
- Basic design data:
 - Outdoor notional psychrometric conditions, winter:
 - Temperature: -5°C.
 - Relative humidity: 90%.
 - Vapour pressure: 0.36 kPa.
 - Duration: 60 days.
 - Outdoor notional psychrometric conditions, summer:
 - Temperature: 18°C.
 - Relative humidity: 65%.
 - Vapour pressure: 1.34 kPa.
 - Duration: 60 days.
 - Indoor notional psychrometric conditions:
 - Temperature: 20°C.
 - Relative humidity: 55%.
 - Vapour pressure: 1.28 kPa.
- Winter interstitial condensate (warm roof):
 - Calculated amount (maximum): 0.35kg/m².
 - Calculated annual net retention: Nil.
- Vapour control layer: If necessary, provide a suitable membrane so that damage and nuisance from interstitial condensation do not occur.

PRODUCTS

352 CARRIER MEMBRANE

- Type: SBS modified glass reinforced base.
- Manufacturer: 3M United Kingdom PLC, 3M Centre, Cain Road, Bracknell RG12 8HT
Tel.: [REDACTED] Fax: [REDACTED]
Web: www.3m.co.uk.
- Product reference: 3M™ Scotchkote™ Poly-Tech Preparation Membrane 668.

353 WATERPROOF COATING

- Type: Polyurethane.
- Manufacturer: 3M United Kingdom PLC, 3M Centre, Cain Road, Bracknell RG12 8HT
Tel.: [REDACTED] Fax: [REDACTED]
Web: www.3m.co.uk.
- Product reference:
 - Embedment coat: 3M Scotchkote Roofing Poly-Tech EC 661
 - Top coat: 3M Scotchkote Roofing Poly-Tech UV 662.
- Primer: Not required.
- Application: Embedment coat 2x1.0 l/m², Top coat 1x0.5l /m²; apply in accordance with system manufacturer's recommendation.
- Reinforcement: 3M Scotchkote Roofing Premier Plus Reinforcing Mat 055 & 3M 1900 Duct Tape.
- Colour: Light grey.
- Minimum dry film thickness: Manufacturer's standard.
- Surface protection: Not required.

357 PIPE COLLARS

- Manufacturer: 3M United Kingdom PLC, 3M Centre, Cain Road, Bracknell RG12 8HT
Tel.: [REDACTED] Fax: [REDACTED]
Web: www.3m.co.uk.
- Product reference: Submit proposals.
- Size: Varies.

385 WALKWAY PROTECTIVE COATING

- Manufacturer: 3M United Kingdom PLC, 3M Centre, Cain Road, Bracknell RG12 8HT
Tel.: [REDACTED] Fax: [REDACTED]
Web: www.3m.co.uk.
- Product reference: Submit proposals.
- Width: As architect's drawing.
- Colour: Dark grey.
- Additives: as recommended by system manufacturer.

EXECUTION GENERALLY

410 ADVERSE WEATHER

- Do not apply coatings:
 - In wet conditions or at temperatures below 5°C, unless otherwise permitted by coating manufacturer.
 - In high winds (speeds > 7 m/s), unless adequate temporary windbreaks are erected adjacent to working area.
- Unfinished areas of roof: Keep dry.

420 SUITABILITY OF SUBSTRATE

- Substrates generally:
 - Secure, clean, dry, smooth, free from frost, contaminants, loose material, voids, protrusions and organic growths.
 - Compatible with coating system.
- Preliminary work: Complete, including:
 - Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
 - Fixing of battens, fillets and anchoring plugs/ strips.
- Moisture content and stability: Must not impair integrity of roof.

EXISTING SUBSTRATES

515 EXISTING FLASHINGS

- General: Raise to facilitate cleaning of surfaces to receive coatings.
- Timing: Leave raised during coating application and lower only after full curing.
- Damaged lengths: Replace with new, specified in section: H72 and H74.

520 PRELIMINARY POWER WASH TO EXISTING COVERINGS

- Timing: Before renewing existing coverings, water jet clean all areas. Allow to dry.

535 MAKING GOOD EXISTING REINFORCED BITUMEN MEMBRANE COVERING

- Blisters: Star cut, dry out and rebond.
- Cracked and defective areas: Cut back to substrate.
- Substrate: Dry out.
- Bitumen membrane: Patch level with existing surface with layers of matching bitumen membrane, lapped minimum 100 mm onto existing membrane.

565 EXISTING GUTTERS/ OUTLETS

- Dirt, debris and build up of previous coverings/ coatings: Remove to restore free flow of water.

570 EXISTING CRACKS/ GAPS

- General: Rake out, clean and make good with sealants or repair systems recommended by coating manufacturer.

575 FINAL POWER WASH TO EXISTING COVERINGS

- General: Water jet clean all areas. Allow to dry.

580 STERILIZATION TREATMENT TO EXISTING COVERINGS

- Preliminary work: Complete including making good and cleaning down.
- Biocidal solution: Apply to all areas previously subject to organic growth. Allow to dry.

NEW SUBSTRATES/ VAPOUR CONTROL LAYERS/ WARM DECK ROOF INSULATION**ROOF COATING SYSTEM****730 LAYING CARRIER MEMBRANE**

- Bond: As recommended by system manufacturer.
- Mechanical fixing: Not required.

740 MOVEMENT JOINTS IN SUBSTRATE

- Debonding tape: Apply over movement joints.
- Reinforcement strip: Apply over debonding tape.
 - Bedding: Preliminary coating application.
 - Joints: Lap in length.
 - Bond: Continuous over whole surface, with no air pockets.
 - Condition at completion: Smooth.

760 APPLICATION OF ROOF COATINGS

- Thickness: Monitor by taking wet/ dry film thickness readings.
- Continuity: Maintain full thickness of coatings around angles, junctions and features.
- Rainwater outlets: Form with watertight joints.
- Drainage systems: Do not allow liquid coatings to enter piped rainwater or foul systems.
- Edge trims: Apply coatings over horizontal leg of trim and into recess.

770 SKIRTINGS AND UPSTANDS

- Top edges of coatings: Where not protected by flashings, apply into chases cut to a minimum depth of 10 mm.
- Completion of chases: When coatings are fully cured, prepare chase and apply sealant as section Z22.
 - Sealant: To BS EN ISO 11600.
 - Colour: As coating.

SURFACING**890 APPLYING WALKWAY PROTECTIVE COATING**

- Coverage per coat (minimum): as recommended by system manufacturer.
- Surface coverage: Even and full.

COMPLETION**910 INSPECTION**

- Coating surfaces: Check when cured for discontinuities.
 - Defective areas: Apply another coating.

920 ELECTRONIC ROOF INTEGRITY TEST

- Testing authority: Submit proposals.
- Timing of test: Prior to, and on completion of access by other trades.
- Condition of roof prior to testing:
 - Coating: Complete to a stage where integrity can be tested.
 - Surface: Clean.
- Test results: Submit.
- Waterproof integrity certificate: On completion of testing, submit.

940 COMPLETION

- Roof areas: Clean.
 - Outlets: Clear.
 - Flashings: Dressed into place.
- Work necessary to provide a weathertight finish: Complete.
- Storage of materials on finished surface: Not permitted.
- Completed coatings: Protect against damage.

J40

Flexible sheet waterproofing/ damp proofing

J40 Flexible sheet waterproofing/ damp proofing

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF TANKING/ DAMP PROOFING

191 SELF-ADHESIVE BITUMEN DAMP PROOFING/ TANKING

- Substrate: Existing concrete slab.
- Primer: As clause 335.
- Manufacturer: RIW Limited, Arc House, Terrace Road South, Binfield, RG42 4PZ
Tel : [REDACTED] Fax : [REDACTED]
E-mail : technical@riw.co.uk, Web : www.riw.co.uk.
- Product reference: RIW Sheetseal 226.
- Number of layers: One.
- Thickness/ Gauge: 1.5mm applied.
- Bonding: Full. Lay sheet adhesive side down and smooth out to exclude air.
- Joints:
 - Surfaces to be joined: Clean and dry beyond full width of joint.
 - Laps (minimum): 50mm, end of roll 100mm.
 - Sealing: Roll to fully adhere.
- Accessories: As recommended by sheet manufacturer to complete installation.

290 HIGH DENSITY POLYETHYLENE/ POLYPROPYLENE STUDDED CAVITY DRAIN MEMBRANE

- Substrate: Concrete slab.
 - Preparation: In accordance with manufacturer's recommendations..
- Manufacturer: RIW Limited, Arc House, Terrace Road South, Binfield, RG42 4PZ
Tel : [REDACTED] Fax : [REDACTED]
E-mail : technical@riw.co.uk, Web : www.riw.co.uk.
- Product reference: RIW Cavity Drain, horizontally only.
- Stud height: 20 mm.
- Colour: Black.
- Fixing: Not required when laid horizontally.
 - Fasteners: None.
 - Fixing centres: N/A.
 - Sealing: N/A.
- Joints: Minimum overlap ; 100mm. – eg: 2 No studs.
 - Sealing: RIW Sealing Rope, placed along the flat area between the two studs.
- Drainage components:
 - Cavity drainage channels;
 - Cavity drainage pumps;
 - Cavity drainage sumps.
- Accessories: As recommended by membrane manufacturer to complete installation.

291 HIGH DENSITY POLYETHYLENE/ POLYPROPYLENE STUDDED CAVITY DRAIN MEMBRANE VERTICAL SURFACES

- Substrate: Concrete.
 - Preparation: In accordance with manufacturer's recommendations..
- Manufacturer: RIW Limited, Arc House, Terrace Road South, Binfield, RG42 4PZ
 Tel : [REDACTED] Fax : [REDACTED]
 E-mail : technical@riw.co.uk, Web : www.riw.co.uk.
 - Product reference: RIW P5 Cavity Drain.
- Stud height: 5 mm.
- Colour: Clear.
- Fixing: Fixed through studs.
 - Fasteners: RIW Brick Plugs.
 Fixing centres: 1000mm maximum, staggered.
 Sealing: RIW Sealing Rope around RIW Brick Plugs before insertion.
- Joints: Minimum overlap: 70mm, side of roll or 3 No. studs, end / cut rolls.
 - Sealing: RIW Sealing Tape.
- Drainage components: In conjunction of clause 290.
- Accessories: As recommended by membrane manufacturer to complete installation.

WORKMANSHIP

310 WORKMANSHIP GENERALLY

- Condition of substrate:
 - Clean and even textured, free from voids and sharp protrusions.
 - Moisture content: Compatible with damp proofing/ tanking.
- Air and surface temperature: Do not apply sheets if below minimum recommended by membrane manufacturer.
- Condition of membrane at completion:
 - Neat, smooth and fully supported, dressed well into abutments and around intrusions.
 - Completely impervious and continuous.
 - Undamaged. Prevent puncturing during following work.
- Permanent overlying construction: Cover membrane as soon as possible.

320 INSPECTION

- Give notice: Before covering any part of membrane with overlying construction.

335 PRIMERS

- Manufacturer: In accordance with manufacturer's recommendations..
 Manufacturer: RIW Limited, Arc House, Terrace Road South, Binfield, RG42 4PZ
 Tel : [REDACTED] Fax : [REDACTED]
 E-mail : technical@riw.co.uk, Web : www.riw.co.uk.
 - Product reference: RIW Sheetseal Primer.
- Coverage per coat (minimum): As recommended for the purpose by membrane manufacturer.
- Curing: Allow to dry thoroughly before covering.

351 ANGLES IN BONDED DAMP PROOFING/ TANKING

- Fit internal angles with sand/cement fillet, not less than 40x40mm.
- Reinforcing strip to all angles:
 - Material: As damp proofing tanking.
 - Width (minimum): 300 mm.
 - Timing: Apply before main sheeting.
- Dressing of main sheeting onto adjacent surfaces (minimum): 100 mm.

- 360 JUNCTIONS WITH PROJECTING DPCS/ CAVITY TRAYS
- Adjoining surfaces: Clean and dry.
 - Dpcs/ Cavity trays: Lap and fully bond/ seal with sheeting.
 - Laps (minimum):
 - Clause 191: 75mm
 - Clause 290 & 291: 150 mm.
 - Bonding/ Sealing:
 - Clause 191: RIW Sheetseal 226x150mm wide
 - Clause 290 & 291: RIW Adhesive Tape.
- 365 JUNCTIONS WITH FLUSH DPCS/ CAVITY TRAYS
- Adjoining surfaces: Clean and dry.
 - Dpcs/ Cavity trays:
 - Expose edge where concealed.
 - Lap and fully bond/ seal sheeting to wall.
 - Dressing of sheeting beyond dpc/ cavity tray (minimum): 50 mm.
 - Bonding/ Sealing: RIW Sheetseal 226x150mm wide for clause 191 only.
- 371 PREFORMED COLLARS FOR PIPES, DUCTS, CABLES, ETC.
- Where these pass through sheeting, make junctions completely impervious, following details as recommended for the purpose by the sheet manufacturer.
- 382 CAVITY DRAINAGE CHANNELS
- Manufacturer: RIW Limited, Arc House, Terrace Road South, Binfield, RG42 4PZ
 Tel : [REDACTED] Fax : [REDACTED]
 E-mail : technical@riw.co.uk, Web : www.riw.co.uk.
 - Product reference: Aqua Channel.
 - Type: PVC-U solid wall perforated pipe.
- 388 CAVITY DRAINAGE SUMPS WITH INTEGRAL PUMPS
- Manufacturer: RIW Limited, Arc House, Terrace Road South, Binfield, RG42 4PZ
 Tel : [REDACTED] Fax : [REDACTED]
 E-mail : technical@riw.co.uk, Web : www.riw.co.uk.
 - Product reference: Submit proposals.
 - Type: Manufacturer's standard.
 - Flow rate: Manufacturer's standard.
 - Pumping head (minimum): Manufacturer's standard.
 - Discharge pipe size: Manufacturer's standard.

K

Linings/Sheathing/Dry partitioning

K10
Plasterboard dry linings/ partitions/ ceilings

K10 Plasterboard dry linings/ partitions/ ceilings

To be read with Preliminaries/ General conditions.

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All timber supplied or used in timber products must be from certified sources. Evidence must be provided by the supplier/manufacturer in form of FSC or PEFC certificates. Additional CEPT documentation may be supplied for verification purposes.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF DRY LINING

- 125 METAL STUD PARTITION SYSTEM BETWEEN ROOMS partition types P10A, P10B, P10C, P10D
Refer to drawings 1279(22)100, 1279(21)100 for identification of partition types.
- Manufacturer: British Gypsum Limited, East Leake, Loughborough, Leicestershire LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
 - Web: www.british-gypsum.com, Email: bgtechnical.enquiries@bpb.com.
 - Product reference: GypWall CLASSIC.
 - Nominal thickness (excluding finishes): 75mm
 - Fire resistance: 30 minutes (where required as per (08) series architect's drawings).
 - Fire resistance: 120 minutes (partition type P10C)
 - Sound insulation: 34 Rw dB (partition type P10A)
 - Sound insulation: 40 Rw dB (partition type P10B)
 - Sound insulation: 42 Rw dB (partition type P10C)
 - Partition duty to BS 5234: Medium.
 - Maximum height: 2500mm.
 - Studs:
 - Type: 48mm Gypframe.
 - Centres: 600 mm.
 - Head condition: Concrete slab.
 - Deflection allowance: Consult structural Engineer.
 - Insulation: Not required.
 - Recycled content: N/A.
 - Thickness: N/A.
 - Resilient layer: Not required.
 - Linings:
 - Generally (partition type P10A, P10B): 12.5 mm Gyproc WallBoard
 - Bathroom/WC (partition type P10D): 12.5mm Glasroc H Tilebacker
 - Compartment wall (partition type P10C): 12.5mm Gyproc FireLine.
 - Finishing: As clause 650 and 670.
 - Primer/ Sealer: As recommended by board manufacturer.
 - Accessories: Metal channels/beads/ stops recommended by board manufacturer .
 - Other requirements:

Fully seal all junctions to maintain air seal and acoustic and fire rating of wall construction.
Structural integrity and insulation fire resistance period as per schedule.
Sealant applied in accordance with clauses 510 and 516.
Runners as per manufacturer's recommendations.
Linings at soffit level fixed to studs and not head track.
Isolation strips as per manufacturer's recommendations.
Fixing: Generally in accordance with manufacturer's recommendations.

- 126 METAL STUD PARTITION SYSTEM BETWEEN ROOMS - partition types P10E, P10F, P10G, P10H
Refer to drawings 1279(22)100, 1279(21)100 for identification of partition types.
- Manufacturer: British Gypsum Limited, East Leake, Loughborough, Leicestershire LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
 - Web: www.british-gypsum.com, Email: bgtechnical.enquiries@bpb.com.
 - Product reference: GypWall CLASSIC.
 - Nominal thickness (excluding finishes): 97mm
 - Fire resistance: 30 minutes.
 - Sound insulation: 36 Rw dB (partition type P10E)
 - Sound insulation: 42 Rw dB (partition types P10F, P10G)
 - Sound insulation: 50 Rw dB (partition type P10H)
 - Partition duty to BS 5234: Medium.
 - Maximum height: 3600mm (partition types P10E, P10F, P10G)
 - Maximum height: 4600mm (partition type P10H).
 - Studs:
 - Type: 70mm Gypframe.
 - Centres: 600 mm.
 - Head condition: Concrete slab.
 - Deflection allowance: Consult structural Engineer.
 - Insulation: Mineral wool to BS EN 13501-1.
 - Manufacturer: [Isover, Gotham Business Park, Leake Road, Gotham Nottinghamshire NG11 0LB,
Tel: [REDACTED] Fax: [REDACTED]
Web: www.isover.co.uk].
 - Recycled content: 80% (approximately) to BS EN ISO 14021.
 - Thickness:
 - N/A for partition type P10E
 - 25mm for partition type P10F, P10G
 - 50mm for partition type P10H.
 - Resilient layer: Not required.
 - Linings:
 - Generally (partition type P10E, P10F) : 12.5 mm Gyproc WallBoard
 - Bathrooms/WC/Shower area (partition type P10G): 12.5mm Glasroc H Tilebacker
 - Enhanced acoustic walls (partition type P10H) : 2 x 12.5 mm Gyproc WallBoard.
 - Finishing: As clause 650 and 670.
 - Primer/ Sealer: As recommended by board manufacturer.
 - Accessories: Metal channels/beads/ stops recommended by board manufacturer .
 - Other requirements:

Fully seal all junctions to maintain air seal and acoustic and fire rating of wall construction.
Structural integrity and insulation fire resistance period as per schedule.
Sealant applied in accordance with clauses 510 and 516.
Runners as per manufacturer's recommendations.
Linings at soffit level fixed to studs and not head track.
Isolation strips as per manufacturer's recommendations.
Fixing: Generally in accordance with manufacturer's recommendations.

- 128 METAL STUD PARTITION SYSTEM ENHANCED FIRE RATING partition type P10K
Refer to drawings 1279(22)100, 1279(21)100 for identification of partition types.
- Manufacturer: British Gypsum Limited, East Leake, Loughborough, Leicestershire LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
 - Web: www.british-gypsum.com, Email: bgtechnical.enquiries@bpb.com.
 - Product reference: GypWall CLASSIC.
 - Nominal thickness (excluding finishes): 122mm
 - Fire resistance: 120 minutes.
 - Sound insulation: 50 Rw dB
 - Partition duty to BS 5234: Severe.
 - Maximum height: 4600mm.
 - Studs:
 - Type: 70mm Gypframe.
 - Centres: 600 mm.
 - Head condition: Concrete slab.
 - Deflection allowance: Consult structural Engineer.
 - Insulation: Not required.
 - Linings: 2 x12.5 mm FireLine.
 - Finishing: As clause 650 and 670.
 - Primer/ Sealer: As recommended by board manufacturer.
 - Accessories: Metal channels/beads/ stops recommended by board manufacturer .
 - Other requirements:

Fully seal all junctions to maintain air seal and acoustic and fire rating of wall construction.
Structural integrity and insulation fire resistance period as per schedule.
Sealant applied in accordance with clauses 510 and 516.
Runners as per manufacturer's recommendations.
Linings at soffit level fixed to studs and not head track.
Isolation strips as per manufacturer's recommendations.
Fixing: Generally in accordance with manufacturer's recommendations.

- 129 METAL STUD PARTITION SYSTEM ENHANCED FIRE RATING & ACOUSTIC PERFORMANCE partition type P10J
Refer to drawings 1279(22)100, 1279(21)100 for identification of partition types.
- Manufacturer: British Gypsum Limited, East Leake, Loughborough, Leicestershire LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
 - Web: www.british-gypsum.com, Email: bgtechnical.enquiries@bpb.com.
 - Product reference: GypWall CLASSIC.
 - Nominal thickness (excluding finishes): 122mm
 - Fire resistance: 60 minutes.
 - Sound insulation: 65 Rw dB
 - Partition duty to BS 5234: Severe.
 - Maximum height: 3200mm.
 - Studs:
 - Type: 70mm Gypframe.
 - Centres: 600 mm.
 - Head condition: Concrete slab.
 - Deflection allowance: Consult structural Engineer.
 - Insulation: Mineral wool to BS EN 13501-1.
 - Manufacturer: Isover, Gotham Business Park, Leake Road, Gotham Nottinghamshire NG11 0LB,
Tel: [REDACTED] Fax: [REDACTED]
Web: www.isover.co.uk.
 - Product reference: Isover APR 1200
 - Recycled content: 80% (approximately) to BS EN ISO 14021.
 - Thickness: 50mm.
 - Resilient layer: Gypframe RB1 Resilient Bar at 600mm centres either side.
 - Linings:
 - Generally: 2 x15 mm SoundBloc..
 - Finishing: As clause 650 and 670.
 - Primer/ Sealer: As recommended by board manufacturer.
 - Accessories: Metal channels/beads/ stops recommended by board manufacturer .
 - Other requirements:

Fully seal all junctions to maintain air seal and acoustic and fire rating of wall construction.
Structural integrity and insulation fire resistance period as per schedule.
Sealant applied in accordance with clauses 510 and 516.
Runners as per manufacturer's recommendations.
Linings at soffit level fixed to studs and not head track.
Isolation strips as per manufacturer's recommendations.
Fixing: Generally in accordance with manufacturer's recommendations.

135 METAL STUD PARTITION SYSTEM SHAFT WALL

- Manufacturer: British Gypsum Limited, East Leake, Loughborough, Leicestershire LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
 - Web: www.british-gypsum.com, Email: bgtechnical.enquiries@bpb.com.
 - Product reference: ShaftWall.
 - Nominal thickness (excluding finishes): 119mm
 - Fire resistance: 60 minutes.
 - Sound insulation: 47 Rw dB
 - Partition duty to BS 5234: Severe.
 - Maximum height: 6000mm.
- Studs:
 - Type: 92mm Gypframe 'I' Stud + Gypframe Retaining Channels.
 - Centres: As recommended by board manufacture.
- Head condition: Concrete slab.
 - Deflection allowance: Consult structural Engineer.
- Insulation: Mineral wool to BS EN 13501-1.
 - Manufacturer: Isover, Gotham Business Park, Leake Road, Gotham Nottinghamshire NG11 0LB,
Tel: [REDACTED] Fax: [REDACTED]
Web: www.isover.co.uk.
 - Product reference: Isover APR 1200
 - Recycled content: 80% (approximately) to BS EN ISO 14021.
 - Thickness: 25mm.
- Resilient layer: As recommended by board manufacture.
- Linings:
 - Gyproc CoreBoard between studs secured with retaining channels.
 - Generally: 2 x 12.5mm FireLine.
 - Bathroom: 1x 12.5 mm FireLine + 1x 12.5mm Glasroc H Tilebacker.
- Finishing: As clause 650 and 670.
 - Primer/ Sealer: As recommended by board manufacturer.
 - Accessories: Metal channels/beads/ stops recommended by board manufacturer.
- Other requirements:

Fully seal all junctions to maintain air seal and acoustic and fire rating of wall construction.
 Structural integrity and insulation fire resistance period as per schedule.
 Sealant applied in accordance with clauses 510 and 516.
 Runners as per manufacturer's recommendations.
 Linings at soffit level fixed to studs and not head track.
 Isolation strips as per manufacturer's recommendations.
 Fixing: Generally in accordance with manufacturer's recommendations.

155 WALL LINING SYSTEM (METAL STUDS) TO EXTERNAL WALLS

- Manufacturer: British Gypsum Limited, East Leake, Loughborough, Leicestershire LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
Web: www.british-gypsum.com, Email: bgtechnical.enquiries@bpb.com.
- Product reference: GypLyner IWL.
- Studs:
 - Type: GypLyner.
 - Centres: 600 mm.
- Cavity between wall and studs: to suit setting out.
- Unbraced height (maximum): 800mm.
- Head condition: Concrete slab.
 - Deflection allowance: Consult structural Engineer.
- Insulation: Not required.
 - Recycled content: Not applicable.
 - Thickness: N/A.
- Vapour control layer: Refer to group J10.
- Resilient layer: As recommended by board manufacturer.
- Linings: 15 mm Gyproc WallBoard.
- Access units: Not required.
- Finishing: As clause 650 and 670.
 - Primer/ Sealer: As recommended by board manufacturer.
 - Accessories: Metal channels/beads/ stops recommended by board manufacturer.
Provide timber batten patressing behind plasterboard for curtain fixing by tenants where applicable.
- Other requirements: Fully seal all junctions to maintain air seal and acoustic and fire rating of wall construction.

180 WALL LINING TO CURTAIN WALLING

- Manufacturer: British Gypsum Limited, East Leake, Loughborough, Leicestershire LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
Web: www.british-gypsum.com, Email: bgtechnical.enquiries@bpb.com.
- Product reference: Gyproc WallBoard lining board.
- Wall: PPC aluminium curtain walling system, refer to section H11.
- Furring centres: 400 mm fixed to CW transoms between mullions.
- Linings: 12.5mm Gyproc WallBoar.
- Finishing: As clause 650 and 670.
 - Primer/ Sealer: As recommended by board manufacturer.
 - Accessories: As recommended by board manufacturer to complete installation.
- Other requirements:
Fully seal all junctions to maintain air seal and acoustic rating of wall construction.
Sealant applied in accordance with clauses 510.

185 WALL LINING SYSTEM (ADHESIVE) GENERALLY

- Manufacturer: British Gypsum Limited, East Leake, Loughborough, Leicestershire LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
Web: www.british-gypsum.com, Email: bgtechnical.enquiries@bpb.com.
- Product reference: DriLyner BASIC.
- Wall: Concrete, block work or brickwork.
- Adhesive method: Dabs as clause 620 and 625.
- Linings: 12.5mm Gyproc WallBoard.
- Finishing: As clause 650 and 670.
 - Primer/ Sealer: As recommended by board manufacturer.
 - Accessories: Corner beads and stop beads recommended by board manufacturer.
- Other requirements: Sealant applied in accordance with clauses 510.

- 186 WALL LINING SYSTEM (ADHESIVE) TO EXISTING EXTERNAL WALL
- Manufacturer: British Gypsum Limited, East Leake, Loughborough, Leicestershire LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
Web: www.british-gypsum.com, Email: bgtechnical.enquiries@bpb.com.
 - Product reference: DriLynner RF.
 - Wall: Concrete, block work or brickwork.
 - Adhesive method: Dabs as clause 620 and 625.
 - Linings: 90mm ThermaLine super.
 - Thermal performance: TBC.
 - Finishing: As clause 650 and 670.
 - Primer/ Sealer: As recommended by board manufacturer.
 - Accessories: Corner beads and stop beads recommended by board manufacturer.
 - Other requirements: Sealant applied in accordance with clauses 510.
- 220 PROPRIETARY SUSPENDED CEILING SYSTEM
- Manufacturer: British Gypsum Limited, East Leake, Loughborough, Leicestershire LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
Web: www.british-gypsum.com, Email: bgtechnical.enquiries@bpb.com.
 - Product reference: CasoLine MF.
 - Lining board: 15mm Gyproc WallBoard.
 - Finishing: Seamless jointing.
 - Accessories: Metal beads/ stops recommended by lining board manufacturer.
 - Suspension system:
 - Grid centres: Primary grid centres 1200 mm; Secondary grid centres 600 mm.
 - Hangers: FEA1 Steel Angle.
 - Primary grid: MF7 Primary Support Channel.
 - Secondary grid: MF5 Ceiling Section.

Length: To give ceiling soffit height above finished floor level of approx. 3000mm to 3500 mm, refer to architect's drawings.

Centres:

 - Hangers -1200 mm
 - Primary and secondary grid - see above.

Top fixing: To suit structural soffit of insitu concrete slab.
 - Insulation: Not required.
 - Thickness: Not applicable.
 - Access units: as clause 430.
 - Integrated services fittings: None.
 - Accessories/ Other requirements:

Movement control joints to manufacturer's recommendations;
 The ceiling system must safely support loads including services fittings as per Services Engineers Documentation;
 Fixing of services in accordance with frame and lining manufacturer's recommendations;
 Fire stopping around service penetrations as section P12.

225 PROPRIETARY CEILING LINING SYSTEM

- Manufacturer: British Gypsum Limited, East Leake, Loughborough, Leicestershire LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
Web: www.british-gypsum.com, Email: bgtechnical.enquiries@bpb.com.
- Product reference: GypLyner Universal.
- Lining board: 15mm Gyproc WallBoard.
 - Finishing: Seamless jointing.
 - Accessories: Metal beads/ stops recommended by lining board manufacturer.
- Suspension system:
 - Grid centres: 600 mm.
 - Hangers: GL2 Bracket .
Length: Approx. 35mm.
Centres: 1200 mm.
 - Top fixing: To suit structural soffit of insitu concrete slab.
- Insulation: Not required.
 - Thickness: Not applicable.
- Access units: Not required.
- Integrated services fittings: None.
- Accessories/ Other requirements:
Movement control joints to manufacturer's recommendations;
Fire stopping around service penetrations as section P12.

230 CEILING BULKHEAD GENERALLY

- Manufacturer: British Gypsum Limited, East Leake, Loughborough, Leicestershire LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
Web: www.british-gypsum.com, Email: bgtechnical.enquiries@bpb.com.
- Product reference: CasoLine MF.
- Lining board: 15mm Gyproc WallBoard.
 - Finishing: Seamless jointing.
 - Accessories: Metal beads/ stops recommended by lining board manufacturer.
- Suspension system:
 - Grid centres: Primary and secondary grid centres as recommended by board manufacturer.
 - Hangers: Type recommended by board manufacturer.
Length: Varies.
 - Top fixing: To suit structural soffit of insitu concrete slab.
- Access units: as clause 430.
- Integrated services fittings: TBC.
- Accessories/ Other requirements:
Movement control joints to manufacturer's recommendations;
The ceiling system must safely support loads including services fittings as per Services Engineers Documentation;
Fixing of services in accordance with frame and lining manufacturer's recommendations;
Fire stopping around service penetrations as section P12.

GENERAL/ PREPARATION

325 PREPARATION OF MASONRY TO RECEIVE WALL LININGS

- General: Suitable to receive lining system. Redundant fixtures and services removed. Cutting, chasing and making good completed.
- Holes, gaps, service penetrations, perimeter junctions and around openings: Seal.
- Adhesive fixings: Prepare substrate to achieve effective bonding.
 - Contaminants: Remove loose material, dirt, grease, oil, paper, etc.
 - Absorption: Control by dampening, priming or applying bonding agents as necessary.

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.

375 NEW WET LAID BASES

- Dpcs: Install under full width of partitions/ freestanding wall linings.
 - Material: Bituminous sheet or plastics.

385 SERVICE PENETRATIONS

- The dry lining contractor must liaise with the Main Contractor and other contractors to ensure that fire resistance and other specified performance requirements are not impaired by service penetrations.
- In particular:
 - Form framed openings accurately for grouped services, ducts, etc. allowing for associated fire barriers.
 - Provide insulation backings to recessed electrical outlets and switches as recommended by the plasterboard manufacturer.

395 CONTROL SAMPLES

- General: Complete areas of finished work and obtain approval of appearance before proceeding.
- Type of dry lining: All partition and ceiling types.
 - Location/ Size: TBC.

COMPONENTS

401 GYPSUM PLASTERBOARD

- Type: Gyproc Wallboard.
- Core density (minimum): 650 kg/m³.
- Recycled content: 84% (minimum) to BS EN ISO 14021.
- Exposed surface and edge profiles: Suitable to receive specified finish.

403A GYPSUM PLASTERBOARD (MOISTURE RESISTANT)

- Type: Glasroc H Tilebacke.
- Core: Moisture resistant.
 - Density (minimum): 900 kg/m³.
- Paper facings: Moisture resistant.
- Recycled content: 84% (minimum) to BS EN ISO 14021.
- Exposed surface and edge profiles: Suitable to receive specified finish.

404 GYPSUM PLASTERBOARD (IMPROVED FIRE PROTECTION)

- Type: Gyproc Fireline.
- Core: Including fibres and/ or other additives for improved cohesion.
 - Density (minimum): 800 kg/m³.
- Recycled content: 84% (minimum) to BS EN ISO 14021.
- Exposed surface and edge profiles: Suitable to receive specified finish.

415 GYPSUM PLASTERBOARD SHAFT WALL

- Type: Gyproc CoreBoard.
- Core density (minimum): Consult manufacturer.
- Recycled content: 84% (minimum) to BS EN ISO 14021.
- Exposed surface and edge profiles: Clean and undamaged.

430 ACCESS PANELS GENERALLY

- Type: Flush metal access panels .
 - Sizes: 600 mm x 600 mm generally - Location: To M&E Engineer's and M&E Sub-contractor requirements .
- Frame: Bead for taping and jointing .
- Panel: Electro galvanised, polyester powder coated. Colour: TBC .
- Lock:
 - Ceiling: concealed hinges or pivots with key operated locks. - Wall: security locking .

432 METAL STUDS

- Manufacturer: British Gypsum Ltd, East Leake, Loughborough, Leicestershire LE12 6JT
 Tel: [REDACTED] Fax: [REDACTED]
 Email: bgtechnical.enquiries@bpb.com, Web: www.british-gypsum.com .
- Product reference:
 - Gypframe Steel Stud, Channel, Track and Accessories;
 - Shaftwall Stud, Channel, Track and Accessories .

INSTALLATION

435 DRY LININGS GENERALLY

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

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.

460 SHAFT WALL

- Notwithstanding clause 455, fix head channel securely at not more than 300mm centres, incorporating fire sealant.

485 SUSPENDED CEILING GRIDS

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

505 INSTALLING MINERAL WOOL INSULATION

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

510 SEALING GAPS AND AIR PATHS

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

515 ACOUSTIC SEALANT

- Location of sealant: At junctions with adjoining structure, and at other air paths.
- Application: Apply as a continuous bead to clean, dry, dust free surfaces, leaving no gaps. After application of sealant, bulk fill gaps between floor and underside of plasterboard using joint compound recommended by board manufacturer.

520 AIR PRESSURE SEALANT

- Location of sealant:
 - To all framing members at perimeter junctions with walls, floors and ceilings, air gaps around openings, and other potential air leakage points.
 - To frame members prior to fitting core boards and around fire stops cloaking horizontal core board joints.
 - To all metal framing around board perimeters of first layer boarding and board perimeters when fixing outer layer board.
- Application: Apply as a continuous bead leaving no gaps.

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: 50 mm mineral wool wire reinforced mattress.
- Fire resistance: To BS 476-20, 30/30 minutes (Integrity/ Insulation).
- Ceiling void subdivision: Fix barriers as drawings.
- 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 plasterboards:
 - Bound edges: Lightly butted.
 - Cut/ unbound edges: 3 mm gap.
 - Square edged plasterboards: 3 mm gap.
 - Square edged fibre reinforced gypsum boards: 5 mm gap.
- 565 VERTICAL JOINTS
- Joints: Centre on studs.
 - Partitions: Stagger joints on opposite sides of studs.
 - Two layer boarding: Stagger joints between layers.
- 570 HORIZONTAL JOINTS
- Surfaces exposed to view: Horizontal joints not permitted. Seek instructions where height of partition/ lining exceeds maximum available length of board.
 - Two layer boarding: Stagger joints between layers by at least 600 mm.
 - Edges of boards: Support using additional framing.
 - Two layer boarding: Support edges of outer layer.
- 580 INSULATION BACKED PLASTERBOARD
- General: Do not damage or cut away insulation to accommodate services.
 - Installation at corners: Carefully cut back insulation or plasterboard as appropriate along edges of boards to give a continuous plasterboard face, with no gaps in insulation.
- 590 FIXING PLASTERBOARD 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.
- 591 FIXING PLASTERBOARD TO METAL SUPPORTS SHAFT WALL
- Working from the centre of each board, fix securely to all supports at maximum 300mm centres, reduced to 200mm at external angles.
- Ceilings: 230 mm. Reduce to 150 mm at board ends and at lining perimeters.
- Fix working from the centre of each board. Position screws not less than 13mm from cut edges and 10mm from bound edges of boards. Set heads in a depression; do not break paper or gypsum core.
- 595 DEFLECTION HEADS
- Fixing boards: Do not fix to head channels.

620 FIXING PLASTERBOARD 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.

FINISHING

650 LEVEL OF DRY LINING ACROSS JOINTS

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

670 SEAMLESS JOINTING TO PLASTERBOARDS

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

692 RIGID BEADS/STOPS

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

695 INSTALLING BEADS/ STOPS

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

K11

**Rigid sheet flooring/ sheathing/ decking/ sarking/
linings/ casings**

K11 Rigid sheet flooring/ sheathing/ decking/ sarking/ linings/ casings

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers of wood flooring must provide evidence that their product is tested in accordance with EN 14342:2005 and comply with Formaldehyde class E1. They must verify that regulated wood preservatives are absent as defined by the standard.
- All manufacturers of laminated wood flooring must provide evidence that their product is tested in accordance with EN 14041:2004 and comply with Formaldehyde class E1. They must verify that regulated wood preservatives are absent as defined by the standard.
- All timber supplied or used in timber products must be from certified sources. Evidence must be provided by the supplier/manufacturer in form of FSC or PEFC certificates. Additional CEPT documentation may be supplied for verification purposes.

TYPES OF FLOORING/ SHEATHING/ DECKING/ SARKING/ LINING/ CASINGS

110 WOOD-BASED SHEETS GENERALLY

- Standard: To BS EN 13986.
- Evidence of compliance: Submit.

115 BATTENED PLYWOOD FLOATING FLOOR BOXING CLUB TRAINING AREA

- Substrate: Leveling screed to M10.
 - Preparation: Clean, level and dry.
- Resilient layer:
 - Supplier Reference: Mason UK XXXXXXXXXX <http://www.mason-uk.co.uk>
 - MFS-150 (yellow) Spring Floor Mounts, nailed to battens at 600mm intervals.
 - Recycled content: Contractor's choice.
- Loose laid battens: 100X50 battens on at 600mm centres .
 - Additional battens: -.
- Thermal insulation between battens: -.
 - Recycled content: Not applicable.
- Vapour control layer: 1000 gauge virgin polyethylene sheet .
- Floating substrate: Not required.
- Flooring: Plywood to an approved national standard.
 - Bonding quality to BS EN 314-2: Class 2.
 - Appearance class to BS EN 635: Class III.
 - Finish: Unsanded.
 - Thickness: 2 layers 18 mm ply, glued and screwed..
 - Edges: Tongued and grooved all edges.
 - Other requirements: Sports Floor K21/115A.
- Installation:
 - Floors with no vapour control layer: Adhesive fixed to each batten.
 - Setting out of floating substrate (where specified): Long edges running across battens. End joints central over battens and staggered.
 - Setting out of flooring: Long edges running across battens. End joints central over battens and staggered. All joints glued.
 - Flooring laid over floating substrate: Spot bonded to floating substrate. Joints must not coincide.
 - Fixing flooring to each batten:
 - Fasteners: 50 mm x 8 gauge wood screws into pilot holes .
 - Fixing centres (maximum):
 - Around floor perimeter and along short edges of each board: 150 mm.
 - Along intermediate supports: 300 mm.
 - Fixing distance from edges: 25 mm from long edges and minimum 10 mm from short edges.
- Bonding/ Jointing adhesive: Contractor's choice .
- Expansion provision:
 - Clear expansion gap around perimeter of floor area and upstands: 1 mm per metre run of floor, with a minimum gap of 10 mm .
 - Intermediate expansion/ movement joints: As recommended by flooring manufacturer.

WORKMANSHIP

910 INSTALLATION GENERALLY

- Timing: Building to be weathertight before fixing boards internally.
- Moisture content of timber supports (maximum): 18%.
- Joints between boards: Accurately aligned, of constant width and parallel to perimeter edges.
- Methods of fixing, and fasteners: As section Z20 where not specified otherwise.

915 DRYNESS OF CONCRETE/ SCREED SUBSTRATES FOR FLOATING FLOORS

- Relative humidity above substrate when tested with a hygrometer to BS 8201, Appendix A (maximum): 75%.
 - Test points: All corners, around perimeter, and random points over area being tested.
 - Drying aids: Turned off for not less than 4 days before testing.

- 920 VAPOUR CONTROL LAYER IN FLOATING FLOOR CONSTRUCTION
- Location: Immediately below floating layer.
 - Installation:
 - Joints: Overlapped by minimum 150 mm and sealed with vapour resistant tape.
 - Treatment of membrane at perimeter of flooring and upstands: Turned up and sealed to top face of flooring using a method approved by the board manufacturer.
 - Excess material: Trimmed off neatly after fixing skirtings/ cover beads.
 - Condition of membrane before laying flooring: Clean and dry.
- 925 BATTENS FOR FLOATING FLOORS
- Timber quality: Free from decay, insect attack (except ambrosia beetle damage) and with no knots wider than half the width of the section.
 - Preservative treatment: As section Z12 and Wood Protection Association Commodity Specification C8.
 - Type/ Desired service life: Acoustic floor system manufacturer's standard.
 - Moisture content at time of laying (maximum): 16%.
- 930 ADDITIONAL SUPPORTS
- Additional studs, noggings/ dwangs (Scot) and battens:
 - Provision: In accordance with board manufacturer's recommendations and as follows:
 - Tongue and groove jointed rigid board areas: To all unsupported perimeter edges.
 - Butt jointed rigid board areas: To all unsupported edges.
 - Size: Not less than 50 mm wide and of adequate thickness.
 - Quality of timber: As for adjacent timber supports.
 - Treatment (where required): As for adjacent timber supports.
- 940 BOARD MOISTURE CONTENT AND CONDITIONING
- Moisture content of boards at time of fixing: Appropriate to end use.
 - Conditioning regime: Submit proposals.
- 950 MOISTURE CONTENT TESTING
- Test regime and equipment: Submit proposals.
 - Test results: Submit record of tests and results.
- 960 FIXING GENERALLY
- Boards/ sheets: Fixed securely to each support without distortion and true to line and level.
 - Fasteners: Evenly spaced in straight lines and, unless otherwise recommended by board manufacturer, in pairs across joints.
 - Distance from edge of board/ sheet: Sufficient to prevent damage.
 - Surplus adhesive: Removed as the work proceeds.
- 980 OPEN JOINTS
- Perimeter joints, expansion joints and joints between boards: Free from plaster, mortar droppings and other debris.
 - Temporary wedges and packings: Removed on completion of board fixing.
- 990 ACCESS PANELS
- Size and position: Agree before boards are fixed.
 - Additional noggings/ dwangs (Scot), battens, etc: Provide and fix as necessary.

K13

Rigid sheet fine linings and panelling

K13 Rigid sheet fine linings and panelling

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers of vinyl, carpet and PVC-U linings to walls must provide evidence that their product is tested in accordance with EN 14041:2004 and complies with Formaldehyde class E1. They must verify that regulated preservatives are absent as defined by the standard.
- All manufacturers of flooring adhesives and adhesives for rigid wall coverings must provide evidence that their product is tested in accordance with EN 13999-1:2007. They must verify that carcinogenic or sensitising volatile substances are absent from their product.

TYPES OF LINING AND PANELLING

- 121 PLYWOOD PANEL LINING to Main Entrance Foyer
- Substrate: proposed cold rolled steel studwork.
 - Battens: Softwood free from decay and active insect attack and with no knots wider than half the width of the section.
 - Finished size: 1220mm x 2440mm.
 - Moisture content at time of fixing (maximum): 12%.
 - Spacing (centres): refer to Architect's drawings.
 - Method of fixing: studwork restrained back to existing masonry and concrete structure by proprietary metal straps.
 - Panels:
 - Core material: WBP birch plywood throughout B/BB quality. FSC or PEFC certification of sourcing. Thickness: 15mm minimum.
 - Fire retardant impregnation treatment: Osmose FirePro to Euro Class B to EN ISO 11925 (Ignitability Test) & BS EN 13823:2002 (Single Burning item Test).
 - Face veneer: Free from decay and holes.
 - Supplier: Specialised Panel Products Ltd
 - contact: Bruce Inker Tel: [REDACTED] Mobile: [REDACTED]
 - Wood species: birch.
 - Cutting: as per manufacturer's recommendation and architect's approval.
 - Arrangement: refer to Architect's drawings.
 - Backing veneer: As recommended by fabricator.
 - Edge treatment: factory treated.
 - Fabrication: As section Z10.
 - Adhesive: To BS EN 204; Type: To match durability class of core material.
 - Finish (to match approved sample): Nonintumescent clear finish to give Class 0 surface spread of flame rating to BS 476.
 - Coated to one side and edges with water based lacquer.
 - Colour and gloss TBC by Architect.
 - Moisture content at time of fixing: As recommended by fabricator to suit environmental conditions.
 - Installation:
 - Method of fixing panels: secret fixing by timber split batten.
 - Joint treatment: refer to Architect's drawings.
 - Included features: lining to reveals of door openings with hardwood corner battens.
 - Accessories: recessed skirting to receive tiling.

146 PROPRIETARY PVCu LININGS TO WALLS

- Substrate: Concrete, block work and plasterboard.
- Panels:
 - Manufacturer: Altro Limited - Works Road, Letchworth Garden City, Herts, Hertfordshire SG6 1NW
 - Tel: [REDACTED] Fax: [REDACTED]
 - Web: www.altro.co.uk, Email: enquiries@altro.com.
 - Product reference: Altro Whiterock™ W103/W104.
 - Board/ Panel type: Extruded semi-rigid PVCu sheet, EU Grade.
 - Width: 1220mm.
 - Length: 2500mm (W103) or 3000mm (W104).
 - Thickness: 2.5mm.
 - Weight: 3.5 kg/m².
 - Colour: White.
 - Light reflectance value: 95.
 - Surface finish: Satin.
- Method of fixing panels: Adhered to substrate in accordance with manufacturer's recommendations.
- Adhesive (and primer if recommended by manufacturer): AltroFix™ W139
Support the panel on double sided tape (Ref: A815 or A915 or welded system) whilst adhesive cures (approx. 3-5 hours - full cure 24 hours); Back of sheets to be cleaned using Altro Whiterock cleaner/thinner or Desolvit wipes.
- Joint treatment: All joints should be covered with high impact PVCu 'H' joint sections (two-part joint trim, or single part joint trim). Alternatively a 3-4mm Altro Whiterock silicone sealant joint can be used. All such joints are to be primed with Altro cleaner thinner before sealant is applied.
- Abutments:
 - To window frame, door frames, architraves, ceiling & quarry tile: Wipe clean & prime the edges with cleaner/thinner and seal with Altro Whiterock silicone sealant, white, 3-4mm width joint.
 - To PVC flooring with coved skirting: Overlapped by 50mm with Altro Whiterock, close bottom of sheet with silicon.
- Finish: Protective film to be removed and any marks and dirt wiped off using Altro Whiterock cleaner/thinner or Desolvit wipes. Antistatic solution to be applied to all surfaces when dry.
- Service penetrations: All holes to be cut to allow 3-4mm silicone seal around all penetrations. Clean with leaner/thinner and seal with Altro Whiterock silicone sealant
- Accessories: If required, high impact PVCu two-part start and edge trimer high impact PVCu single part heavy duty start and edge trim.

GENERAL REQUIREMENTS

210 ADVANCE REGISTRATION

- Materials registered in advance by the Employer: Obtain from supplier named in Preliminaries section A56.
 - Ordering: Supersede Employer's registration and take over responsibility by an order to the supplier covering price, supply and delivery to suit progress of the work.

220 MATERIAL SAMPLES

- Representative samples of designated materials: Submit before placing orders.
 - Designated materials: Altro Whiterock™ for splashbacks and wall linings.

230 CONTROL SAMPLES

- Sample area: Complete as part of the finished work.
 - Clause reference: clause 146 .
 - Location: Kitchen, WC, shower area .
 - Size (minimum):
 - Kitchenette: H 450mm x L 1000mm
 - Handwash basin: H 400mm x L 600mm
 - Shower area: complete panel .
 - Included features: Joint, abutments, service penetrations .
- Approval of appearance: Obtain before proceeding.

260 ENVIRONMENTAL CONDITIONS

- General requirements prior to starting work specified in this section: Building weathertight; wet trades completed and affected areas dried out.
- Temperature and humidity before, during and after fixing lining/ panelling: Maintained at levels approximating to those which will prevail after building is occupied.

FABRICATION/ FIXING/ FINISHING**350 FIXING LININGS AND PANELLING**

- Setting out: Accurate, true to line and level, free from undulations and lipping, with lines and joints aligned, straight and parallel unless specified otherwise.
- Movement allowance: Adequate for future moisture and temperature movement of boards.
- Fixing of panels: Secure, to prevent pulling away, bowing, or other movement during use.
- Methods of fixing and fasteners: As section Z20 unless specified otherwise.
- Trims: Wherever possible, to be in unjointed lengths between angles or ends of runs.
 - Running joints: Where unavoidable, submit proposals for location and method of jointing.
 - Angle joints: Mitred, unless specified otherwise.

K21

Wood strip/ board fine flooring/ linings

K21 Wood strip/ board fine flooring/ linings

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers of wood flooring must provide evidence that their product is tested in accordance with EN 14342:2005 and comply with Formaldehyde class E1. They must verify that regulated wood preservatives are absent as defined by the standard.
- All manufacturers of laminated wood flooring must provide evidence that their product is tested in accordance with EN 14041:2004 and comply with Formaldehyde class E1. They must verify that regulated wood preservatives are absent as defined by the standard.
- All timber supplied or used in timber products must be from certified sources. Evidence must be provided by the supplier/manufacturer in form of FSC or PEFC certificates. Additional CEPT documentation may be supplied for verification purposes.

TYPES OF FLOORING/ LINING

115A FLOORING

- Manufacturer: Boen UK Ltd.
 - Web: www.boen.co.uk.
 - Email: sales@boen.co.uk.
 - Product reference: 28 mm Boflex Stadium Sports Floor or similar
- Species and format: Beech.
- Accessories: None.

GENERAL/ PREPARATION

210 WORKMANSHIP GENERALLY

- Moisture content of timber supports: 12-14%.
- Methods of fixing and fasteners: As section Z20 where not specified.
- Protection: Protect from dirt, stains and damage using suitable coverings and boards laid as the work proceeds.

220 ENVIRONMENTAL CONDITIONS

- General requirements prior to starting work specified in this section: Building weathertight, wet trades completed and affected areas dried out.
- Temperature and humidity before, during and after installing strips/ boards: Maintained at levels approximating to those which will prevail after building is occupied.

230 HEATING SYSTEM

- Operating mode: Intermittent.
- Room temperatures for which the system has been designed: 15-18 degrees C.
- Operation up to Completion: Submit proposals.

250 FIXTURES

- Fixtures around which strip flooring is to be fixed: Installed before starting work specified in this section.

260 DRYNESS OF CONCRETE/ SCREED SUBSTRATES FOR FLOORING

- Relative humidity above substrate when tested with a hygrometer to BS 8201, Appendix A (maximum): 75%.
 - Test points: All corners, around perimeter, and random points over area being tested.
- Drying aids: Turned off for not less than four days before testing.

270 STRIP/ BOARD MOISTURE CONTENT TESTING

- Test regime and equipment: Submit proposals.
- Test results: Submit record of tests and results.

290 CONTROL SAMPLES

- Sample area: Complete as part of the finished work.
 - Clause reference: Clause 115.
 - Location: TBC.
 - Size (minimum): 1.5m².
 - Included features: Skirting boards, thresholds, pipe covers and resilient layer.
- Approval of appearance: Obtain before proceeding.

FIXING/ FINISHING**335 TREATED TIMBER**

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

361 EXPANSION PROVISION

- Expansion gaps:
 - Edges of flooring: Parallel to lie of strips/ boards, width as recommended by flooring manufacturer .
 - Ends of flooring: 10 mm wide.
- Spacer blocks and debris: Removed before fixing skirtings/ cover fillets.
- Intermediate expansion/ movement joints: Formed as recommended by flooring manufacturer/ supplier.

370 FINISH TO FLOORING

- Exposed fastener heads: Punched or set below surface and filled with stopping to match wood.
- Strips/ Boards: Sanded to give a clean, smooth and flush surface free from score marks.
- Finish: As recommended by flooring manufacturer .

K32

Panel cubicles/ duct and wall linings/ screens

K32 Panel cubicles/ duct and wall linings/ screens

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

112 FULLY FRAMED PANEL CUBICLES BOXING CLUB SHOWERS

- Manufacturer: Amwell Systems Ltd., Buntingford Business Park, Baldock Road, Buntingford, Hertfordshire, SG9 9ER
Tel: [REDACTED] Fax: [REDACTED]
Email: info@amwell-systems.com, Web: www.amwell-systems.com.
- Product reference: Aqualine Shower Cubicle With Doors.
- Frame:
 - Type: 42mm diameter vertical aluminium profiles fixed directly to finished floor with die cast foot levelling mechanism; door hanging profile includes shaped recess to surround continuous hinge extrusion for complete finger protection. 35 x 75mm tubular aluminium headrail fixed over vertical profiles; all sections pre-treated.
 - Height: 2100mm.
 - Material/ finish: Aluminium, powder coated, semi-gloss; colour RAL9006.
- Panels:
 - Height (overall): Standard height.
 - Floor clearance: 100mm.
 - Core material: Solid grade laminate.
Thickness: 12.5mm.
 - Facings: None.
Colour/ Pattern/ Species: TBC
Finish: Surf.
 - Edge treatment: Edges machined to a smooth profile with corners to doors radiused for added safety.
- Doors:
 - Height: Standard height.
 - Core material: Solid grade laminate.
Thickness: 12.5mm.
 - Facings: None.
Colour/ Pattern/ Species: TBC
Finish: Surf.
 - Edge treatment: Edges machined to a smooth profile with corners to doors radiused for added safety.
 - Ironmongery: Integrated pivot hinges supporting full length finger protection hinge profiles; ergonomic DDA compliant slide operated indicator bolt with high viz red & white circular face plate; integral door buffer and emergency release facility; continuous channel division fixings.
Colour: Indicator bolt available in ABS RAL 9006 to match the framework.
- Accessories: As required to complete installation
- Other requirements: Complete with outward opening doors to ambulant and enlarged cubicles where requested.

113 FULLY FRAMED PANEL CUBICLES BOXING CLUB MALE WC

- Manufacturer: Amwell Systems Ltd., Buntingford Business Park, Baldock Road, Buntingford, Hertfordshire, SG9 9ER
Tel: [REDACTED] Fax: [REDACTED]
Email: info@amwell-systems.com, Web: www.amwell-systems.com.
- Product reference: Impact standard+ Toilet cubicles.
- Panels/Doors:
 - Core material: Moisture resistant chipboard (to V313).
Thickness: 18mm.
 - Facings: Faced both sides with high pressure laminate (HPL).
Colour/ Pattern/ Species: Colour to be confirmed from Amwell Washroom HPL selection.
Finish: Surf.
 - Edge treatment: All edges are lipped with corresponding / contrasting durable PVC.
- Pilaster:
 - Core material: Moisture resistant chipboard (to V313).
Thickness: 18mm.
 - Facings: Faced both sides with high pressure laminate (HPL).
Colour/ Pattern/ Species: Colour to be confirmed from Amwell Washroom MFC selection.
Finish: Surf.
 - Edge treatment: Vertical edges postformed to form continuous radius.
- Headrails: Rigid polished aluminium angle section with bull-nosed leading edge.
- Legs: Polished aluminium rectangular aluminium design, through fixed into partitions; adjustable to accommodate varying floor levels.
- Ironmongery: Aluminium pivot hinge; coat hook; ergonomic DDA compliant slide operated indicator bolt with circular face plate; Integral door buffer and emergency release facility; channel bracket partition fixings.
Finish/Colour: Polished.
- Dimensions: 2100mm overall height including 100mm floor clearance.
- Accessories: As required to complete installation
- Other requirements: Complete with outward opening doors to ambulant and enlarged cubicles where requested. Cubicles with inward opening doors to be set out to maintain 450mm diameter manoeuvring space within the cubicle.

120 PANEL CUBICLES UNFRAMED - NURSERY TOILET

- Manufacturer: Amwell Systems Ltd, Buntingford Business Park, Baldock Road, Buntingford, Herts, SG9 9ER. T: [REDACTED] F: [REDACTED]
Email: specs@amwell-systems.com ,Web: www.amwell-systems.com. Alternative suppliers subject to approval.
 - Product reference: Playtime Arches SGL range.
- Panels:
 - Height (overall): 1350mm Overall height from FFL (Including ground clearance).
 - Floor clearance: 160mm.
 - Core material: Solid grade laminate.
Thickness: 12/13mm.
 - Facings: None.
Colour/ Pattern/ Species: Provide sample options for approval. .
 - Edge treatment: machined smooth profile.
 - Wall support: Manufacturer's standard.
- Pilasters:
 - Core material: Solid grade laminate.
Thickness: Manufacturer's standard.
 - Facings: None.
Colour/ Pattern/ Species: Provide sample options for approval.
 - Edge treatment: machined smooth profile.
- Doors:
 - Height: 1260.
 - Core material: 12/13mm Solid grade laminate (SGL).
Thickness: 12mm.
 - Facings: -.
Colour/ Pattern/ Species: Provide sample options for approval.
 - Edge treatment: Edges are machined to a smooth profile (Black). Corners to doors and Pilasters are radiused for added safety.
 - Ironmongery: Universal Aluminium safety hinge, DDA compliant slide operated indicator bolt with circular face plate / Integral door buffer and emergency release facility.
Colour: Provide sample options for approval.
- Fittings:
 - Headrails: None.
 - Pedestals/ Shoes: Manufacturer's standard.
- Accessories: toilet roll holder fitted by manufacturer.
- Other requirements: None.

140 DUCT/ WALL LININGS – PANELS ONLY TOILETS

- Manufacturer: Amwell Systems Ltd, Buntingford Business Park, Baldock Road, Buntingford, Herts, SG9 9ER
T: [REDACTED] F: [REDACTED]
Email: specs@amwell-systems.com, Web: www.amwell-systems.com.
- Product reference: HPL duct/access panelling.
- Panels:
 - Type: Plastic laminate faced made to measure panels, full height one panel sets..
 - Width (coordinating): As architect's drawings.
 - Core material: Moisture resistant 650kg/m3 chipboard to V313.
 - Thickness: 20mm.
 - Facings: 0.8mm high pressure laminate.
 - Colour/ Pattern/ Species: Colour to be confirmed from Amwell Washroom HPL selection.
 - Edge treatment: Vertical edges postformed with horizontal edges lipped with corresponding / contrasting durable PVC.
 - Reaction to fire (minimum classification, finished panel): Manufacturer's standard.
- Fasteners: Concealed Keku 'lift off' brackets.
- Framing/ Support:
 - Duct panels: Softwood frame, site fabricated.
 - Wall panels: N/A.
- Flashgap panels: All duct/panelling cistern duct sets to be made to suit site dimensions with vertical flash gaps kept to a minimum.
- Skirting: Manufacturer's standard.

180 DUCT PANEL SUPPORT FRAMING – SITE FABRICATED SOFTWOOD TOILETS

- Framing: Softwood, free from decay and active insect attack and with no knots wider than half the width of the section.
 - Finished size: As panel manufacturer's recommendations.
 - Moisture content at time of fixing (maximum): 18%.
 - Spacing (centres): As panel manufacturer's recommendations.
 - Method of fixing: As panel manufacturer's recommendations.
- Treatment: As section Z12 and Wood Protection Association Commodity Specification FR3, Type HR (Humidity resistant).

210 SAMPLES

- General: Before placing orders submit representative samples of the following: Panel and door material and colours, and accessories.
- Delivered materials/ products: To match samples.

220 CONTROL SAMPLES

- General: Complete samples as part of finished work and obtain approval of appearance before proceeding.
- Types:
 - Duct panels to sample cubicles, as clause 140
 - Two complete cubicles, as clause 112 and 113.
 - Locations: Obtain instructions.

250 INSTALLATION

- Programming: Do not install cubicles or duct/ wall panels before building is weathertight, wet trades have finished their work, wall and floor finishes are complete, and the building is well dried out.
- Accuracy: Set out to ensure frames and/ or panels and doors are plumb, level and accurately aligned.
- Modifications: Do not cut, plane or sand prefinished components except where shown on drawings.
- Fixing: Secure components using methods and fasteners recommended by the cubicle/ panel manufacturer. Prevent pulling away, bowing or other distortions to frames, panels and doors.
- Moisture and thermal movement: Make adequate allowance for future movement.

K40
Demountable suspended ceilings

K40 Demountable suspended ceilings

TO BE READ WITH PRELIMINARIES/GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers of suspended ceiling tiles must provide evidence that their product is tested in accordance with EN 13964:2004 and complies with Formaldehyde class E1. They must verify that the product does not contain asbestos.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF CEILING SYSTEM

115 UNIT SUSPENDED CEILING SYSTEM OFFICES & MEETING ROOMS

- Ceiling system manufacturer: Armstrong World Industries Ltd. Building Products Division, Armstrong House, 38 Market Square, Uxbridge UB8 1NG
Tel: [REDACTED] Fax: [REDACTED]
Web: www.armstrong.co.uk.
 - Product reference: Sierra OP 3783M.
- Ceiling:
 - Infill units: Sierra
 - Material: Mineral.
 - Edge : Tegular.
 - Colour: White.
 - Ceiling module: 600 x 600 mm.
 - Soffit height above finished floor level: Refer to architect's drawings.
- Grid:
 - Form: Interlocking.
 - Exposure: Exposed.
- Access: Infill units fully demountable.
- Suspension system: Prelude XL.
- Perimeter trim: Shadowline painted.
- Accessories: As required to complete installation.
- Integrated services fittings: Hangers and housings for linear luminaires.
- Other requirements: Cavity barrier as clause 287.

116 UNIT SUSPENDED EXTERNAL CEILING SYSTEM UNDERCROFT

- Ceiling system manufacturer: Armstrong World Industries Ltd. Building Products Division, Armstrong House, 38 Market Square, Uxbridge UB8 1NG
Tel: [REDACTED] Fax: [REDACTED]
Web: www.armstrong.co.uk
Contact:
Ben Campbell (Area Specification Manager) Mob : [REDACTED]
- Product reference: BP3982M6A1SG.
- Ceiling:
 - Infill units: Board Mesh
 - Material: Steel expanded mesh.
 - Edge: bent return with overall panel thickness of 35mm.
 - Finish: powdercoated
 - Colour: TBC by Architect.
 - Ceiling module: 1200 x 600 mm.
 - Soffit height above finished floor level: Refer to architect's drawings.
- Grid:
 - Form: Interlocking.
 - Exposure: Exposed.
 - Type: Prelude 24TLX
 - Material: anti-corrosive
 - Finish: Powdercoated
 - Colour: to match infill units
- Access: Infill units fully demountable.
- Suspension system: Prelude 24 TLX.
- Perimeter trim: As per manufacturer's standard.
- Accessories: As required to complete installation including PPC aluminium collars to any necessary penetrations.
- Integrated services fittings: Hangers and housings for linear luminaires.
- Other requirements: Form bulkhead along the exposed perimeter, as indicated on Architect's drawings, using the same infill units. Height to be confirmed on site to reflect existing services distribution.

GENERAL/ PERFORMANCE

210 ENVIRONMENT

- Environmental classification to BS EN 13964:
 - RA Offices & Boxing Club: Class A
 - Changing rooms/Shower: Class C.

COMPONENTS

240 SAMPLES

- General: Submit representative samples of the following: Clause 115 .

245 STANDARDS

- Components: To BS EN 10346.
 - Aluminium sheet, strip and plate: To BS EN 485.
 - Aluminium bars, tubes and sections: To relevant parts of BS EN 515, BS EN 573, BS EN 755 and BS EN 12020.

287 CAVITY BARRIERS

- Standard: To BS 476-20 and -22.
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Fire resistance: To BS 476-20 and -22, 30 minutes integrity and insulation.
- Type/ Material: Wire reinforced mineral wool.
- Thickness: Manufacturer's standard.
- Density: Manufacturer's standard.
- Facings/ Wrappings: Aluminium foil to back (facing void) and edges, white glass fibre tissue to front.

EXECUTION

302 CONTROL SAMPLES

- General: Complete areas as part of the finished work in the following locations:
 - RA offices
 - Boxing Club
 - Shower areas.
- Approval: Obtain before completing areas of similar work.

305 SETTING OUT

- General: Completed ceiling should present, over the whole of its surface exposed to the room below, a continuous and even surface, jointed (where applicable) at regular intervals.
- Infill and access units, integrated services: Fitted correctly and aligned.
- Edge/ perimeter infill units size (minimum): Half standard width or length.
- Corner infill units size (minimum): Half standard width and length.
- Grid: Position to suit infill unit sizes. Allow for permitted deviations from nominal sizes of infill unit.
- Infill joints and exposed suspension members: Straight, aligned and parallel to walls, unless specified otherwise.
- Suitability of construction: Give notice where building elements and features to which the ceiling systems relate are not square, straight or level.

310 BRACING

- General: Secure, with additional bracing and stiffening to give a stable ceiling system resistant to design loads and pressures.

315 PROTECTION

- Loading: Do not apply loads for which the suspension system is not designed.
- Ceiling materials: When necessary, remove and replace correctly using special tools and clean gloves, etc. as appropriate.

320 TOP FIXING

- Building structure: Verify suitability.
- Structural soffit: Insitu concrete slab.
 - Suitability to receive specified fixings: Evaluate and confirm.
- Fixing generally: In accordance with BS EN 13964.
- Fixing to:
 - Concrete: Drill and insert suitable expanding anchors.
 - Aerated concrete: Fix through from the top of concrete units and provide a system of primary support channels.
 - Structural steel: Drill, or use suitable proprietary clips/ adaptors.
 - Metal roof decking: Fix to sides of liner tray corrugations.
 - Timber: Fix to side of joists at least 50 mm from bottom edge. If ceiling system is intended for fire protection, fix into top third of joists.
 - Hollow structural members: Submit fixing proposals.

325 INSTALLING HANGERS

- Wire hangers: Straighten and tension before use.
- Installation: Install vertical or near vertical, without bends or kinks. Do not allow hangers to press against fittings, services, or insulation covering ducts/ pipes.
- Obstructions: Where obstructions prevent vertical installation, either brace diagonal hangers against lateral movement, or hang ceiling system on an appropriate rigid sub-grid bridging across obstructions and supported to prevent lateral movement.
- Extra hangers: Provide as necessary to carry additional loads.
- Fixing:
 - Wire hangers: Tie securely at top with tight bends to loops to prevent vertical movement.
 - Angle/ strap hangers: Do not use rivets for top fixing.
- Spacings: As recommended by manufacturer.

335 INSTALLING PERIMETER TRIMS

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

340 EXPOSED GRIDS

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

355 INSTALLING INFILL UNITS

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

385 UPSTANDS AND BULKHEADS

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

390 OPENINGS IN CEILING MATERIALS

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

395 INTEGRATED SERVICES

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

401 CEILING MOUNTED LUMINAIRES

- Support: Support by ceiling.
 - Independently supported luminaires: Suspension adjusted to line and level of ceiling.
 - Ceiling supported luminaires: Modifications and/ or extra support required: TBC by installer.
- Surface mounted luminaires: Units installed so that in event of a fire the designed grid expansion provision is not affected.
- Modular fluorescent recessed luminaires: Compatible with ceiling module. Extension boxes must not foul ceiling system.
- Recessed rows of luminaires: Provide flanges for support of grid and infill units, unless mounted above grid flanges. Retain in position with lateral restraint.
- Fire protecting/ resisting ceiling systems: Luminaires must not diminish protection integrity of ceiling system.
- Access: Provide access for maintenance of luminaires.

406 TRUNKING

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

411 MECHANICAL SERVICES

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

425 INSTALLING CAVITY FIRE BARRIERS

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

500 ELECTRICAL CONTINUITY AND EARTH BONDING

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

COMPLETION

520 USER INSTRUCTIONS

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

530 SPARES

- General: At Completion supply the following: 20 tiles for ceiling systems in clause 115.

K41
Raised access floors

K41 Raised access floors

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers/suppliers must provide evidence that particle boards used in their product are tested in accordance with EN 13986:2004 and comply with Formaldehyde class E1. They must verify that regulated wood preservatives are absent as defined by the standard.
- All timber supplied or used in timber products must be from certified sources. Evidence must be provided by the supplier/manufacturer in form of FSC or PEFC certificates. Additional CEPT documentation may be supplied for verification purposes.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF RAISED ACCESS FLOOR

- 130 RAISED ACCESS FLOOR GENERALLY- CARPET.
 Manufacturer: Kingspan Access Floors Ltd, Burma Drive, Marfleet, Hull, HU9 5SG
 Tel: [REDACTED] Fax: [REDACTED]
 Email: marketing@kingspanaccessfloors.co.uk, Web: www.kingspanaccessfloors.co.uk.
- Product reference: Woodcore - Steel encapsulated panels.
 - Subfloor: Refer to J30 and J40.
 - Preparation: Consult manufacturer.
 - Floor panels:
 - Woodcore steel encapsulated - gravity lay
 - Size: 600 x 600 x 31mm
 - RG3 Medium Duty Class 3 to BS EN 12825
 - Pedestal: Europed pedestal.
 - Accessibility: Partial: Refer to M&E drawings.
 - Pedestal fixing: Adhesive.
 - Structural grade: BS EN 12825 Class 3/A/3/2
 - Installed mass of system (maximum): 31 kg/m².
 - Height:
 - Finished raised access floor height above subfloor: 150mm.
 - Floor void height: 119mm.
 - Floor covering: Loose laid antistatic carpet tiles as section M50.
 - Accessories:
 - Stringers
 - Cavity barriers
 - Oversize perimeter panels
 - Bridging sections
 - Fixing screws
 - Pedestal earth clamps
 - Aluminium foil tape
 - Perimeter gasket
 - Floor boxes
 - Pedestal clips for underfloor heating system to M&E engineers specification
 - 75mm mineral wool slab acoustic barrier below partitions where required
 - Expansion joint where required as per clause 336.

131 RAISED ACCESS FLOOR GENERALLY- SHEET FINISHES.

Manufacturer: Kingspan Access Floors Ltd, Burma Drive, Marfleet, Hull, HU9 5SG

Tel: [REDACTED] Fax: [REDACTED]

Email: marketing@kingspanaccessfloors.co.uk, Web: www.kingspanaccessfloors.co.uk.

- Product reference: Woodcore - Steel encapsulated panels.

- Subfloor: Refer to J30 and J40.

- Preparation: Consult manufacturer.

- Floor panels:

Woodcore steel encapsulated - gravity lay

Size: 600 x 600 x 31mm

RG3 Medium Duty Class 3 to BS EN 12825

Pedestal: Europed pedestal.

- Accessibility: Partial: Refer to M&E drawings.

- Pedestal fixing: Adhesive.

- Structural grade: BS EN 12825 Class 3/A/3/2

- Installed mass of system (maximum): 31 kg/m².

- Height:

- Finished raised access floor height above subfloor: 145mm.

- Floor void height: 114mm.

- Floor covering: Sheet flooring as section M50 laid on 6.5mm plywood overlay as clause M50/560.

- Accessories:

- Stringers

- Cavity barriers

- Oversize perimeter panels

- Bridging sections

- Fixing screws

- Pedestal earth clamps

- Aluminium foil tape

- Perimeter gasket

- Floor boxes

- Pedestal clips for underfloor heating system to M&E engineers specification

- 75mm mineral wool slab acoustic barrier below partitions where required

- Expansion joint where required as per clause 336.

132 RAISED ACCESS FLOOR STORAGE AREA.

Manufacturer: Kingspan Access Floors Ltd, Burma Drive, Marfleet, Hull, HU9 5SG

Tel: [REDACTED] Fax: [REDACTED]

Email: marketing@kingspanaccessfloors.co.uk, Web: www.kingspanaccessfloors.co.uk.

- Product reference: Woodcore - Steel encapsulated panels.
- Subfloor: Refer to J30 and J40.
 - Preparation: Consult manufacturer.
- Floor panels:
 - Woodcore steel encapsulated - gravity lay
 - Size: 600 x 600 x 32mm
 - RG6 Heavy Duty Class 3 to BS EN 12825
 - Alpha 5 pedestal.
 - Accessibility: Partial: Refer to M&E drawings.
- Pedestal fixing: Adhesive.
- Structural grade: BS EN 12825 Class 6/A/3/2
 - Installed mass of system (maximum): 44 kg/m².
- Height:
 - Finished raised access floor height above subfloor: 145mm.
 - Floor void height: 113mm.
- Floor covering: Sheet flooring as section M50 laid on 6.5mm plywood overlay as clause M50/560.
- Accessories:
 - Stringers
 - Cavity barriers
 - Oversize perimeter panels
 - Bridging sections
 - Fixing screws
 - Pedestal earth clamps
 - Aluminium foil tape
 - Perimeter gasket
 - Floor boxes
 - Pedestal clips for underfloor heating system to M&E engineers specification
 - 75mm mineral wool slab acoustic barrier below partitions where required
 - Expansion joint where required as per clause 336.

GENERAL/ PERFORMANCE

219 INSTALLATION

- Completed installation: Clean and stable. Free from bounce and vibration. No lipping between floor panels.

234 FIRE PERFORMANCE

- Reaction to fire: In accordance with Building Regulations, class 0.
- Resistance to fire: To BS 476-20 and -21, 30 minutes loadbearing capacity and integrity.

239 SOUND TRANSMISSION

- Laboratory system test: In accordance with BS EN ISO10848-2.
 - Airborne sound insulation: 41dB .
 - Impact sound insulation: 71dB .
 - Test report: Submit.

COMPONENTS

310 SAMPLES

- General: Submit representative samples of the following: Floor panels incl. finishes and specified floor boxes .
 - Purpose: Client approval .

315 FLOOR PANELS GENERALLY

- Panel size: 600 x 600 mm.
 - Dimensional deviations: To BS EN 12825, Class 2.
- Life expectancy, excluding coverings (minimum): 25 years.
- Casing material: Steel.
 - Casing finish: Galvanized.
- Core material: HD particleboard.
- Perimeter edging material: Wrap around steel.
- Weight of removable panels: Varies, consult manufacturer.
- Floor panel fixing: Proprietary locators.
- Floor panel location method: Positive.
- Labelling:
 - Nonstandard panels: Identify for relocation purposes.
 - Service identification labels: Provide self-adhesive labels to identify under-floor services and their direction. Fix to the visible surface of the floor panel, and under carpet finish if any.

320 PEDESTALS GENERALLY

- Material: Zinc plated steel.
- Life expectancy (minimum): 30 years.
- Adjustability: Adjustable.
 - Limits on adjustability: Submit proposals.
 - Locking: Required.
- Additional pedestals: Submit proposals.

322 PEDESTAL ADHESIVE

- Adhesive: Compatible with subfloor surface finish.

325 STRINGERS GENERALLY

- Type: Submit proposals.
- Material: Galvanized steel.
- Life expectancy (minimum): 30 years.
- Removable stringers: Submit proposals.

340 CAVITY BARRIERS

- Type: Submit proposals.
- Performance:
 - General: Permanently stable, continuous, and an effective barrier to smoke and flame.
 - Fire resistance: To BS 476-20 and -22, 30 minutes integrity and insulation.
- Spacing: Maximum dimension in any direction: 20 m.
- Fixing: Fix securely so that their performance is unlikely to be affected by:
 - Movement of the building due to subsidence, shrinkage or temperature change.
 - Failure of their fixings in a fire.
 - Failure in a fire of any abutting material or construction.
 - Collapse in a fire of any services penetrating them.
- Floor panels above cavity barriers: To be firmly secured.
- Gaps between cavity barriers and other elements: Seal with mineral wool or other suitable material.
- Notification: Give notice when cavity barriers have been installed.

390 SUNDRY ACCESSORIES EXPANSION JOINTS

- Component: Expansion joints.
 - Manufacturer: Tremco illbruck Ltd, Bentall Business Park, Washington, tyne and Wear NE37 3JD Tel: [REDACTED] Fax: [REDACTED]
Email: sales@tremco-illbruck.co.uk, Web: www.tremco-illbruck.com .
Product reference: Compriband Interspan FSN 146-21.

INSTALLATION

410 CONTROL SAMPLES

- General: Complete areas of finished work in the following locations: Inspectors & RA offices/Storage .

421 PREPARATION

- Areas where flooring is to be installed: Clean before installation and keep clean during installation.
- Setting out of flooring: Indelibly mark pedestal positions before installing services.
- Fixtures: Before installing floor, complete fixtures that floor panels are to be cut around, or that are to be bridged by floor supports.
- Bridging structures - supplementary supports: N/A.

425 ENVIRONMENTAL CONDITIONS

- General: Dry, well ventilated, not subject to rapid variations or extremes of temperature or humidity.
- RH of air (maximum): 75%.
- Subfloors:
 - Moisture content: Test to BS 8201 using an accurately calibrated hygrometer.
 - RH (maximum): 75%.
 - Temperature (minimum): 5°C.

431 DUSTPROOFING

- Preparation: Surfaces to be sealed must be clean, dry and free from dust, grease and other contaminants.
- Extent of sealing: Concrete and masonry surfaces within raised access floor void.
- Sealer: Recommended by raised access floor manufacturer. Compatible with materials used to pack and/ or fix pedestals.
 - Colour: Tinted; different tint for each coat.
 - First coat: Apply before pedestals are erected.
 - Second coat: Apply after completion of services and other associated work.

433 PEDESTAL ADHESIVE TESTING

- Test method: Submit proposals.
- Rate of testing:
 - Pre-installation: Submit proposals.
 - During installation: 1%, selected at random.
- Witnessing: Arrange for pre-installation testing to be witnessed by: Contract Administrator.
- Results of testing during installation: Submit.

435 CUT FLOOR PANELS

- Size (minimum): Half standard width x half standard length.
- Edges:
 - Burrs and rough edges: Make smooth.
 - Sealing: Seal exposed cut edges of floor panels that have moisture sensitive or combustible cores.
- Sealer: Self adhesive aluminium foil tape, rated class 0 as defined in Building Regulations.

445 PERIMETERS

- Expansion gaps:
 - Size: 10 mm.
 - Location: At abutments.
- Expansion gap filling:
 - Filler type: Resilient closed cell.
 - Filling: Before fixing skirtings and cover strips.

465 ELECTRICAL CONTINUITY AND EARTH BONDING

- Standard: To BS 7671.
- Substantial metal parts of raised access floor: Electrically continuous and fully earth bonded.
- Bonding methods: Submit proposals.
- Earthing methods: Submit proposals.
- Rooms used for electronic data processing equipment: Submit proposal.
- Earth bonding connection points: Determine number and location. Provide connectors.
- Total resistance of earth fault loop (maximum): Resistance required to operate earth fault protection devices to BS 7671.
- Electrical continuity and earth bonding tests:
 - General: Test complete raised access floor.
 - Points for testing: Randomly selected pedestals, stringers, tops and bottoms of floor panels.

470 INTEGRAL FINISHES ELECTRICAL RESISTANCE TESTING

- Location: Test complete raised access floor.
- Extent of testing: Test complete raised access floor.
- Testing agent: Qualified electrician.

COMPLETION

510 TOOLS

- Floor panel lifting devices: At completion, supply one set of suitable devices for each type of raised access floor finish installed. Train designated personnel in their use.
- Pedestal locking: At completion, supply one set of tools for releasing pedestal locking.

515 USER INSTRUCTIONS

- User manual contents: Include the following:
 - Correct method for lifting and replacing floor panels and stringers.
 - Limitations on sequence, number and positions of floor panels and stringers that can be removed safely at one time.
 - Permissible loading, with guidance on use of spreader plates when shifting heavy equipment and subsequent maintenance.
 - Methods for installing cabling and ducts to prevent damage to supporting structure.
 - Methods for cleaning floor panels and integral finishes.
 - Method for replacing integral floor panel coverings.
 - Method for adjusting and locking pedestals.
 - Recommended maintenance methods and frequency.
 - Minimum maintenance-free life of raised access floor system.
 - Minimum maintenance-free life of replaceable parts where this differs from that of the whole system.
 - Minimum period during which replaceable components will be available.
 - Installation instructions, including COSHH Assessment.

520 SPARES

- General: At completion, supply the following:
 - Clause 130 - 5 Panels
 - Clause 131 - 5 Panels
 - Clause 132 - 5 Panels.

525 CLEANING

- Subfloors: At completion, thoroughly clean accessible areas of subfloors and leave free of dust and debris.
- Raised access floor: Before delivery of items carried by floor, clean thoroughly.

L
Windows/Doors/Stairs

L10

Windows/ Rooflights/ Screens/ Louvres

L10 Windows/ Rooflights/ Screens/ Louvres

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

GENERAL**110 EVIDENCE OF PERFORMANCE**

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

111 EVIDENCE OF BRE AAM RATING

- Certification: Provide independently certified evidence that all incorporated new windows achieve minimum BRE Green Guide rating B for Domestic Use.

140 CONTROL SAMPLES

- Procedure:
 - Finalise component details.
 - Fabricate one of each of the following designated items as part of the quantity required for the project.
 - Obtain approval of appearance and quality before proceeding with manufacturer of the remaining quantity.
- Designated items: full mock up of window for residents' presentation. Location and type TBC.

150 DAYLIGHT PERFORMANCE

- Daylight calculations: In accordance with BS 8206-2 and CIBSE 'Lighting guide LG10'.
- BRE AAM requirements:
 - Submit: Daylight performance schedule.
 - Calculations showing: Average daylight factor expressed as a percentage for each room/ area.

PRODUCTS**205 WINDOW MATERIALS SPECIFICATION**

- Minimum BRE 'Green Guide to Specification Online' rating: B.

331 ALUMINIUM WINDOWS SIDE & BOTTOM HUNG - TILT & TURN OPENING

Manufacturer: Wicona - UK. [www: http://www.wicona.co.uk](http://www.wicona.co.uk)

Contact: Stuart Pollard (Specification Manager London)

HBS Centre, Silkwood Park, Wakefield WF5 9TG

M: [REDACTED]

T: [REDACTED]

F: [REDACTED]

E: stuart.pollard@hydro.com.

- Product reference: Wiclone 65 evo window assembly to achieve minimum U-value 1.6W/m²K.
- Finish as delivered: Polyester powder coating.
- Glazing details: Argon filled insulating glass units .
 - Inner pane: 6mm low E clear toughened glass.
 - Outer pane:
 - Generally: 6mm clear toughened glass
 - GF/Mezzanine: min 8mm clear laminated glass. Translucent where indicated on the drawings to provide privacy .
- Glazing system: Mechanical corner cleats and stainless steel corner braces; EPDM gaskets .
 - Beading: Internal snap on aluminium box beads .
- Ironmongery/ Accessories:

As determined by the sub-contractor to fully complete the installation and interfaces with other installations. Including but not limited to: colour coordinated hinges and locking handles OR concealed hinges - TBC with Architects and Client, multipoint locking, releasable restrictors, couplings, sill/head/abutment flashings, vapour barriers and air seals .
- Fixing: Aluminium extrusion angles fixed to the existing concrete structure, fixing the window top and bottom. Manufacturer: Harley Curtain Wall UK Ltd, Harley House, Brooklands Park, Farningham Road, Crowborough, East Sussex, TN6 2JD, Contact: MARK HARRIS
Commercial Manager Tel: [REDACTED] Galvanised steel frame cramps to concrete reveal as clause 782 if required. .

332 ALUMINIUM WINDOWS FIXED UNIT - ALUMINIUM

Manufacturer: Wicona - UK. [www: http://www.wicona.co.uk](http://www.wicona.co.uk)

Contact: Stuart Pollard (Specification Manager London)

HBS Centre, Silkwood Park, Wakefield WF5 9TG

M:

T:

F:

E: stuart.pollard@hydro.com.

- Product reference: Wicline 65 evo window assembly to achieve minimum U-value 1.6W/m²K.
- Finish as delivered: Polyester powder coating.
- Panel/ facing type: Aluminium faced insulated panel comprising core insulation, aluminium lining panel and integrated channel profile around perimeter, fully air-sealed at edges to achieve minimum U-value 0.15W/m²K.
 - External material: Aluminium panel.
 - External finish: Polyester powdercoated. Colour TBC.
 - Internal material: Aluminium sheet.
 - Internal finish: Polyester powder coated, colour TBC
- Panel retention system: Mechanical corner cleats and stainless steel corner braces; EPDM gaskets.
 - Beading: Internal snap on aluminium box beads.
- Ironmongery/ Accessories:

As determined by the sub-contractor to fully complete the installation and interfaces with other installations.

Including but not limited to: couplings, sill/head/abutment flashings, vapour barriers and air seals. Allow for M&E penetration (for ventilation ducts) where required.
- Fixing: Galvanised steel frame cramps to masonry/concrete reveal as clause 782.

333 ALUMINIUM WINDOWS FIXED UNIT - GLASS

Manufacturer: Wicona - UK. [www: http://www.wicona.co.uk](http://www.wicona.co.uk)
 Contact: Stuart Pollard (Specification Manager London)
 HBS Centre, Silkwood Park, Wakefield WF5 9TG

M: [REDACTED]
 T: [REDACTED]
 F: [REDACTED]
 E: stuart.pollard@hydro.com.

- Product reference: Wiclone 65 evo window assembly to achieve minimum U-value 1.6W/m²K.
- Finish as delivered: Polyester powder coating.
- Panel/ facing type:
 - Clear double glazed unit of same specification as in clause 331 - refer to Architect's drawings for locations
 - Translucent where indicated on the drawings to provide privacy - refer to Architect's drawings for locations
 - Glass faced insulated panel comprising ceramic coated insulated glass units (colour TBC), foil backed insulation and aluminium lining panel and integrated channel profile around perimeter, fully air-sealed at edges to achieve minimum U-value 0.15W/m²K - refer to Architect's drawings for locations.
 - External material: Glass.
 - External finish: Colour TBC.
 - Internal material: Aluminium foil backed insulation.
 - Internal finish: Polyester powder coated, colour TBC
- Panel retention system: Mechanical corner cleats and stainless steel corner braces; EPDM gaskets.
 - Beading: Internal snap on aluminium box beads.
- Ironmongery/ Accessories:
 As determined by the sub-contractor to fully complete the installation and interfaces with other installations.
 Including but not limited to: couplings, sill/head/abutment flashings, vapour barriers and air seals.
- Fixing: Galvanised steel frame cramps to masonry/concrete reveal as clause 782.

560 GLAZED SCREEN SYSTEM

- Location: RECEPTION DESK.
- Manufacturer: AllGlass Systems Ltd [REDACTED]
 - Product reference: Horizontal sliding hatch kit 6mm 2 Panel.
- Screen height: 1200.
- Fire resistance rating of complete system: -.
- Sound insulation rating: -.
- Materials:
 - Frames: Aluminium.
Finish: Anodised.
 - Panels: Laminated 6.5mm.
Finish: clear.
- Glazing details: -.
- Incorporated features: Lock.
- Accessories/ Other requirements: -.
- Fixing: Screw fixed and pelleted as clause 780.

650 METAL LOUVRES

- Manufacturer: RENSON Fabrications Ltd, Fairfax Units 1-5 - Bircholt Road - Parkwood Industrial Estate, Maidstone - Kent ME15 9SF - United Kingdom. Tel: [REDACTED]
Email: projects@rensonuk.net. Website: www.rensonuk.net.
- Product reference: Continuous louvre LO66 (TBC)
Location: External ventilation shafts for basement area. Refer to Architect's drawings.
- Material: Aluminium.
 - Finish as delivered: Powder coated. Colour TBC.
- Fire resistance rating: Not applicable.
- Number of louvre banks: As recommended by manufacturer.
- Louvre blade pitch and angle: 66mm (TBC).
- Blanking panels: Not required.
- Accessories/ Other requirements:
 - Free area to Environmental Engineer's requirement
 - Insect mesh
 - Water penetration protection class B
 - Drainage channel to bottom of louvre
 - Secure and vandal proof fixing
 - Secure to withstand manual attack.
- Fixing: To subcontractor's design. Secure and vandal proof fixing. Submit proposals. Indicative design intent shown on Architect's drawing 1279 (06) 122.

652 METAL LOUVRES [TO COVER OPENING VENTS as indicated on the drawings]

- Manufacturer: Wicono - UK. [www: http://www.wicono.co.uk](http://www.wicono.co.uk)
Contact: Stuart Pollard (Specification Manager London)
HBS Centre, Silkwood Park, Wakefield WF5 9TG
M: [REDACTED]
T: [REDACTED]
F: [REDACTED]
E: stuart.pollard@hydro.com.
- Product reference: Submit proposals.
- Material: Aluminium.
 - Finish as delivered: Powder coated.
- Fire resistance rating: Not applicable.
- Number of louvre banks: One.
- Louvre blade pitch and angle:
 - Pitch: 100mm TBC
 - Angle: 45°.
- Blanking panels: TBC.
- Accessories/ Other requirements:
 - Free area to Environmental Engineer's requirement
 - Bird mesh
 - Secure to withstand manual attack on ground and mezzanine floors.
- Fixing: Surface fixed to window frame. Secure and vandal proof fixing. Submit proposals.

653 THERMALLY INSULATED METAL LOUVRES [TO WALKWAY +1 VENTS as indicated on the drawings]

Manufacturer: RENSON Fabrications Ltd, Fairfax Units 1-5 - Bircholt Road - Parkwood Industrial Estate, Maidstone - Kent ME15 9SF - United Kingdom. Tel: [REDACTED]

Email: projects@rensonuk.net. Website: www.rensonuk.net.

- Product reference: Glazed-in louvre panel 414THF.
- Material: Aluminium.
 - Finish as delivered: Powder coated. 60 microns min.
- Fire resistance rating: Not applicable.
- Number of louvre banks: One.
- Louvre blade pitch and angle: 33.3mm.
- Blanking panels: as manufacturer's standard.
- Accessories/ Other requirements:
 - Free area to Environmental Engineer's requirement
 - U-value 1.1W/m²K.
- Fixing: glazed in.

691 AUTOMATED OPENING VENTS FOR HOT SMOKE RELEASE

- Manufacturer: Wicono - UK. www: <http://www.wicono.co.uk>
- Contact: Stuart Pollard (Specification Manager London)
- HBS Centre, Silkwood Park, Wakefield WF5 9TG

M: [REDACTED]

T: [REDACTED]

F: [REDACTED]

E: stuart.pollard@hydro.com.

- Product reference: Wicline 65 evo.
- Type: Submit proposals in line with performance criteria described in drawings 1279 (08) 101, 1279 (05) 210 and Fire Strategy Report.
- Finish as delivered: Polyester powdercoating to match adjacent window vents.
 - Colour: to match adjacent windows.
- Accessories/ Special features: Provide chain actuators, fully automated and linked with Fire Alarm system as per Engineer's specification.
- Fixing: As per manufacturer's recommendation.

EXECUTION

710 PROTECTION OF COMPONENTS

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

730 PRIMING/ SEALING

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

765 WINDOW INSTALLATION GENERALLY

- Installation: Into prepared openings.
- Gap between frame edge and surrounding construction:
 - Minimum: 5mm.
 - Maximum: 10mm.
- Distortion: Install windows without twist or diagonal racking.

782 FIXING OF ALUMINIUM FRAMES

- Standard: As section Z20.
- Fasteners: Galvanized carbon steel frame cramps.
 - Spacing: When not predrilled or specified otherwise, position fasteners not more than 250 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 600 mm centres.

810 SEALANT JOINTS

- Sealant:
 - Manufacturer: Submit proposals.
Product reference: Submit proposals.
 - Colour: TBC.
 - Application: As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.

820 IRONMONGERY

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

Section Revision History

No.	Purpose	
01	Tender Clarification	30th Jan 2014

L20 Doors/ shutters/ hatches

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers/suppliers of plywood and particle board must provide evidence that their product is tested in accordance with EN 13986:2004 and complies with Formaldehyde class E1. They must verify that regulated wood preservatives are absent from their product as defined by the standard.
- All timber supplied or used in timber products must be from certified sources. Evidence must be provided by the supplier/manufacturer in form of FSC or PEFC certificates. Additional CEPT documentation may be supplied for verification purposes.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

GENERAL

110 EVIDENCE OF PERFORMANCE

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

115 FIRE RESISTING DOORS/ DOORSETS/ ASSEMBLIES

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

120 NON FIRE RESISTING DOORS/ DOORSETS/ ASSEMBLIES

- Provide certified evidence, in the form of a product conformity certificate or engineering assessment, that each door/ doorset/ assembly supplied will comply with the specified requirements to BS EN 14351-1. Such certification must cover door and frame materials, glass and glazing materials and their installation, essential and ancillary ironmongery, hinges and seals.

150 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items: TBC.

170 CONTROL SAMPLES

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

PRODUCTS

280 DOORS STEEL EXTERNAL

- Manufacturer: Prima Doors Ltd, Newby Road Industrial Estate, Hazel Grove, Cheshire SK7 5DA
Tel. [REDACTED] Fax. [REDACTED]
Web. www.primadoors.co.uk, Email info@primadoors.co.uk.
 - Product reference: Secureguard Grade 2.
- Finish as delivered: Polyester powder coated to BS 6496, RAL colour and gloss level TBC.
- Glazing/ Infill details: Not applicable.
 - Manifestation: Not applicable.
 - Beading: Not required.
- Ironmongery: As ironmongery schedule.
- Other requirements:
 - Prima standard seals
 - Threshold in compliance with Building Reg. AD Part M and BS8300:2009+A1:2010.

410 WOOD DOORSETS INTERNAL FLUSH PANEL PAINTED - NON FIRE RATED/FD20S/FD30S

- Manufacturer: *David Smith St Ives Limited, (or equivalent)*
Marley Road, St Ives, Huntingdon, Cambs, PE27 3EX T: [REDACTED] F: [REDACTED]
 - Product reference: Timber Doorset.
- Door leaf:
 - Facings: Interior grade plywood.
 - Lippings: Hardwood lippings to long edges.
 - Finish as delivered: Primed for painting.
 - Core: Medium duty.
- Frame and architraves:
 - Wood species: Softwood from FSC managed forest
 - Frame maximum 126x32mm frame with 18mm extension lining for deep reveals.
 - Finish as delivered: Primed for painting..
- Preservative treatment: Not required.
- Glazing/ Infill details: Clear single glazing where specified in door schedule.
 - Manifestation: Not required.
 - Beading: External to manufacturer's standard.
- Ironmongery: As section P21.
- Perimeter seals: Acoustic seal pack where required to comply with acoustic requirements.
- Other requirements:
 - Finger guard required for doors installed in nursery.
- Fixing: Predrilled, plugged and screwed with colour matched pellets.

- 411 WOOD DOORSETS *INTERNAL FLUSH PANEL PAINTED FD60S*
- Manufacturer: *David Smith St Ives Limited, (or equivalent)*
Marley Road, St Ives, Huntingdon, Cambs, PE27 3EX T: [REDACTED] F: [REDACTED]
 - Product reference: 60 min Timber Doorset.
 - Door leaf:
 - Facings: Interior grade plywood.
 - Lippings: Hardwood lippings to long edges.
 - Finish as delivered: Primed for painting.
 - Core: Medium duty.
 - Frame and architraves:
 - Wood species: Hardwood from FSC managed forest
 - Typical 126x44mm frame or as required to satisfy fire certificate.
 - Finish as delivered: Primed for painting..
 - Preservative treatment: Not required.
 - Glazing/ Infill details: Clear single glazing where specified in door schedule to satisfy 60min.
 - Manifestation: Not required.
 - Beading: External to manufacturer's standard.
 - Ironmongery: As section P21.
 - Perimeter seals: Acoustic seal pack where required to comply with acoustic requirements.
 - Other requirements: none.
 - Fixing: Predrilled, plugged and screwed with colour matched pellets.
- 412 WOOD DOORSETS *INTERNAL FLUSH PANEL VENEERED FD30S*
- Manufacturer: *David Smith St Ives Limited, (or equivalent)*
Marley Road, St Ives, Huntingdon, Cambs, PE27 3EX T: [REDACTED] F: [REDACTED]
 - Product reference: Timber Doorset.
 - Door leaf:
 - Facings: Hardwood Veneer (Beech or Oak TBC).
 - Lippings: Matching concealed hardwood lippings to long edges.
 - Finish as delivered: Full factory finish.
 - Colour/texture: n/a.
 - Core:
 - Generally: Heavy duty.
 - Within offices: Medium duty.
 - Frame and architraves:
 - Wood species: Softwood .
 - Frame type: Typical 126x32mm , including 18mm extension linings frame for deep reveals.
 - Finish as delivered: Primed for painting.
 - Colour/texture: Colour and gloss level TBC.
 - Preservative treatment: Not required.
 - Glazing/ Infill details: Clear fire-resisting glazing to achieve FD30S.
 - Manifestation: Not required.
 - Beading: Hardwood to match veneer.
 - Ironmongery: As Section P21.
 - Perimeter seals: Fire and smoke seal as required to achieve FD30S rating.
 - Other requirements: Finger guard required for doors installed in nursery.
 - Fixing: Predrilled, plugged and screwed with colour matched pellets.

- 413 WOOD DOORSETS *INTERNAL FLUSH PANEL VENEERED FD60S*
- Manufacturer: *David Smith St Ives Limited, (or equivalent)*
Marley Road, St Ives, Huntingdon, Cambs, PE27 3EX T: [REDACTED] F: [REDACTED]
 - Product reference: Timber Doorset.
 - Door leaf:
 - Facings: Hardwood Veneer (Beech or Oak TBC).
 - Lippings: Matching hardwood lippings to long edges, concealed.
 - Finish as delivered: Full factory finish.
 - Colour/texture: n/a.
 - Core: Heavy duty.
 - Frame and architraves:
 - Wood species: Hardwood to satisfy fire certificate.
 - Frame type: Typical 126x44mm, including 18mm extension linings frame for deep reveal, Stops in accordance with fire certificate.
 - Finish as delivered: Primed for Painting.
 - Colour/texture: RAL colour and gloss level TBC.
 - Preservative treatment: Not required.
 - Glazing/ Infill details: Clear fire-resisting glazing to achieve FD60S rating where specified in door schedule.
 - Manifestation: Not required.
 - Beading: *Hardwood to match veneer.*
 - Ironmongery: As Section P21.
 - Perimeter seals: Fire and smoke seal as required to achieve FD60S rating.
 - Other requirements: Finger guard required for doors installed in nursery.
 - Fixing: Predrilled, plugged and screwed with colour matched pellets.
- 420 WOOD DOORSETS *FLAT ENTRANCE DOORS FD30S*
- Manufacturer: John A Russell Joinery Ltd., 8 Dilwara Avenue, Whiteinch, Glasgow, G14 0QS; <http://www.russelltimbertech.co.uk/>; www.russelltimbertech.co.uk/.
 - Product reference: QTE 2 High Performance Fire Resistant Security Door Sets 30 minute.
 - Door leaf:
 - Wood species: Hardwood.
 - Panel details: flush panel Veneered.
 - Finish as delivered: Full factory finish.
 - Frame and architraves:
 - Wood species: Hardwood.
 - Finish as delivered: Full factory finish, standard colour range.
 - Preservative treatment: Not required.
 - Glazing/ Infill details: 180 degree viewer; 2no. on wheelchair flat.
 - Manifestation: Not applicable.
 - Beading: Not required.
 - Ironmongery: Factory fitted.
 - Perimeter seals: Fire and smoke seal.
 - Other requirements:
 - Hardwood cill to satisfy fire certificate
 - door chain
 - FD30 Letter plate
 - *Door Closer to satisfy Building Regulations.*
 - Fixing: In accordance with manufacturer's recommendations. Refer to details for beading/architrave details.

490 AUTOMATIC DOORS MAIN ENTRANCE

- Type: Fully automatic electro-hydraulic swing door operator.
- Manufacturer: DORMA UK Limited, Automatics division, Wilbury Way, Hitchin, Hertfordshire, SG4 OAB
Tel: [REDACTED] Fax: [REDACTED]
Email: autos@dorma-uk.co.uk, Web: www.dorma-uk.co.uk.
- Product reference: DORMA ED 200.
- Materials/ finishes:
 - Doors: Aluminium.
 - Frames: Aluminium.
 - Screens: Aluminium
 - Finishes: Polyester powder coated to BS 6496, colour RAL and gloss level (TBC).
- Glazing/ Infill details:
 - 6.4mm laminated outer pane
 - argon filled cavity
 - 6mm toughened inner pane with soft low emissive coating
 - U-value not exceeding 1.6W/m²K.
 - Manifestation: As drawing.
- Activation and control system:
 - o Adjustable opening angle;
 - o Variable opening, closing and hold open times;
 - o Adjustable backcheck;
 - o Adjustable delayed action;
 - o Adjustable wall blanking for safety sensors;
 - o External program switch (integrated 3-position program switch as standard);
 - o Monitored battery back up to keep door shut (fail secure) in case of a power failure or upon a signal from the interfaced fire alarm system .
 - Safety devices:
 - o DORMA IRS-2 infrared safety sensors;
 - o DORMA SVP emergency exit motor locking with self-locking action .
 - Breakout facility: Emergency Break glass .
- Locking mechanism: Electric strikes (fail secure principal) .
- Signs: As per ironmongery schedule .
- Barriers: Required .
- Other requirements:
 - o Threshold in compliance with Building Reg. AD Part M and BS8300:2009+A1:2010;
 - o Installation to be carried out by manufacturer's engineers; installed to BS 7036 .

610 ROLLER SHUTTERS/ CURTAINS CONCIERGE DESK

- Manufacturer: Armashield LLP, Innovation House, Marples Way, Havant, Hampshire PO9 1UH
Tel: [REDACTED] Fax: [REDACTED]
Web: www.armashieldsecurity.com, email: sales@armashieldsecurity.com.
- Product reference: Rollashield FC120.
- Performance: Fire and smoke curtain, 60 minutes fire rated.
- Arrangement: Vertical, fitted into reveal.
- Shutter/ curtain material: 0.65 mm fire rated fabric stitched and hemmed with Kevlar and stainless steel thread.
 - Finish as delivered: Polyester powder coated, RAL colour and gloss level TBC.
- Frame/ Guides: Galvanized steel.
 - Finish as delivered: Polyester powder coated, RAL colour and gloss level TBC.
- Operation: Electrical, controlled release activated by fire alarm link via audio visual warning unit (FDI)
 - Motor: Manufacturer's standard.
- Ironmongery: N/A.
- Other requirements: All interfaces to adjacent structural and non-structural elements to be 120min fire rated and smoke tight.

613A ROLLER GRILLES MEETING ROOMS & NURSERY

- Manufacturer: Armashield LLP, Innovation House, Marples Way, Havant, Hampshire PO9 1UH
Tel: [REDACTED] Fax: [REDACTED]
Web: www.armashieldsecurity.com, email: sales@armashieldsecurity.com .
- Product reference: Rollashield 75 punched steel roller shutter .
- Arrangement: Vertical, fitted into reveal .
- Grille curtain: Curved steel lath, brick-bond punched to retain through-visibility and discourage graffiti vandalism .
- Finish as delivered: Polyester powder coated, RAL colour and gloss level TBC .
- Frame/ Guides: Steel. Fixed curtain wall mullions .
- Finish as delivered: Polyester powder coated, RAL colour and gloss level TBC .
- Operation: Electrical, with key switch. Control switch location TBC .
- Ironmongery: N/A .
- Other requirements:
- To be installed to the outside of fenestration as per Architect's drawing 1279 (06)120.
- All accessories required to complete installation to be included .

680 UP AND OVER GARAGE DOORS

- Manufacturer:
Hörmann (UK) Limited
Gee Road
Coalville
Leicestershire
LE67 4JW
Phone: [REDACTED]
Fax: [REDACTED] .
- Product reference: 2011 open-for-infill .
- Type: One piece fully retracting .
- Finish as delivered: Polyester powder coated frame, Trespa Meteon panel adhesive fixed as external finish to the outside. One piece for whole door. Colour TBC by Architect .
- Operation: TBC .
- Other requirements: to fit within existing opening .

EXECUTION

710 PROTECTION OF COMPONENTS

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

730 PRIMING/ SEALING

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

750 FIXING DOORSETS

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

760 BUILDING IN

- General: Not permitted unless indicated on drawings.

790 FIXING OF WOOD FRAMES

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

- 800 **FIXING OF LOOSE THRESHOLDS**
- Spacing of fixings: Maximum 150 mm from each end and at 600 mm maximum centres.
- 809 **FIRE RESISTING/ SMOKE CONTROL DOORS/ DOORSETS/ ROLLER SHUTTERS/ CURTAINS**
- Installation: By a firm currently registered under a third party accredited fire door installer scheme in accordance with instructions supplied with the product conformity certificate, test report or engineering assessment.
- 820 **SEALANT JOINTS**
- Sealant:
 - Manufacturer: Contractor's choice .
 - Product reference: Contractor's choice .
 - Colour: TBC .
 - Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.
- 830 **FIXING IRONMONGERY GENERALLY**
- Fasteners: Supplied by ironmongery manufacturer.
 - Finish/ Corrosion resistance: To match ironmongery.
 - Holes for components: No larger than required for satisfactory fit/ operation.
 - Adjacent surfaces: Undamaged.
 - Moving parts: Adjusted, lubricated and functioning correctly at completion.
- 840 **FIXING IRONMONGERY TO FIRE RESISTING DOOR ASSEMBLIES**
- General: All items fixed in accordance with door leaf manufacturer's recommendations ensuring that integrity of the assembly, as established by testing, is not compromised.
 - Holes for through fixings and components: Accurately cut.
 - Clearances: Not more than 8 mm unless protected by intumescent paste or similar.
 - Lock/ Latch cases for fire doors requiring \geq 60 minutes integrity performance: Coated with intumescent paint or paste before installation.
- 850 **LOCATION OF HINGES**
- Primary hinges: Where not specified otherwise, positioned with centre lines 250 mm from top and bottom of door leaf.
 - Third hinge: Where specified, positioned with centre line 250 mm below centre line of top hinge .
 - Hinges for fire resisting doors: Positioned in accordance with door leaf manufacturer's recommendations.
- 860 **INSTALLATION OF EMERGENCY EXIT DEVICES**
- Standard: Unless specified otherwise, install panic bolts/ latches in accordance with BS EN 1125.

L30

Stairs/ ladders/ walkways/ handrails/ balustrades

L30 Stairs/ ladders/ walkways/ handrails/ balustrades

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

PRELIMINARY INFORMATION/ REQUIREMENTS

130 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
 - Designated items: Balustrades.

COMPONENTS

550 PURPOSE MADE BALUSTRADES INTERNAL STAIR & LOBBY VOID

- Component material, grade and finish as delivered:
 - Guarding: Powder coated flat steel uprights with 12mm clear toughened laminated safety glass infill
 - Finish/texture: RAL colour and gloss level TBC.
 - Handrails: Stainless steel - brushed CHS nominal 45mm dia.
Lower handrail: Not required
 - Height of guarding: 1300mm in total.
- Workmanship:
 - Joinery: Not applicable.
 - Metalwork: To section Z11.
- Other requirements:
 - Welding to be ground smooth
 - Guarding to be in compliance with AD part K and N.
- Fixing: Side fixed to insitu concrete floor slab and stair edge as per architect's and structural engineer's drawings.
 - Centres: As per architect's and structural engineer's drawings.

551 PURPOSE MADE BALUSTRADES TO EXTERNAL WALKWAY

- Component material, grade and finish as delivered:
 - Guarding: Powder coated RHS steel uprights with perforated powder coated steel infill panels
 - Finish/texture: RAL colour and gloss level TBC.
 - Handrails: Stainless steel - brushed CHS nominal 50mm dia.
Lower handrail: Not required
 - Height of guarding: 1100mm in total.
- Workmanship:
 - Joinery: Not applicable.
 - Metalwork: To section Z11.
- Other requirements:
 - Welding to be ground smooth
 - Guarding to be in compliance with AD part K and N.
- Fixing: Side fixed to steel as per architect's and structural engineer's drawings.
 - Centres: As per architect's and structural engineer's drawings.

570 PURPOSE MADE HANDRAILS TO STAIRS

- Component material, grade and finish as delivered:
 - Handrails: Stainless steel - brushed CHS nominal 50mm dia.
 - Lower handrail: Not required.
 - Brackets: Stainless steel - brushed.
- Workmanship:
 - Joinery: Not applicable.
 - Metalwork: To section Z11.
- Other requirements: Welding to be ground smooth.
- Fixing: Face fixed to curtain walling and concrete wall.
 - Centres: As per architect's drawings.

INSTALLATION**620 PRIMING/SEALING/PAINTING**

- Surfaces inaccessible after assembly/installation: Before fixing components, apply full protective/decorative treatment/coating system.

630 CORROSION PROTECTION OF DISSIMILAR MATERIALS

- Components/ substrates/ fasteners of dissimilar materials: Isolate using washers/ sleeves or other suitable means to separate materials to avoid corrosion and/ or staining.

640 INSTALLATION GENERALLY

- Fasteners and methods of fixing: To section Z20.
- Structural members: Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
- Temporary support: Do not use stairs, walkways or balustrades as temporary support or strutting for other work.
- Applied finishes: Substrates to be even, dry, sound and free from contaminants. Make good substrate surfaces and prepare/ prime as finish manufacturer's recommendation before application.

COMPLETION**910 INSPECTION**

- Timing: Consult main contractor.
- Period of notice (minimum): Consult main contractor.

920 DOCUMENTATION

- Contents:
 - Copies of structural design calculations/ test reports.
 - General product information.
 - Installation information.
 - Inspection and maintenance reports.
- Number of copies: Consult main contractor.
- Submission: Consult main contractor.

L40
General glazing

L40 General glazing

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

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.

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.

TYPES OF GLAZING

230 BEAD FIXED SINGLE GLAZING TO INTERNAL DOORSETS

- Pane material: Laminated or toughened glass to BS6206
 - Thickness: to be determined by manufacturer to suit pane size; - Manufacturer:
 - Submit proposal .
- Surround/ bead: Softwood frame with hardwood beads .
 - Preparation: Prime and paint as M60/133 .
 - Bead location: Outside .
 - Bead fixing: Pinned or screwed;
 - Beads fixed on both sides, to be determined by manufacturer dependent on frame/rebate detail .
- Glazing compound: Nonsetting compound .
- Glazing installation:
 - Glass: Located centrally in surround using setting and location blocks and distance pieces.
 - Finished thickness of back bedding after inserting glazing (minimum): 3 mm.
 - Front bedding: Applied to fill voids.
 - Beads: Bedded in glazing compound and fixed securely.
 - Visible edge of glazing compound: Finished internally and externally with a smooth chamfer.

250 BEAD FIXED SINGLE GLAZING TO INTERNAL FIRE-RATED DOORSETS

- Pane material:
 - 10mm fire rated glazing to be Pilkington Pyrodur™ Glass;
 - Glazing Manufacturer:
 - Pilkington United Kingdom Limited, Head Office, Prescott Road, St Helens, Merseyside, WA10 3TT
 - Tel: [REDACTED] Fax: [REDACTED]
 - Web: www.pilkington.com .
- Surround/ bead: Softwood frame with hardwood beads .
 - Preparation: Prime and paint as M60/133 .
 - Bead location: Outside .
 - Bead fixing: Screw fixed with brass cups and screws .
- Glazing system:
 - Tape: As per manufacturer's recommendations .
 - Bead bedding sealant: One-part, fire rated intumescent acrylic sealant .
 - Capping sealant: Not required .
- 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.

460 SINGLE GLAZING INTO CHANNELS 30 MIN FIRE RATED

- Pane material: Pyran S .
- Channel/ surround:
 - Manufacturer: Optima, Courtyard House West End Road, High Wycombe, Bucks HP11 2QB
 - T: [REDACTED]
 - Email: action@optima-group.co.uk, Web: www.optimasystems.com .
 - Product reference: Optima 117 Plus.
 - Floor: OPT 117 25mm x 25 aluminium floor track section with clip-in bead and PVC gaskets.
 - Abutment: OPT 117 25mm x 25 aluminium wall abutment section with clip-in bead and PVC gaskets.
 - Head: OPT 117 25mm x 25 aluminium head track section with PVC gaskets
- Glass to glass jointing: Optima Nebula dry-joints.
- Glazing installation:
 - Glass located centrally in channels using setting blocks and distance pieces of appropriate thickness.
 - Hardwood setting block to floor track and silicon to attach glass

461 SINGLE GLAZING INTO CHANNELS BUTT GLAZED

- Pane material: 8.5mm laminated glass.
- Channel/ surround:
 - Manufacturer: Optima, Courtyard House West End Road, High Wycombe, Bucks HP11 2QB
 - T: [REDACTED]
 - Email: action@optima-group.co.uk, Web: www.optimasystems.com .
 - Product reference: Optima 117 Plus.
 - Floor: OPT 117 25mm x 25 aluminium floor track section with clip-in bead and PVC gaskets.
 - Abutment: OPT 117 25mm x 25 aluminium wall abutment section with clip-in bead and PVC gaskets.
 - Head: OPT 117 25mm x 25 aluminium head track section with PVC gaskets
- Glass to glass jointing: Optima Nebula dry-joints.
- Glazing installation:
 - Glass located centrally in channels using setting blocks and distance pieces of appropriate thickness.
 - Hardwood setting block to floor track and silicon to attach glass

505 FIRE RESISTANT TAPE/ STRIP GLAZING TO ENTRANCE LOBBY

- Fire resistance rating: 60 minutes integrity and insulation .
- Pane material: Intumescent laminated glass - internal grade
 - Manufacturer: Pilkington Building Products Prescott Road, St Helens, WA10 3TT
 - Tel: [REDACTED] Fax [REDACTED]
 - email: pilkington@respond.uk.com, Web: www.pilkington.co.uk.
 - Product reference: Pyrostop 23mm Pyrostop 60-101 internal grade .
 - Orientation: As recommended by manufacturer .
- Frame/ Surround material: Hardwood frame .
- Beads:
 - Material: Hardwood with 15° chamfer .
 - Location: In accordance with fire certificate .
 - Fixing: In accordance with fire certificate .
- Glazing system:
 - Tape/ Strip: Ceramic fibre tape .
 - Pointing sealant: Silicone mastic .
- Installation: By a firm currently registered under a UKAS certified accreditation scheme for the installation of fire resistant glazing, in accordance with glazing manufacturer's recommendations.

520 FIRE RATING

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

630 MANIFESTATION TO GLAZED FIRE RATED SCREEN

- Design: Two 50mm bands of dots.
 - Art work: Not applicable.
 - Media: Scale drawings.
- Technique: Applied film.

M

Surface finishes

M10

Cement based levelling/ wearing screeds

M10 Cement based levelling/ wearing screeds

TO BE READ WITH PRELIMINARIES/GENERAL CONDITIONS.

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- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF SCREED**130 PROPRIETARY QUICK DRYING LEVELLING SCREEDS FLOATING CONSTRUCTION**

- Substrate: In situ concrete slab.
- Screed manufacturer: Flowcrete UK Limited, The Flooring Technology Centre, Booth Lane, Sandbach, Cheshire, CW11 3QF
Tel: [REDACTED] Fax: [REDACTED]
Email: uk@flowcrete.com, Web: www.flowcrete.com.
- Product reference: Isocrete Heavy Duty Fast-K.
- Screed construction: Unbonded, as clause 280.
- Reinforcement for crack control: PP Fibres with a strip of steel fabric to BS4483 ref. D49 across day joints.
- Thickness:
 - Nominal: 80mm.
 - Minimum: 60mm generally but 50mm at thresholds.
- Mix:
 - Cement: Special / As clause 302.
 - Proportions: To manufacturer's recommendations.
- In situ crushing resistance (ISCR) category: A (3 mm maximum indentation).
- Mass of test weight: 4 kg.
- Flatness/ Surface regularity class: SR2.
- Finish: Trowelled, as clause 540.
- To receive: Carpet tiles and sheet flooring as Section M50, ceramic tiles as Section M40 in shower areas.
- Other requirements: As recommended by manufacturer to complete installation.

131 PROPRIETARY QUICK DRYING LEVELLING SCREEDS GENERALLY

- Substrate: In situ concrete slab.
- Screed manufacturer: Flowcrete UK Limited, The Flooring Technology Centre, Booth Lane, Sandbach, Cheshire, CW11 3QF
Tel: [REDACTED] Fax: [REDACTED]
Email: uk@flowcrete.com, Web: www.flowcrete.com.
- Product reference: Isocrete Fast-K Screed.
- Screed construction: Unbonded, as clause 280.
 - Reinforcement for crack control: PP Fibres with a strip of steel fabric to BS4483 ref. D49 across day joints.
- Thickness:
 - Nominal: 45mm.
 - Minimum: 40mm.
- Mix:
 - Cement: Special / As clause 302.
 - Proportions: To manufacturer's recommendations.
- In situ crushing resistance (ISCR) category: A (3 mm maximum indentation).
 - Mass of test weight: 4 kg.
- Flatness/ Surface regularity class: SR2.
- Finish: Trowelled, as clause 540.
 - To receive: Carpet tiles and sheet flooring as Section M50, ceramic tiles as Section M40 in shower areas.
- Other requirements: As recommended by manufacturer to complete installation.

132 PROPRIETARY QUICK DRYING LEVELLING SCREEDS THIN BED

- Substrate: Existing in-situ concrete slab/screed.
- Screed manufacturer: Flowcrete UK Limited, The Flooring Technology Centre, Booth Lane, Sandbach, Cheshire, CW11 3QF
Tel: [REDACTED] Fax: [REDACTED]
Email: uk@flowcrete.com, Web: www.flowcrete.com.
- Product reference: Isocrete Self Level Plus.
- Screed construction: Fully bonded, as clause 260.
 - Reinforcement for crack control: Not required.
- Thickness:
 - Nominal: 7mm.
 - Minimum: 3mm.
- Mix:
 - Cement: As recommended by screed manufacturer.
 - Proportions: To manufacturer's recommendations.
- In situ crushing resistance (ISCR) category: A (3 mm maximum indentation).
 - Mass of test weight: 4 kg.
- Flatness/ Surface regularity class: SR1.
- Finish: n/a.
 - To receive: Carpet tiles and sheet flooring as Section M50, ceramic tiles as Section M40, or Battened timber floor as K11.
- Other requirements: As recommended by manufacturer to complete installation.

186 PROPRIETARY POLYMER LEVELLING SCREEDS GENERALLY

- Substrate: In situ concrete slab.
- Screed manufacturer: ARDEX UK Ltd., Homefield Road, Haverhill, Suffolk CB9 8QP
Tel: [REDACTED] Fax: [REDACTED]
Web: www.ardex.co.uk, Email: info@ardex.co.uk.
- Product reference: ARDITEX RS TRADE.
- Screed construction: Fully bonded.
- Thickness:
 - Minimum: 1.5mm.
 - Maximum: 6mm in one application.
- Preparation:
 - Surface of sub-floor to be clean and free of dust, oil, adhesive residues and loosely adhered materials.
 - Highly porous or absorbent sub-floors to be damped down with water (without leaving puddles) or to be primed with ARDITEX RS latex diluted 1 part to 4 parts water. Allow to dry before applying ARDITEX RS TRADE.
- Application:
 - Apply only at temperatures above +5°C.
 - Spread with trowel to required thickness in one operation.
- Finish to receive: Carpet tile and linoleum sheet.
- Other requirements: As recommended by manufacturer to complete installation.

GENERALLY/ PREPARATION

205 DESIGN LIFE OF SCREEDS

- Duration: 60 years .
 - Subject to reasonable wear and tear.
- Location: Circulation areas .
- Condition of use: Subject to correct loading and traffic usage throughout duration.

210 SUITABILITY OF SUBSTRATES

- General:
 - Suitable for specified levels and flatness/ regularity of finished surfaces. Consider permissible minimum and maximum thicknesses of screeds.
 - Sound and free from significant cracks and gaps.
- Concrete strength: In accordance with 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.

215 SURFACE HARDNESS OF SUBSTRATES TO RECEIVE POLYMER MODIFIED WEARING SCREEDS

- General: Substrates must restrain stresses that occur during setting and hardening of wearing screeds.
- Test for surface hardness: To BS EN 12504-2 using a rebound hammer with compliance values selected from the following:

Screed thickness	Rebound hammer value
15 mm or less	Greater than 25
Greater than 15 mm	Greater than 30

- Report: Submit details of areas where substrates surface hardness does not comply with these values.

- 220 PROPRIETARY LEVELLING/ WEARING SCREEDS
- General: Materials, mix proportions, mixing methods, minimum/ maximum thicknesses and workmanship must be in accordance with recommendations of screed manufacturer.
 - Standard: To BS 8204-3.
- 230 CONTROL SAMPLES
- General: Complete areas of finished work and obtain approval of appearance before proceeding.
 - Screed type: As clause 130 and 186.
 - Location/ Size: Submit proposal.
- 250 CONDUITS UNDER FLOATING SCREEDS
- Haunching: Before laying insulation for floating screeds, haunch up in 1:4 cement:sand on both sides of conduits.
- 260 FULLY BONDED CONSTRUCTION
- Preparation: Generally in accordance with BS 8204-1.
 - Removing mortar matrix: Shortly before laying screed, expose coarse aggregate over entire area of hardened substrate.
 - Texture of surface: Suitable to accept screed and achieve a full bond over complete area.
 - Bonding coat: Manufacturer's standard.
- 280 UNBONDED CONSTRUCTION
- Separation: Lay screed over a suitable sheet dpm or a separating layer.
 - Type: Polyethylene sheet, minimum 125 micrometres thick (500 gauge).
 - Installation of separating layer: Lay on clean substrate. Turn up for full depth of screed at abutments with walls, columns, etc. Lap 100 mm at joints.
- 291A FLOATING CONSTRUCTION ENTRANCE AREAS
- Insulation:
 - Type: PIR foam board and separating layer below underfloor heating system (System specification to be proposed by M&E sub-contractor)
 - Manufacturer: Celotex Limited, Lady Lane Industrial Estate, Hadleigh, Ipswich, Suffolk. IP7 6BA
 - Tel: [REDACTED] Fax: [REDACTED]
 - Email: technical@celotex.co.uk, Web: www.celotex.co.uk.
 - Type:
 - A) Areas with under floor heating - Product reference: Celotex™ Zero FF4070
Compressive strength: min. 150kPa.
 - B) Edge strip - Product reference: Celotex™ ZeroTB4020
Compressive strength: min. 120kPa .
 - Installation: Lay with tight butt joints. Continue up at perimeter abutments for full depth of screed.
 - Separating layer:
 - Type: Polyethylene sheet minimum 125 micrometres thick (500 gauge). .
 - Installation: Lay over insulation and turn up at perimeter abutments. Lap 100 mm at joints.

BATCHING/ MIXING

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

305 AGGREGATES

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

306 PROPRIETARY POLYMER MODIFIED SCREEDS

- Cement types: In accordance with BS 8204-3.
- Sand: To BS EN 13139:
 - Grading limits: 0/2 mm (MP) category 1.
- Aggregates: In accordance with BS 8204-3.

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.

311 BATCHING WITH LIGHTWEIGHT AGGREGATES

- Standard: In accordance with BS 8204-1, Annex A.
- Mix proportions: Specified by volume.
- Batching: Use accurate gauge boxes.

330 MIXING

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

335 IN SITU CRUSHING RESISTANCE (ISCR)

- Standards and category: In accordance with 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.

- 350 SCREEDING TO FALLS
 - Minimum screed cover: Maintain at the lowest point.
 - Falls: Gradual and consistent.
 - Gradient (minimum): 1:80 and 1:60 as per drawings .
- 355 FLATNESS/ SURFACE REGULARITY OF FLOOR SCREEDS
 - Standard: In accordance with BS 8204-1, Table 5.
 - Test: In accordance with 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.
 - Type: D49.
 - Installation: In accordance with BS 8204-1.
- 395 STRIP REINFORCEMENT
 - Location: Across day joints .
 - Steel fabric: To BS 4483.
 - Type Isocrete PP Fibres with a strip of steel fabric to BS 4483 Ref: D49 .
 - Width of strips: 600 mm .
 - Installation: In accordance with BS 8204-1.
- 405 JOINTS IN LEVELLING SCREEDS GENERALLY
 - Laying screeds: Lay continuously using 'wet screeds' between strips or bays. Minimize defined joints.
 - Daywork joints: Form with vertical edge.
- 406 BAY JOINTS IN LEVELLING SCREEDS
 - Screed type: As clause 130.
 - Bay sizes:
 - Area (maximum): Consult manufacturer.
 - Length (maximum): Consult manufacturer.
 - Location of bay joints: Coordinate with those required for substrate slab and floor covering.
- 440 CRACK INDUCING GROOVES IN LEVELLING SCREEDS
 - Groove depth: At least half the depth of screed.
 - Cutting grooves: Straight, vertical and accurately positioned. Select from the following:
 - Trowel cut as screed is laid.
 - Saw cut sufficiently early after laying to prevent random cracking.

FINISHING/CURING

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

540 TROWELLED FINISH TO LEVELLING SCREEDS

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

650 CURING

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

M20

Plastered/ Rendered/ Roughcast coatings

M20 Plastered/ Rendered/ Roughcast coatings

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF COATING**210 LIGHTWEIGHT GYPSUM PLASTER GENERALLY**

- Substrate: Blockwork as clause F10/355 and insitu concrete.
 - Preparation: Bonding agent recommended by plaster manufacturer.
- Manufacturer: British Gypsum Ltd, East Leake, Loughborough, Leics. LE12 6JT
Tel: [REDACTED] Fax: [REDACTED]
Web: www.british-gypsum.com, email: bgtechnical.enquiries@bpb.com.
- Undercoats: To BS EN 13279-1.
 - Product reference: Thistle Hardwall Undercoat Plaster.
 - Thickness (excluding dubbing out and keys): 11mm maximum.
- Final coat: Finish plaster to BS EN 13279-1.
 - Product reference: Thistle Plaster finish.
 - Thickness: 2-3 mm.
 - Finish: Smooth.
- Accessories: Beads and stops.

GENERAL**418 CONTROL SAMPLES**

- Complete sample areas, being part of the finished work, in locations as follows: Entrance lobby.

424 SPECIAL PROTECTION OF HISTORIC PLASTERWORK

- General: Prevent damage and disturbance to retained plasterwork.
- Protection methods: Submit proposals.

MATERIALS AND MARKING OF MORTAR**497 COLD WEATHER**

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

PREPARING SUBSTRATES

510 SUITABILITY OF SUBSTRATES

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

531 ROUGHENING FOR KEY

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

536 SPATTERDASH KEY

- Materials:
 - Cement: To BS EN 197-1 and CE marked.
 - Sand: Clean, coarse.
 - Admixtures: SBR bonding agent, Agrément certified.
- Mix proportions (cement:sand): 1:1.5-2.
- Consistency: Thick slurry, well stirred.
- Application: Throw onto dampened background and leave rough.
 - Thickness: 3-5 mm.
- Curing: Controlled to achieve a firm bond to substrate.

541 BONDING AGENT APPLICATION

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

551 REMOVAL AND RENEWAL OF EXISTING PLASTER/ RENDER

- Location and extent: Agree, at least on a provisional basis, before work commences. Minimize extent of removal and renewal.

566 REMOVING DEFECTIVE EXISTING PLASTER

- Plaster for removal: Detached, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.
 - Hollow, detached areas: Obtain instructions.
- Stained plaster: Submit proposals.
- Removing defective plaster. Cut back to a square, sound edge.
- Faults in substrate (structural deficiencies, damp, etc.): Submit proposals.
- Cracks:
 - Fine hairline cracking/ crazing: Leave.
 - Other cracks: Obtain instructions.
- Dust and loose material: Remove from exposed substrates and edges.

568 EXISTING DAMP AFFECTED PLASTER/ RENDER

- Plaster affected by rising damp: Remove to a height of 300 mm above highest point reached by damp or 1 m above dpc, whichever is higher.
- Perished and salt contaminated masonry:
 - Mortar joints: Rake out.
 - Masonry units: Submit proposals.
- Faults in substrate (structural deficiencies, additional sources of damp, etc.): Submit proposals.
- Drying out substrates: Establish drying conditions. Leave walls to dry for as long as possible before plastering.
- Dust and loose material: Remove from exposed substrates and edges.

BACKINGS/ BEADS/ JOINTS

- 600 **ADDITIONAL FRAMING SUPPORTS FOR BACKINGS**
- Framing: Accurately position and securely fix to give full support to fixtures, fittings and service outlets.
 - Support board edges and perimeters: As recommended by board manufacturer to suit type and performance of board.
- 605 **GYPSUM PLASTERBOARD BACKINGS**
- Type: To BS EN 520 Type D.
 - Core density (minimum): 650 kg/m³.
 - Exposed surface and edge profiles: Suitable to receive specified plaster finish.
- 611 **FIXING PLASTERBOARD BACKINGS GENERALLY**
- 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 GENERALLY**
- Material: Galvanized steel to BS EN 13658-1.
- 640 **BEADS/ STOPS GENERALLY**
- Location: External angles and stop ends except where specified otherwise.
 - Corners: Neat mitres at return angles.
 - Fixing: Secure, using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
 - Beads/ stops for external render: Fix mechanically.
 - Finishing: After coatings have been applied, remove surplus material while still wet, from surfaces of beads/ stops exposed to view.

646 CRACK CONTROL AT JUNCTIONS BETWEEN DISSIMILAR SOLID SUBSTRATES

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

653 SEALANT MOVEMENT JOINTS WITH STOP BEAD EDGINGS FOR INTERNAL PLASTER

- Stop beads: As clause 630, either side of joint, aligned straight & true.
- Installation: Centred over joint in substrate.
 - Joint width: 10mm.
 - Fixing: Steel screws.
- Sealant:
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Preparation and application: As section Z22. As recommended by manufacturer.

659 PLASTERBOARD JOINTS

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

673 PLASTERING OVER CONDUITS/ SERVICE CHASES

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

INTERNAL PLASTERING

710 APPLICATION GENERALLY

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

715 FLATNESS/ SURFACE REGULARITY

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

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.

742 THIN COAT PLASTER

- Preparation for plasters less than 2 mm thick: Fill holes, scratches and voids with finishing plaster.

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.

M40

Stone/ concrete/ quarry/ ceramic tiling/ mosaic

M40 Stone/ concrete/ quarry/ ceramic tiling/ mosaic

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF TILING/ MOSAIC**110 TILING TO FLOORS TO ENTRANCE FOYER & STAIR**

- Tiles: Anti-slip floor tiles.
 - Manufacturer/ Supplier: SpecTile Ltd – Unit 2 Poplar Grove, Crewe, Cheshire, CW1 4AZ
Tel: [REDACTED] Email: sales@spectile.co.uk, Web: www.spectile.co.uk .
Product reference: Lava Structured or similar rectified tile. Alternative proposals to be submitted .
 - Colour: Lava .
 - Finish: Unglazed .
 - Size: 600 x 600 mm .
 - Thickness: 9.6mm .
 - Slip potential:
Slip resistance value (SRV) (minimum)/ Pendulum test value (PTV) (minimum) to BS EN 13036-4 or BS EN 14231 (natural stone only): Dry58 Wet42 .
Surface roughness (Rz) (minimum) to BS 1134: Manufacturer's standard .
SlipSTD class: Manufacturer's standard .
 - Recycled content: Submit proposals .
- Background/ Base: Screed M10/130 .
 - Preparation: As recommended by tile manufacturer .
- Intermediate substrate: Not required .
- Bedding: Adhesive bed - notched trowel method, as clause 710 .
 - Reinforcement: Not applicable .
 - Adhesive to BS EN 12004: As recommended by tile manufacturer .
- Joint width: 4 mm .
- Grout: Cement based grout .
 - Type/ classification: CG2A .
 - Admixture: As recommended by grout manufacturer .
- Movement joints: In accordance with BS 5385-3 and manufacturers recommendations.
Refer also to clause 81 .
 - Accessories: - 150x600 cut tiles, rectified edges to be used for skirtings .

111 TILING TO SHOWER FLOORS

- Tiles: Slip resistant floor tiles.
 - Manufacturer/ Supplier: Swedecor Ltd., Rotterdam Road, Hull. HU7 0XU. T: [REDACTED]
[REDACTED] F: [REDACTED] web: www.swedecor.com.
Product reference: Swedecor Kartal Diamond.
 - Colour: Dotti Dark Grey.
 - Size: 200 x 200 mm.
 - Thickness: Manufacturer's standard to suit purpose.
 - Slip potential:
Slip resistance value (SRV) (minimum)/ Pendulum test value (PTV) (minimum) to BS EN 13036-4 or BS EN 14231 (natural stone only): 35/ 25 dry/ wet.
Surface roughness (Rz) (minimum) to BS 1134: Manufacturer's standard.
SlipSTD class: Manufacturer's standard.
 - Recycled content: Submit proposals.
- Background/ Base: Insitu concrete and Screed M10/130.
 - Preparation: As recommended by tile manufacturer.
- Intermediate substrate: Tanking as Clause J10/121.
- Bedding: Adhesive bed - buttering method, as clause 710.
 - Reinforcement: Not applicable.
 - Adhesive to BS EN 12004: As recommended by tile manufacturer.
- Joint width: 6 mm.
- Grout: No Mould Flexible Grout.
 - Type/ classification: CG2A.
 - Admixture: As recommended by grout manufacturer.
- Movement joints: In accordance with BS 5385-3 and manufacturers recommendations.
Refer also to clause 81.
- Accessories: Kartel Sit-In coved skirtings..

112 TILING TO WALLS IN SHOWER AREAS

- Tiles: Plain Ceramic Tiles.
 - Manufacturer/ Supplier: H&R Johnson Ceramics International, Harewood Street, Tunstall, Stoke-on-Trent, Staffordshire ST6 5JZ
Tel: [REDACTED] Fax: [REDACTED]
Email: sales@johnson-tiles.com, Web: www.johnson-tiles.com.
Product reference: Prismatics.
 - Colour: PRS12 Satin White.
 - Finish: Glazed, smooth.
 - Size: 200 x 100 mm.
 - Thickness: Manufacturer's standard to suit purpose.
- Background/ Base: Rendered blockwork walls, cement tile backer board.
 - Preparation: As recommended by tile manufacturer.
- Intermediate substrate: Waterproofing as clause J10/121.
- Bedding: Thin bed adhesive - solid, as clause 651.
 - Reinforcement: Not applicable.
 - Adhesive to BS EN 12004: Cementitious adhesive, refer to clause J10/121.
- Joint width: 4 mm.
- Grout: Ultracolor Plus Flexible Grout.
 - Manufacturer: Mapei U.K. Ltd. Mapei House Steel Park Road - Halesowen, West Midlands, B62 8HD
Tel. [REDACTED] Fax [REDACTED]
Email: sales@mapei.co.uk, Web: www.mapei.com.
 - Type/ classification: CG2A.
 - Admixture: As recommended by grout manufacturer.
- Movement joints: In accordance with BS 5385-3 and manufacturers recommendations.
Refer also to clause 816.
- Accessories: Aluminium L Corner beads Prismatics 100mm Cove including internal and external corners.

113 TILING TO SPLASHBACKS GENERALLY

- Tiles: Plain Ceramic Tiles.
 - Manufacturer/ Supplier: H&R Johnson Ceramics International, Harewood Street, Tunstall, Stoke-on-Trent, Staffordshire ST6 5JZ
Tel: [REDACTED] Fax: [REDACTED]
Email: sales@johnson-tiles.com, Web: www.johnson-tiles.com.
Product reference: Prismatics.
 - Colour: PRS12 Satin White.
 - Finish: Glazed, smooth.
 - Size: 100 x 100 mm.
 - Thickness: Manufacturer's standard to suit purpose.
- Background/ Base: Plasterboard.
 - Preparation: As recommended by tile manufacturer.
- Intermediate substrate: Not required.
- Bedding: Thin bed adhesive - solid, as clause 651.
 - Reinforcement: Not applicable.
 - Adhesive to BS EN 12004: Cementitious adhesive, refer to clause J10/121.
- Joint width: 4 mm.
- Grout: Johnson No Mould Flexible Grout.
Manufacturer: H&R Johnson Ceramics International (Norcros Adhesives).
 - Type/ classification: CG2A.
 - Admixture: As recommended by grout manufacturer.
- Movement joints: In accordance with BS 5385-3 and manufacturers recommendations. Refer also to clause 816.
- Accessories: Aluminium L Corner beads Prismatics 100mm Cove including internal and external corners.

114 TILING TO WALLS TO LIFT LOBBIES

- Tiles: Plain Ceramic Tiles.
 - Manufacturer/ Supplier: H&R Johnson Ceramics International, Harewood Street, Tunstall, Stoke-on-Trent, Staffordshire ST6 5JZ
Tel: [REDACTED] Fax: [REDACTED]
Email: sales@johnson-tiles.com, Web: www.johnson-tiles.com.
Product reference: Prismatics.
 - Colour: Allow for 50% Group 2 colour, 50% Group 3 colour. Present proposals for approval.
 - Finish: Glazed, smooth.
 - Size: 150 x 150 mm.
 - Thickness: Manufacturer's standard to suit purpose.
- Background/ Base: Plasterboard.
 - Preparation: As recommended by tile manufacturer.
- Intermediate substrate: Not required.
- Bedding: Thin bed adhesive - solid, as clause 651.
 - Reinforcement: Not applicable.
 - Adhesive to BS EN 12004: Cementitious adhesive, refer to clause J10/121.
- Joint width: 4 mm.
- Grout: Johnson No Mould Flexible Grout.
Manufacturer: H&R Johnson Ceramics International (Norcros Adhesives).
 - Type/ classification: CG2A.
 - Admixture: As recommended by grout manufacturer.
- Movement joints: In accordance with BS 5385-3 and manufacturers recommendations. Refer also to clause 816.
- Accessories: Aluminium L Corner beads Prismatics 100mm Cove including internal and external corners.

GENERAL

210 SUITABILITY OF BACKGROUNDS/ BASES

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

215 FALLS IN THE BASES

- General: Give notice if falls are inadequate.

260 CONTROL SAMPLES

- General: Complete sample areas, being part of finished work, in locations as follows: Entrance lobby.
 - Approval of appearance: Obtain before proceeding.
- Floor covering slip resistance testing: As clause 900.

PREPARATION

310 EXISTING BACKGROUNDS/BASES GENERALLY

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

355 OLD ADHESIVE RESIDUES ON CONCRETE/SCREED BASES

- Soft or unsound adhesive residues: Remove without damaging base.

370 NEW IN SITU CONCRETE

- Backgrounds/ bases to be tiled: Remove mould oil, surface retarders and other materials incompatible with bedding.

438 PREPARING CONCRETE BASES FOR FULLY BONDED BEDDING

- Surface cement:sand matrix: Remove to expose coarse aggregate.
- Surface preparation: Suitable to achieve a full bond with bedding. Select from:
 - Keep well wetted for several hours. Remove free water then brush in a slurry bonding coat.
 - Slurry: As recommended by adhesive manufacturer.
 - Prepare, prime as necessary and apply a bonding agent.
 - Bonding agent: BBA certified SBR bonding agent.

460 SMOOTHING UNDERLAYMENT

- Type: Recommended by adhesive manufacturer.
- Condition: Allow to dry before tiling.

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.
- Use of admixtures with cementitious adhesives: Only admixtures approved 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.

530 SETTING OUT

- Joints: True to line, continuous and without steps.
 - Joints on walls: Horizontal, vertical and aligned round corners.
 - Joints in floors: Parallel to the main axis of the space or specified features.
- Cut tiles: Minimize number, maximize size and locate unobtrusively.
- Joints in adjoining floors and walls: Align.
- Joints in adjoining floors and skirtings: Align.
- Movement joints: Where locations are not indicated, submit proposals.
- Setting out of Floor tiles : Drawing references: As per architect's drawings.
- Setting out of N/A : Submit proposals.

540 LEVEL OF FLOOR TILING

- Permissible deviation in level from datum to be +/- 5mm.

550 FLATNESS/ REGULARITY OF TILING/ MOSAICS

- Sudden irregularities: Not permitted.
- Deviation of surface: Measure from underside of a 2 m straightedge with 3 mm thick feet placed anywhere on surface. The straightedge should not be obstructed by the tiles and no gap should be greater than 6 mm, i.e. a tolerance of ± 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.

600 SIT-ON TILE SKIRTINGS

- Sequence: Bed solid to wall after laying floor tiles.
- Bedding: Cement based adhesive.

710 ADHESIVE BED - NOTCHED TROWEL AND BUTTERING METHOD (FLOORS)

- Application: Floated coat of adhesive to dry base and comb surface.
- Tiling: Apply coat of adhesive to backs of dry tiles. Fill any ribbed, deep keyed or button profiles. Press tiles firmly onto float coat.
- Finished adhesive thickness: Within range allowed by manufacturer.

MOVEMENT JOINTS/ GROUTING/ COMPLETION**815 SEALANT MOVEMENT JOINTS IN TILING TO FLOORS**

- Joints: Extend through tiles and bedding to base/ background. Centre over joints in base/ background.
 - Width: 6 mm.
- Sealant: Submit proposal.
 - Colour: TBC.
 - Preparation and application: As section Z22.

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: Flush.
- Polishing: When grout is hard, polish tiling with a dry cloth.

885 COLOURED GROUT

- Staining of tiles: Not permitted
- Evaluating risk of staining: Apply grout to a few tiles in a small trial area. If discoloration occurs apply a protective sealer to tiles and repeat trial.

900 TRL PENDULUM FLOOR COVERING SLIP RESISTANCE TESTING

- Floor covering(s) to be tested: M40/ 110.
- Testing authority: A UKAS accredited laboratory.
- Test: To BS EN 13036-4.
 - Floor covering condition: Dry and wet.
 - Witnessing/ Certification: Arrange for tests to be witnessed/ certified by: Contract Administrator.
 - Report: Submit.

M50

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

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

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers of vinyl, carpet and PVC-U linings to walls must provide evidence that their product is tested in accordance with EN 14041:2004 and complies with Formaldehyde class E1. They must verify that regulated preservatives are absent as defined by the standard.
- All manufacturers of flooring adhesives and adhesives for rigid wall coverings must provide evidence that their product is tested in accordance with EN 13999-1:2007. They must verify that carcinogenic or sensitising volatile substances are absent from their product.

TYPES OF COVERING**130 CARPET TILING**

- Location: Refer to architect's drawings.
- Base: Raised access floor as in section K41, screed as in section M10 and insitu concrete.
 - Preparation:
 - Screed: Clean, dry, and dust free in accordance with BS5325
 - Raised floor: As recommended by manufacturer.
- Fabricated underlay: Surface levelling compound as in section M10 where required.
- Carpet tiles:
 - Manufacturer: Desso Ltd, Hitching Court, Abingdon, Business Park, Abingdon, Oxon OX14 1RB
 - Tel No: [REDACTED] Fax: [REDACTED]
 - E-Mail: service_uk@desso.com, Web: www.desso.com.
 - Product reference: Essence Maze.
 - Type: Tufted loop pile.
 - BS EN 1307 classification:
 - Category: Type 1.
 - Level of use class: 33.
 - Luxury rating class: LC1.
 - Recycled content: Submit proposals.
 - Size: 500 x 500 x 6.3mm.
 - Colour/ pattern: Maze, colour TBC.
- Method of laying:
 - Styccobond F41 surface tackifier, manufactured by F Ball & Co Ltd or other equal and approved;
 - Adhesive to be in compliance with EN13999-1:2007 and without carcinogenic or sensitive volatile substances.
- Accessories:
 - Material change strips at junctions as per clause 741;
 - Metal edge trim to voids as clause 742.
- Other requirements: To be in compliance with EN14041:2004 and Formaldehyde class E1.

150 SHEETING VINYL

- Location: Refer to architect's drawings.
- Base: Screed as in section M10, raised access floor as in section K41 and insitu concrete.
 - Preparation:
 - Screed base: apply smoothing bed as clause 460 to remove any surface irregularities and steps, prepare surface in accordance with BS 8203 as clause 210
 - Raised floor: As recommended by manufacturer.
- Fabricated underlay:
 - Screed base: not required
 - Raised floor: Plywood as clause 560.
- Flooring roll: Homogeneous PVC to BS EN 649.
 - Manufacturer: Polyflor Ltd, Head Office, PO Box 3, Radcliffe New Road, Whitefield, Manchester M45 7NR UK
 - Telephone [REDACTED] Fax [REDACTED]
 - Email info@polyflor.com, Web: www.polyflor.com.
 - Product reference: Polysafe Vogue Ultra PUR Safety Floor.
 - BS EN 685 class: 34.
 - Slip potential:
 - Slip resistance value (SRV) (minimum)/ Pendulum test value (PTV) (minimum) to BS 7976: Not applicable.
 - EN 13893: Class DS, AS/NZS 4586: R9.
 - Surface roughness (Rz) (minimum) to BS 1134: Manufacturer's standard.
 - Recycled content: 25% .
 - Width: 2000 mm.
 - Thickness: 2.0mm.
 - Colour/ pattern: Colour TBC.
- Adhesive (and primer if recommended by manufacturer):
 - To be approved by manufacture to ensure full compatibility;
 - To be in compliance with EN13999-1:2007 and without carcinogenic or sensitive volatile substances.
- Seam welding: Hot welding with complimentary coloured rod.
- Accessories:
 - Mastic seal junctions to skirtings, P20/200;
 - Vinyl sit-in(clause 771);
 - Junctions to adjoining finishes with transition strips as clause 741;
 - Metal edge trim to voids as clause 742
 - Stair nosings and edge trims as clause 750.
- Finishing: As clause 820.
- Other requirements:
 - Acousitfoam underlay where located above occupied spaces.
 - Cutting in and Sealing to duct covers to areas as required;
 - Screed up to transition strip where abutting barrier matting.

155 PVC SHEET FLOORING IN SPECIAL WET AREAS

- Location: Bathrooms; Boxing club toilets, Nursery Toilets and changing areas.
- Base: Screed as in section M10 or insitu concrete.
 - Preparation: Screed base: apply smoothing bed as clause 460 to remove any surface irregularities and steps, prepare surface in accordance with BS 8203 as clause 210.
- Fabricated underlay: As recommended by manufacturer.
- Flooring roll: PVC to BS EN 13553.
 - Manufacturer: Altro, www.altro.co.uk; enquiries@altro.com, Tel [REDACTED]
 - Product reference: Altro Marine 20.
 - Identity code: W1A.
 - BS EN 685 class: 34.
 - Slip potential:
 - Slip resistance value (SRV) (minimum)/ Pendulum test value (PTV) (minimum) to BS 7976: TBA.
 - Surface roughness (Rz) (minimum) to BS 1134: 20 micrometres.
 - Recycled content: Manufacturer to confirm.
 - Width: 2000 mm.
 - Thickness: 2.0mm.
 - Colour/ pattern: Submit samples for approval.
- Adhesive (and primer if recommended by manufacturer): Altrofix A19 Plus;.
- Seam welding: Hot welding with complimentary coloured rod.
- Accessories:
 - Coved vinyl up-stand as clause 770. Typical height 150mm;
 - Junctions to adjoining finishes with transition strips as clause 74.
- Finishing: As clause 820.
- Other requirements:
 - Cutting in and Sealing to duct covers to areas as required;
 - To be in compliance with EN14041:2004 and Formaldehyde class E1.

195 FLOOR FINISH MATERIALS SPECIFICATION

- Minimum BRE 'Green Guide to Specification Online' rating: A.

GENERAL REQUIREMENTS

210 WORKMANSHIP GENERALLY

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

220 SAMPLES

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

230 CONTROL SAMPLES

- General: Complete areas of finished work in approved locations as follows, and obtain approval of appearance before proceeding:
 - Clause 130, office space
 - Clause 150, nursery
 - Clause 155, boxing club shower
 - Clause 156, residential bathroom
 - Clause 157, changing area .

250 LAYOUT - ROLL MATERIALS

- Setting out of seams: Agree setting out for sheeting types M50/ 150 and 157 .

251 LAYOUT - SEAMS IN ROLL MATERIALS

- Setting out: Minimise occurrences of seams and cross seams.
- Cross seams: Not permitted in following locations:
 - Nursery
 - Boxing club.

252 LAYOUT - PATTERNS

- Setting out: Agree setting out for covering types M50/ 130 .

270 EXTRA MATERIAL

- Provision of extra material: At completion, hand to Employer extra material of each type of covering to extent of the lesser of a minimum of 1 No. roll or 5% extra of each colour / finish.

330 COMMENCEMENT

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

340 CONDITIONING

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

350 ENVIRONMENT

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

PREPARING BASES**410 NEW BASES**

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

420 EXISTING BASES

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

430 NEW WET LAID BASES

- Base drying aids: Not used for at least four days prior to moisture content testing.
- Base moisture content test: Carry out in accordance with BS 5325, Annexe A or BS 8203, Annexe A.
 - Locations for readings: In all corners, along edges, and at various points over area being tested.
- Commencement of laying coverings: Not until all readings show 75% relative humidity or less.

440 SUBSTRATES TO RECEIVE THIN COVERINGS

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

460 SMOOTHING/ LEVELLING UNDERLAYMENT COMPOUND

- Type: Latex cement.
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.

470 BASES FROM WHICH EXISTING FLOOR COVERINGS HAVE BEEN REMOVED

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

560 PLYWOOD UNDERLAY

- Standard: An approved national standard.
- Bonding quality: To BS EN 314-2 class 3.
- Appearance: To BS EN 635 class II.
- Finish: Sanded.
- Thickness: 6.5mm.
- Sheet size: Contractors choice.
- 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.

620 COLOUR CONSISTENCY

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

640 ADHESIVE FIXING GENERALLY

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

- 650 SEAMS
- Patterns: Matched.
 - Joints: Tight without gaps.
- 680 SEAM WELDING COVERINGS
- Commencement: At least 24 hours after laying, or after adhesive has set.
 - Joints: Neat, smooth, strongly bonded, flush with finished surface.
- 700 LOOSE LAID CARPET TILES
- Areas of adhered tiles: Secure using double sided tape or peelable adhesive.
 - Joints: Butted.
 - Perimeter joints: Accurately cut to match abutment and prevent movement.
- 720 DOORWAYS
- Joint location: On centre line of door leaf.
- 740 EDGINGS AND COVER STRIPS
- Manufacturer: Gradus Ltd, Park Green, Macclesfield, Cheshire SK11 7LZ UK
Tel: [REDACTED] Fax: [REDACTED]
Email: imail@gradusworld.com, Web: www.gradusworld.com .
 - Product reference: Submit proposal .
 - Material/ finish: Aluminium, finish TBC .
 - Fixing: Secure with edge of covering gripped. Use matching fasteners where exposed to view
- 745 EDGE TRIMS TO LIGHT AND STAIR WELL
- Manufacturer: Gradus Ltd, Park Green, Macclesfield, Cheshire SK11 7LZ UK
Tel: [REDACTED] Fax: [REDACTED]
Email: imail@gradusworld.com, Web: www.gradusworld.com .
 - Product reference: Submit proposal for edge trim to ceramic tiling as in section M40/110
 - Material/ finish: Aluminium, finish TBC .
 - Fixing: Secure with edge of ceramic tiling covered. Use matching fasteners where exposed to view.
- 750 STAIR NOSINGS AND TRIMS
- Manufacturer: Gradus Ltd, Park Green, Macclesfield, Cheshire SK11 7LZ UK
Tel: [REDACTED] Fax: [REDACTED]
Email: imail@gradusworld.com, Web: www.gradusworld.com.
 - Product reference: Submit proposal for nosings and edge trims to ceramic tiling (refer to section M40/110) on stairs and landings.
 - Material/ finish:
 - Aluminium with coloured PVC insert;
 - Finish TBC
 - Colour of insert TBC.
 - Fixing: Secure, level and with mitred joints. Adjusted to suit thickness of covering with continuous packing strips of hardboard or plywood. Nosings and packing strips bedded in gap-filling adhesive recommended by nosing manufacturer.
 - Screw fixing with matching plugs: Where required and exposed to view.

770 SKIRTINGS

- Types: COVED PVC.
- Manufacturer: ALTRO.
<http://www.altro.co.uk/Accessories/Flooring/Finishing-Detail/Cove-Former.aspx>.
 - Product reference: Self-Coved Skirting
 - Cover Former CF20R
 - Capping seal C7 (painted walls)
 - Capping seal C8 (tiled walls).
- Fixing: Secure with top edge straight and parallel with floor.
 - Corners: Mitre joints.

771 SKIRTINGS

- Types: SIT ON COVED PVC.
- Manufacturer: POLYFLOR <http://www.polyflor.co.uk/jh/products.nsf/products!open&family=acc&ProdCode=ejecta>.
 - Product reference: MC8c.
- Fixing: Secure with top edge straight and parallel with floor.
 - Corners: Mitre joints.

780 TRAFFICKING AFTER LAYING

- Covering types: Clauses 150,155,156 and 157.
- Traffic free period: minimum 5 days.

COMPLETION

820 FINISHING PVC FLOORING

- Cleaning operations:
 - Wash floor with water containing neutral (pH 6-9) detergent. If necessary, lightly scrub heavily soiled areas.
 - Rinse with clean water, removing surplus to prevent damage to adhesive. Allow to dry.
- Emulsion polish: Two coats of a type recommended by covering manufacturer.

861 SLIP RESISTANCE TESTING

- Testing authority: A UKAS accredited laboratory.
- Floor covering(s) to be tested: M50/ 155, 156 and 157.
- Test: To BS 7976.
 - Floor covering condition: Dry and wet.
 - Witnessing/ Certification: Arrange for tests to be witnessed/ certified by: Contract Administrator.
- Report: Submit.

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

M60 Painting/clear finishing

TO BE READ WITH PRELIMINARIES/GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers of decorative paint and varnishes must provide evidence that the VOC emission level/content of their products are tested in accordance with BS EN13300:2001 and comply with the criteria of Decorative Paint Directive 2004/42/CE.

COATING SYSTEMS

110 EMULSION PAINT TO INTERNAL PLASTERED SURFACES

- Manufacturer: ICI Paints, Wexham Road, Slough, SL2 5DS
Tel: [REDACTED] Web: www.duluxtrade.co.uk.
 - Product reference: Dulux Trade Diamond Matt
 - VOC: max 30g/l in compliance with EU Directive 2004/42/EC.
- Surfaces: Gypsum plaster as clause M20/210.
 - Preparation: As clauses 400 and 580.
- Initial coats: Thinning coat Dulux Trade Diamond Matt applied by brush/roller, all in accordance with manufacturer's instructions.
 - Number of coats: 1.
- Undercoats: Dulux Trade Diamond Matt spray applied in accordance with manufacturer's recommendations.
 - Number of coats: 1.
- Finishing coats: Dulux Trade Diamond Matt roller applied in accordance with manufacturer's recommendations (applied to be applied after first fix electrical).
 - Number of coats: 1.

111 EMULSION PAINT TO INTERNAL INSITU CONCRETE AND CONCRETE BLOCK SURFACES

- Manufacturer: ICI Paints, Wexham Road, Slough, SL2 5DS
Tel: [REDACTED] Web: www.duluxtrade.co.uk.
 - Product reference: Dulux Trade Diamond Matt
 - VOC: max 30g/l in compliance with EU Directive 2004/42/EC.
- Surfaces: Gypsum plaster as clause M20/210.
 - Preparation: As clauses 400, 560 and 570.
- Initial coats: Thinning coat Dulux Trade Diamond Matt applied by brush/roller, all in accordance with manufacturer's instructions.
 - Number of coats: 1.
- Undercoats: Dulux Trade Diamond Matt spray applied in accordance with manufacturer's recommendations.
 - Number of coats: 1.
- Finishing coats: Dulux Trade Diamond Matt roller applied in accordance with manufacturer's recommendations (applied to be applied after first fix electrical).
 - Number of coats: 1.
- Other requirements:
Note: 1 coat Dulux Trade Blockfiller with 1 coat Diamond Matt finishing coat acceptable as alternative coating.

112 EMULSION PAINT PLASTERBOARD

- Manufacturer: ICI Paints, Wexham Road, Slough, SL2 5DS
Tel: [REDACTED] Web: www.duluxtrade.co.uk.
 - Product reference: Dulux Trade Diamond Silk
 - VOC: max 30g/l in compliance with EU Directive 2004/42/EC.
- Surfaces: Gypsum plaster as clause M20/210.
 - Preparation: As clauses 400 and 590.
- Initial coats: Thinning coat Dulux Trade Diamond Silk applied by brush/roller, all in accordance with manufacturer's instructions.
 - Number of coats: 1.
- Undercoats: Dulux Trade Diamond Silk spray applied in accordance with manufacturer's recommendations.
 - Number of coats: 1.
- Finishing coats: Dulux Trade Diamond Silk roller applied in accordance with manufacturer's recommendations (applied to be applied after first fix electrical).
 - Number of coats: 1.

113 KEIM CONCRETAL LASUR EXISTING CONCRETE

- Manufacturer: Keim Mineral Paints Ltd.
 - Web: www.keimpaints.co.uk.
 - Email: sales@keimpaints.co.uk. [REDACTED]
 - Product reference: Keim Concretal Lasur
- Primer: Keim Concretal Dilution
- Number of coats: 1 Dilution coat + 2 finishing coats.
- Thinning: Keim Concretal Dilution
- Colour: To match existing. Prepare samples for approval.

150 EGGSHELL/ SATIN PAINT TO PLASTER & DRY LINING - WET & KITCHEN AREAS

- Manufacturer: ICI Paints, Wexham Road, Slough, SL2 5DS
Tel: [REDACTED] Web: www.duluxtrade.co.uk.
 - Product reference: Dulux Trade Diamond Eggshell
 - VOC: max 22g/l in compliance with EU Directive 2004/42/EC.
- Surfaces: Plaster and dry lining surface.
 - Preparation: In accordance with manufacturer's recommendations and as clauses 400, 580 and 590.
- Initial coats: Dulux Trade All Purpose Primer in accordance with manufacturer's instructions.
 - Number of coats: 1.
- Undercoats: Not required.
 - Number of coats: N/A.
- Finishing coats: Dulux Trade Diamond Eggshell.
 - Number of coats: 2.

151 EGGSHELL/ SATIN PAINT TO STEEL WORK

- Manufacturer: ICI Paints, Wexham Road, Slough, SL2 5DS
Tel: [REDACTED] Web: www.duluxtrade.co.uk.
 - Product reference: Dulux Trade Eggshell
 - VOC: max 300g/l in compliance with EU Directive 2004/42/EC.
- Surfaces: Internal exposed steelwork.
 - Preparation: In accordance with manufacturer's recommendations and as clauses 400, 500 and 511.
- Initial coats:
 - Factory primed steelwork: Make sure primer is compatible and undamaged; clean in accordance with manufacturer's recommendations;
 - Unprimed steelwork: Use Dulux Trade Metalshield Quick Drying Metal Primer in accordance with manufacturer's instructions.
 - Number of coats: 1.
- Undercoats: Not required.
 - Number of coats: N/A.
- Finishing coats: Dulux Trade Eggshell.
 - Number of coats: 2.

152 EGGSHELL/ SATIN PAINT TO SKIRTING, SILL BOARDS, TRIMS & DOOR FRAMES

- Manufacturer: ICI Paints, Wexham Road, Slough, SL2 5DS
Tel: [REDACTED] Web: www.duluxtrade.co.uk.
 - Product reference: Dulux Trade Diamond Satinwood
 - VOC: max 75g/l in compliance with EU Directive 2004/42/EC.
- Surfaces: Internal MDF, internal grade plywood, soft- and hardwood frames.
 - Preparation: As clauses 400 and 481; fill and sand down joints/nail screw holes; filler in accordance with manufacturer's recommendations.
- Initial coats:
 - Wood: Dulux Trade Quick Drying Wood Primer Undercoat
 - MDF: Dulux Trade Quick Drying MDF Primer Undercoat .
 - Number of coats: 1 .
- Undercoats: Not required .
 - Number of coats: N/A .
- Finishing coats: Dulux Trade Diamond Satinwood in accordance with manufacturer's recommendations .
 - Number of coats: min. 2 .

153 GLOSS PAINT TO EXISTING STEEL ELEMENTS

- Manufacturer: ICI Paints, Wexham Road, Slough, SL2 5DS
Tel: [REDACTED] Web: www.duluxtrade.co.uk.
 - Product reference: Dulux Trade Metalshield Gloss Finish.
- Surfaces: External exposed steelwork.
 - Preparation: In accordance with manufacturer's recommendations and as clauses 400, 500 and 511. Apply one coat of Dulux Trade Metalshield Primer Zinc Phosphate where rusting has occurred and has been prepared for painting .
- Initial coats: Dulux Trade Metalshield Primer Zinc Phosphate where rusting has occurred.
 - Number of coats: 1.
- Undercoats: Not required.
 - Number of coats: N/A.
- Finishing coats: Dulux Trade Metalshield Gloss Finish.
 - Number of coats: 2.

170 MASONRY COATING TO EXISTING BRICKWORK AND RENDER IN UNDERCROFT

- Manufacturer: ICI Paints, Wexham Road, Slough, SL2 5DS
Tel: [REDACTED] Web: www.duluxtrade.co.uk.
 - Product reference: Dulux Trade Weathershield All Seasons Masonry Paint.
- Surfaces: Existing brickwork (appears to be Common Fletton - TBC), Existing render.
 - Preparation: Brush down to remove surface contaminants and Remove loose and spalled material and wash down.
- Initial coats:
 - Existing brickwork: One coat Dulux Trade Anti-Graffiti Primer overall to create a grip
 - existing render: One thinned coat Dulux Trade Weathershield All Seasons Masonry Paint to bare surfaces .
 - Number of coats: 1.
- Undercoats: not required.
 - Number of coats: n/a.
- Finishing coats: Dulux Trade Weathershield All Seasons Masonry Paint.
 - Number of coats: 2.

175 PROTECTIVE COATING ANTI-GRAFFITI FINISH

- Manufacturer: ICI Paints, Wexham Road, Slough, SL2 5DS
Tel: [REDACTED] Web: www.duluxtrade.co.uk.
 - Product reference: Dulux Trade Anti Graffiti Finish
 - VOC: max 140g/l in compliance with EU Directive 2004/42/EC.
- Surfaces: Plaster, plasterboard and internal exposed concrete.
 - Preparation: as clauses 400, 560, 580, 590 and to manufacturer's recommendations.
- Initial coats: Dulux Trade Anti Graffiti Sealer in accordance with manufacturer's instructions.
 - Number of coats: 1.
- Undercoats: Dulux Trade Anti Graffiti Primer in accordance with manufacturer's instructions
 - Number of coats: 1.
- Finishing coats: Dulux Trade Anti Graffiti Finish in accordance with manufacturer's instructions.
- Application: Brush, roller or conventional spray equipment.
 - Number of coats: 3.
 - Slip resistance value - water wet (minimum): Not applicable .

180 FLOOR COATING TO CONCRETE FLOORS

- Manufacturer: Ronacrete Limited, Ronac House, Flex Meadow, Merring Way, Harlow, Essex, CM19 5TD
Tel: [REDACTED] Fax: [REDACTED]
Email: techweb@ronacrete.co.uk, Web: www.ronacrete.co.uk.
 - Product reference: RonaFloor EWB
 - VOC: content 0.03%.
- Surfaces: Exposed concrete floors.
 - Preparation: As clauses 400 and 560.
- Initial coats: RonaFloor EWB applied by roller, all in accordance with manufacturer's instructions, incorporate RonaFloor A/S Aggregate into initial coat whilst wet and allow to cure to provide slip resistance.
 - Number of coats: 1.
- Finishing coats: RonaFloor EWB applied by roller.
 - Number of coats: 1.
 - Slip resistance value - water wet (minimum): PTV to BS 7976 of 40 .

GENERALLY

210 COATING MATERIALS

- Manufacturers: Obtain materials from any of the following:
ICI paints- Dulux Trade.
- Selected manufacturers: Submit names before commencement of coating work.

215 HANDLING AND STORAGE

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

220 COMPATIBILITY

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

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.

301 CONTROL SAMPLES

- Sample areas of finished work: Carry out, including preparation, as follows:

Types of coating	Location
M60/ 110, 111, 112 .	Entrance lobby, nursery, boxing club .
M60/ 150 .	Office and domestic kitchen .
M60/ 152 .	Entrance lobby, nursery, boxing club .
M60/ 175 .	TBC
- Approval of appearance: Obtain before commencement of general coating work.

320 INSPECTION BY COATING MANUFACTURERS

- General: Permit manufacturers to inspect work in progress and take samples of their materials from site if requested.

PREPARATION

400 PREPARATION GENERALLY

- Standard: In accordance with BS 6150.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
- Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Substrates: Sufficiently dry in depth to suit coating.
- Efflorescence salts: Remove.
- Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
- Surface irregularities: Remove.
- Joints, cracks, holes and other depressions: Fill flush with surface, to provide smooth finish.
- Dust, particles and residues from preparation: Remove and dispose of safely.
- Water based stoppers and fillers:
 - Apply before priming unless recommended otherwise by manufacturer.
 - If applied after priming: Patch prime.
- Oil based stoppers and fillers: Apply after priming.
- Doors, opening windows and other moving parts:
 - Ease, if necessary, before coating.
 - Prime resulting bare areas.

425 IRONMONGERY

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

440 PREVIOUSLY COATED SURFACES GENERALLY

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

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.

- 500 **PREPRIMED STEEL**
 - Areas of defective primer, corrosion and loose scale: Take back to bare metal. Reprime as soon as possible.
- 511 **GALVANIZED, SHERARDIZED AND ELECTROPLATED STEEL**
 - White rust: Remove.
 - Pretreatment: Apply one of the following:
 - 'T wash'/ mordant solution to blacken whole surface.
 - Etching primer recommended by coating system manufacturer.
- 560 **UNCOATED CONCRETE**
 - Release agents: Remove.
- 570 **UNCOATED MASONRY/ RENDERING**
 - Loose and flaking material: remove.
- 580 **UNCOATED PLASTER**
 - Nibs, trowel marks and plaster splashes: Scrape off.
 - Overtrowelled 'polished' areas: Key lightly.
- 590 **UNCOATED PLASTERBOARD**
 - Depressions around fixings: Fill with stoppers/ fillers
- 622 **ORGANIC GROWTHS**
 - Dead and loose growths and infected coatings: Scrape off and remove from site.
 - Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.
 - Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.
- 645 **SEALING OF INTERNAL MOVEMENT JOINTS**
 - General: To junctions of walls and ceilings with architraves, skirtings and other trims.
 - Sealant: Water based acrylic.
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Preparation and application: As section Z22.

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.

M61

Intumescent coatings for fire protection of steelwork

M61 Intumescent coatings for fire protection of steelwork

TO BE READ WITH PRELIMINARIES/GENERAL CONDITIONS

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers of decorative paints and varnishes must provide evidence that the VOC emission level/content of their products are tested in accordance with BS EN13300:2001 and comply with the criteria of Decorative Paint Directive 2004/42/CE.

PROTECTIVE COATING SYSTEMS

110 ON SITE COATING TO PRIMED STEEL GENERALLY

- Use/ location: Internal structural steelwork not part of the structural frame of the building.
- Fire resistance to BS 476-21: 60 minutes.
- Preparation and priming: By steelwork contractor, as section G10.
 - Primer:

S707-60 should be applied onto a clean, undamaged, dry and primed steel surface. Certain types of primers can cause adhesion problems and should be avoided. These include chlorinated rubbers, bitumen, thermoplastic primers.

Nullifire have carried out compatibility testing on a wide range of primers and can be contacted on [REDACTED] for confirmation of compatibility with S707-60.

Galvanised surfaces should be prepared by an application of T-wash or mordant solution followed by a compatible non-saponifiable primer. The primer should be applied in accordance with the manufacturer's instructions.

If a zinc rich primer is used, it is advisable to seal this with a suitable tie coat or travel coat prior to shipment to site. If the steel is left exposed to the atmosphere with just a zinc rich primer, surface salts may build up on the steel. These salts, if not adequately removed, may cause adhesion problems for any subsequent coating applied. Removal of the salts can be achieved by high-pressure washing. If adequate removal of the salts cannot be guaranteed, a suitable tie coat may have to be applied prior to the application of the S707-60 Waterborne Basecoat.

Nullifire should be consulted for technical advice when zinc rich primers or the overcoating of existing paints are specified for use..
- Intumescent coat:
 - Manufacturer: Nullifire Ltd., Torrington Avenue, Coventry CV4 9TJ
Tel. [REDACTED] Fax [REDACTED]
E-mail: protect@nullifire.com, Web: www.nullifire.com.
Product reference: S707-60 Waterborne Basecoat, white thin film intumescent coating for the fire protection of internal structural steelwork
 - VOC: 15g/l in compliance with EU Directive 2004/42/EC.
 - Finish: Non-visible areas - Basic, as clause 440; visible areas frequented by public - High decorative, as clause 460.
 - Site conditions: Nullifire S707-60 is recommended for application and use on dry protected structural steel only. If the basecoat is allowed to get wet, it is likely to be damaged – blistering and wrinkling may occur.
S707-60 should only be applied when the air and steel temperatures are above 5°C. Relative humidity should be below 80% for successful application. Steel surface temperature should be a minimum of 3°C above the dew point. Ensure the steel is dry and free from contact with rain or condensation during the application and drying of S707-60..
- Top sealer coat: Type recommended by intumescent coating manufacturer.
 - Dry film thickness: As recommended by manufacturer and as clause 490.
 - Colour: To be confirmed from standard range of BS/RAL colours.
- Bolt head/ nut protection: As main steelwork.

111 ON SITE COATING TO PRIMED STEEL STRUCTURAL BUILDING FRAME

- Use/ location: Internal structural steelwork as part of the structural frame of the building.
- Fire resistance to BS 476-21: 120 minutes.
- Preparation and priming: By steelwork contractor, as section G10.
 - Primer:

S707-120 should be applied onto a clean, undamaged, dry and primed steel surface. Certain types of primers can cause adhesion problems and should be avoided. These include chlorinated rubbers, bitumen, thermoplastic primers.

Nullifire have carried out compatibility testing on a wide range of primers and can be contacted on [REDACTED] for confirmation of compatibility with S707-60.

Galvanised surfaces should be prepared by an application of T-wash or mordant solution followed by a compatible non-saponifiable primer. The primer should be applied in accordance with the manufacturer's instructions.

If a zinc rich primer is used, it is advisable to seal this with a suitable tie coat or travel coat prior to shipment to site. If the steel is left exposed to the atmosphere with just a zinc rich primer, surface salts may build up on the steel. These salts, if not adequately removed, may cause adhesion problems for any subsequent coating applied. Removal of the salts can be achieved by high-pressure washing. If adequate removal of the salts cannot be guaranteed, a suitable tie coat may have to be applied prior to the application of the S707-60 Waterborne Basecoat.

Nullifire should be consulted for technical advice when zinc rich primers or the overcoating of existing paints are specified for use..
- Intumescent coat:
 - Manufacturer: Nullifire Ltd., Torrington Avenue, Coventry CV4 9TJ
 Tel. [REDACTED] Fax [REDACTED]
 E-mail: protect@nullifire.com, Web: www.nullifire.com.
 Product reference: S707-120 Waterborne Basecoat, white thin film intumescent coating for the fire protection of internal structural steelwork
 - VOC: Consult manufacturer for compliance with EU Directive 2004/42/EC.
 - Finish: Non-visible areas - Basic, as clause 440; visible areas frequented by public - High decorative, as clause 460.
 - Site conditions: Nullifire S707-120 is recommended for application and use on dry protected structural steel only. If the basecoat is allowed to get wet, it is likely to be damaged – blistering and wrinkling may occur.

S707-120 should only be applied when the air and steel temperatures are above 5°C. Relative humidity should be below 80% for successful application. Steel surface temperature should be a minimum of 3°C above the dew point. Ensure the steel is dry and free from contact with rain or condensation during the application and drying of S707-120..
- Top sealer coat: Type recommended by intumescent coating manufacturer.
 - Dry film thickness: As recommended by manufacturer and as clause 490.
 - Colour: To be confirmed from standard range of BS/RAL colours.
- Bolt head/ nut protection: As main steelwork.

GENERAL REQUIREMENTS

205 VALIDATION OF MATERIALS

- Project specific evaluation of intumescent coating materials:
 - Standard: To BS 8202-2, clause 4.
 - Test results: Submit on request.

210 WORKING PROCEDURES

- Standard: To BS 8202-2.
- Give notice: Before commencing surface preparation and coating application.
- Quality control: Record project specific procedures for surface preparation and coating application.

215 WORKING CONDITIONS

- General: Maintain suitable temperature, humidity and air quality during coating application and drying.
- Surfaces to be coated: Clean and dry at time of coating application.

220 APPLICATOR'S PERSONNEL

- Operatives: Trained/ experienced in anticorrosive and intumescent coatings.
- Evidence of training/ experience: Submit on request.

250 SPRAYED COATING APPLICATION

- Spray drift: Minimize.
- Masking: Protect designated adjacent surfaces.
 - Designated surfaces: All junctions to adjacent materials.

260 CONTROL SAMPLES

- General: Carry out sample areas of finished work as follows:
TBC.
- Approval of appearance: Obtain before commencement of general coating application.

270 INSPECTION

- Permit intumescent coating manufacturer to:
 - Inspect work in progress.
 - Inspect quality control records.
 - Take dry film thickness and other measurements.
 - Take samples of coating products.
- Intumescent coating manufacturer's inspection reports: Submit without delay.

PREPARATION OF SURFACES**315 NEW STEEL - BLAST CLEANING**

- Preparation: Remove oil and grease.
- Blast cleaning:
 - Atmospheric condition: Dry.
 - Abrasive: Suitable type and size, free from fines, moisture and oil.
 - Finish: To BS EN ISO 8501-1, preparation grade SA2½, with an average profile of approximately 75 micrometres.
 - Abrasive residues and moisture: Remove.
- Primer: Apply as soon as possible after cleaning and before gingering or blackening appears.

APPLICATION OF COATINGS**410 INTUMESCENT DRY FILM THICKNESS (DFT)**

- Required dft: Determine for every steel member to give specified period of fire resistance. Use intumescent coating manufacturer's current published loading tables.
 - Special sections and partial fire exposure conditions: Obtain required dft in writing from manufacturer.
- Schedule and drawings: Submit at least two weeks before starting work.
 - Schedule content: Member sizes, weights/thicknesses, loading conditions, etc. showing, for each variant, the exposed perimeter/ sectional area (Hp/A) ratio and required dft.
 - Drawing content: Steelwork drawings marked in colour to show required dft for each member.

420 MEASUREMENT OF INTUMESCENT DFT

- Primer dft: Determine average dft (for deduction from total dft after application of intumescent).
- Intumescent dft: Determine at:
 - 500 mm centres along each coated plane of universal sections (8 planes), and rectangular hollow sections (4 planes).
 - 125 mm centres along coated circular hollow sections, spread evenly around circumference.
- Acceptance standard:
 - Average intumescent dft: Not less than required dft (exclusive of primer and top sealer).
 - Local intumescent dft: Not less than 80% of required dft. Areas greater than 100 mm equivalent diameter with a dft of less than 80% of required dft must be brought up to thickness.

440 BASIC FINISH

- Definition: Reasonably smooth and even. Orange peel, other texture, minor runs and similar minor defects are acceptable.

460 HIGH DECORATIVE FINISH

- Definition: High standard of evenness, smoothness and gloss when viewed from a minimum distance of 2 m.

490 TOP SEALER COAT

- Application: To achieve dft recommended by manufacturer and to give an even, solid, opaque appearance, free from runs, sags and other visual defects.

530 RECORDS OF COATED STEEL

- On completion of intumescent coating work, submit:
 - Accurate surface preparation and coating application records.
 - Fire resistance certificates.
 - Intumescent coating manufacturer's recommendations for maintenance and overcoating.

N
Furniture/Equipment

N10
General fixtures/ furnishings/ equipment

N10 General fixtures/ furnishings/ equipment

TO BE READ WITH PRELIMINARIES/GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers/suppliers of plywood and particle board must provide evidence that their product is tested in accordance with EN 13986:2004 and complies with Formaldehyde class E1. They must verify that regulated wood preservatives are absent from their product as defined by the standard.
- All timber supplied or used in timber products must be from certified sources. Evidence must be provided by the supplier/manufacturer in form of FSC or PEFC certificates. Additional CEPT documentation may be supplied for verification purposes.

PRODUCTS

110 PURPOSE MADE CONCIERGE DESK AND ASSOCIATED FITTINGS

- Manufacturer: Contractor's choice.
- Standard: To BS EN 527, BS 8300.
- Timber: To BS EN 942.
 - Species: Hardwood.
 - Appearance class: J2.
 - Moisture content on delivery: 9 to 13%.
- Wood based boards: N/A.
 - Counter top: Solid hardwood edging
 - Cupboard doors and drawer faces: timber veneer, hardwood lipping.
- Metal: Brushed stainless steel legs and brackets as required for counter support.
 - Grade: 304.
- Other materials:
 - Counter tops: Furniture Linoleum 2mm finish
 - A4 Leaflet racks: contractor's choice.
- Finishes: Lacquer.
- Adhesive: To BS EN 204, durability class D1.
- Fixings: Legs and brackets screwed to counter top.
 - Fasteners: As recommended by manufacturer.
- Joinery workmanship: As section Z10.
- Metalwork materials and workmanship: As section Z11.
- Other requirements:
 - Configuration: ref drawing (72)100
 - Counter top for Concierge to be build into opening in wall rated F60 without compromising integrity and insulation requirements. Note alignment of fire curtain on inside of glazed screen

- 111 PURPOSE MADE SCREEN AND SPEECH SYSTEM FOR CONCIERGE DESK
- Manufacturer: SONIC WINDOWS LTD, Unit 14/15, Beeching Park Ind Estate, Wainwright Road, Bexhill-on-Sea, East Sussex TN39 3UR, England, Tel [REDACTED] Fax [REDACTED]
[REDACTED] <http://www.sonicwindows.co.uk>.
 - Standard: To BS EN 527, BS 8300.
Size/Configuration: Refer to drawing (72)100
 - Screen:
 - PPC aluminium box frame, screw-fixed internal beads
 - 11.5mm "anti-bandit" laminated glass - clear
 - Undercounter tray for passing of A4 envelopes, keys and small parcels
 - Speech System
 - Public bridge bar, microphone and speaker combination unit
 - Staff microphone and speaker unit.
 - Induction loop.
- 146 VANITY UNIT BOXING CLUB & NURSERY
- Item: Vanity unit.
- Manufacturer: Amwell Systems Ltd., Buntingford Business Park, Baldock Road, Buntingford, Hertfordshire, SG9 9ER
Tel: [REDACTED] Fax: [REDACTED]
Email: info@amwell-systems.com, Web: www.amwell-systems.com.
- Product reference: SGL Vanity Unit System.
 - Dimensions:
 - Height: 700 & 800mm.
 - Length: Refer to architect's drawings.
 - Vanity top: 350mm wide bed manufactured from solid grade laminate (SGL) incorporating extruded aluminium jointing section to link laminate bed to downstand and upstand.
 - Finish/colour: Laminate colour to be confirmed from Amwell Washroom SGL selection, finish Fini A. Aluminium available in light or dark grey powder coated finish.
 - Front edge profile: Laminate top and 75mm upstand rebated into extruded aluminium jointing section. Jointing section has smooth coved radius.
 - Underpanel material: 12/13mm solid grade laminate (SGL) to provide maximum protection against water and vandalism.
 - Finish/colour: Laminate colour to be confirmed from Amwell Washroom SGL selection, finish Fini A.
 - Edge treatment: Edges are machined to a smooth profile.
 - Accessories: Concealed Keku 'push fit' brackets.
 - Supports: Treated softwood framework, notched and screwed made to measure and site assembled.
 - Other requirements: Complete with cut outs for semi-inset hand wash basins. (sanitaryware & silicone sealant by others).

170 BENCHES AND LINKED SEATS BOXING CLUB - CHANGING ROOMS

- Manufacturer: Amwell Systems Ltd., Buntingford Business Park, Baldock Road, Buntingford, Hertfordshire, SG9 9ER
Tel: [REDACTED] Fax: [REDACTED]
Email: info@amwell-systems.com, Web: www.amwell-systems.com.
- Product reference: Aquabench.
- Seat/ Back:
 - Material: Seat comprising three 90mm wide slates manufactured from 27mm thick hardwood to give generally an overall width of 300mm, leading edge and exposed corners radiused for safety.
 - Finish/ Colour: Ash, factory lacquer finish.
- Frame:
 - Material: Wall and floor mounted benching supported by aluminium tubular 'L' profile brackets..
 - Finish/ Colour: Pre-treated & polyester powder coated, RAL colour and gloss level TBC.
- Fixing: All fixings are stainless steel.
- Fittings/ Other requirements: Complete with independent wall mounted hat & coat rack with double coat hooks @ 300mm ctr.

240 BLINDS TO CURTAIN WALLING

- Manufacturer: Levolux Limited, Forward Drive, Harrow, Middlesex, HA3 8NT
Tel: [REDACTED] Fax: [REDACTED]
Web: www.levolux.com, Email: info@levolux.com .
- Product reference: Levolux 760L.
- Type: Roller blind
 - Roller diameter: To manufacturer's recommendation.
 - Hem bar: Extruded 20mm diameter bottom bar SAA finish, colour TBC
 - Dimensions: Refer to blind schedule.
 - Fixing: Face fixed into curtain walling mullions or top fixed into insitu concrete with universal brackets to subcontractor's detail.
- Material:
 - Fabric: Levolux Vision Screen Fabric 3%, colour TBC.
 - Brackets: Aluminium.
 - Finish/ Colour: Polyester powder coated, colour TBC.
- Operation: Manual continuous bead chain control.
- Accessories/ Other requirements:
 - Side guide wires where required;
 - Fabric to be fire rated class 0 for surface spread of flame.

- 241 DIM-OUT BLINDS TO CURTAIN WALLING
- Manufacturer: Levolux Limited, Forward Drive, Harrow, Middlesex, HA3 8NT
Tel: [REDACTED] Fax: [REDACTED]
Web: www.levolux.com, Email: info@levolux.com .
- Product reference: Levolux 760L.
 - Type: Roller blind
 - Roller diameter: To manufacturer's recommendation.
 - Hem bar: Extruded 20mm diameter bottom bar SAA finish, colour TBC
 - Dimensions: Refer to blind schedule.
 - Fixing: Face fixed into curtain walling mullions or top fixed into insitu concrete with universal brackets to subcontractor's detail.
 - Material:
 - Fabric: Pastel knight II PVC/Fibreglass construction 400g/m.sq. 100% opacity, colour TBC.
 - Brackets: Aluminium.
 - Finish/ Colour: Polyester powder coated, colour TBC.
 - Operation: Manual continuous bead chain control.
 - Accessories/ Other requirements:
 - Side guide wires where required;
 - Fabric to be fire rated class 0 for surface spread of flame.
- 270 MIRRORS CHANGING ROOM & WC
- Material: Class C safety glass to BS 6206 .
 - Quality: Free from tarnishing, discoloration, scratches and other defects visible in the designed viewing conditions. Reflection undistorted.
 - Size: 600mm wide & 1000mm high.
 - Backing: Aluminium foil.
 - Edges: Smoothed.
 - Fixing: Securely fixed with screws, adjusting as necessary to ensure true undistorted reflection; screw heads to be covered with caps.
 - Installation: Accurately with sides vertical.
- 290 MATWELL FRAMES TO ENTRANCE LOBBY
- Manufacturer: Jaymart Rubber & Plastics Ltd., Woodlands Trading Estate, Eden Vale Road, Westbury, Wiltshire BA13 3QS
Tel: [REDACTED] Fax: [REDACTED]
Web: www.jaymart.co.uk, Email: matting@jaymart.co.uk.
- Product reference: Recessed matwell frames.
 - Material: Aluminium.
 - Finish: Manufacturer's standard.
 - Size: For size and location refer to architect's drawings.
 - Angles: To manufacturer's recommendation to suit entrance matting.
 - Corners: Mitred and welded.
 - Angle size: As required to suit entrance matting.
- 300 ENTRANCE MATTING TO ENTRANCE LOBBY
- Manufacturer: Jaymart Rubber & Plastics Ltd., Woodlands Trading Estate, Eden Vale Road, Westbury, Wiltshire BA13 3QS
Tel: [REDACTED] Fax: [REDACTED]
Web: www.jaymart.co.uk, Email: matting@jaymart.co.uk .
- Product reference: Grime-Rail Firefighter
 - Type: Specialist fire resistant low smoke emission Vamac 7300 ribbed rubber/aluminium entrance matting.
 - Construction: Closed .
 - Colour: Black .
 - Size: For size and location refer to architect's drawings .

310 LOOSE LAID MATTING TO BOXING CLUB

- Purpose/ location: Shock and sound absorption, free weight area.
- Manufacturer: Pavigym UK @ Escape Fitness LTD, Unit 5, The Office Village, Cygnet Park, PE7 8FD Peterborough Cambridgeshire
Tel: [REDACTED]
- Product reference: Free Weight S&S
- Installation: Interlocking system.
- Size: 1000mm x 1000mm x 29mm
- Weight: 8.7 kg
- Sound proofing: 21dB.
- Colour: TBC.

350 MISCELLANEOUS FITTINGS

- Item: Corner guards for plasterboard walls.
- Manufacturer: Construction Specialities (UK) Ltd, 1010 Westcott Venture Park, Westcott' Bucks, HP18 0XB
Tel: [REDACTED] Fax: [REDACTED]
E-mail: enquiries@c-sgroup.co.uk, Web.: www.c-sgroup.co.uk.
- Product reference: Heavy duty SS corner guard 40AB.
- Size/ Capacity: 40mmx40mmx1500mm.
- Finish/ Colour: Dull polished.
- Fixing: Installed with construction adhesive.
- Other requirements: For location refer to architect's drawings.

EXECUTION

710 MOISTURE CONTENT OF WOOD AND WOOD BASED BOARDS

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

720 INSTALLATION GENERALLY

- General: As Preliminaries section A33.
- Fixing and fasteners: As section Z20.
- Services: As Engineering Services specification.

760 SEALANT BEDDING AND POINTING

- Application: As section Z22.
- Bedding: Sink to top of worktop.
- Pointing: Between units and splash backs.

770 TRIMS

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

COMPLETION

910 GENERAL

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

N11

Domestic kitchen fittings, furnishings and equipment

N11 Domestic kitchen fittings, furnishings and equipment

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers/suppliers of plywood and particle board must provide evidence that their product is tested in accordance with EN 13986:2004 and complies with Formaldehyde class E1. They must verify that regulated wood preservatives are absent from their product as defined by the standard.
- All timber supplied or used in timber products must be from certified sources. Evidence must be provided by the supplier/manufacturer in form of FSC or PEFC certificates. Additional CEPT documentation may be supplied for verification purposes.

PRODUCTS

310 FITTED BASE UNITS TO OFFICES & NURSERY

- Standard: To BS 6222 -2 and -3, and BS EN 14749.
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Structural performance: To BS 6222-2, test level H.
- Dimensions: To BS EN 1116.
- Surface finishes: To BS 6222-3.
- Doors and drawer fronts:
 - Material: PVC foil laminate on MDF.
 - Style: Slab.
 - Finish and colour: Satin white.
 - Edges: All round with durable PVC edging.
 - Other requirements: Concealed adjustable metal door hinges.
- Side panels, plinths and shelves:
 - Material:
 - Side panels: PVC foil laminate on MDF;
 - Cabinet/plinth/shelves: Laminated MFC 18mm (backs 15mm).
 - Finish and colour:
 - Side panels/plinth: Satin white.
 - Cabinet/shelves: Manufacturer's standard.
 - Edges: All round with durable PVC edging.
- Accessories:
 - Fully adjustable legs;
 - Circular bar handle suite, brushed stainless steel;
 - Further accessories TBC.

311 FITTED BASE UNITS TO FLATS

- Standard: To BS 6222 -2 and -3, and BS EN 14749.
- Manufacturer: Howden Joinery. Other suppliers and ranges subject to approval. .
 - Product reference: Contract "Greenwich" Range.
- Construction:

600mm module drawer line units. Construction: Factory assembled, glue and dowel. 18mm type P5 moisture resistant chipboard panels with ABS edging fully sealed. Metal shelf supports with height adjustment. Metal drawer boxes with 15mm chipboard base. Centre posts to all 800mm and 1000mm units. Wall units complete with adjustable metal hanging brackets.
- Dimensions:

Cabinets excluding drawer fronts:
 Base units: 720 high (excluding legs) x 575mm deep with 75mm service void and adjustable legs. 6mm MDF back.
 Sink units 1000mm x 600mm. 6mm MDF back.
 Adjustable legs
 Plinth. Doors and drawer fronts:
 Colour: Greenwich Light Oak.
 Hinges: 170 degree opening.
- Structural performance: To BS 6222-2, test level H.
- Dimensions: To BS EN 1116.
- Surface finishes: To BS 6222-3.
- Doors and drawer fronts:
 - Material: MFC.
 - Finish and colour: Greenwich Light Oak.
 - Edges: All round with 1.5mm ABS edging.
 - Other requirements: Concealed adjustable metal door hinges, Standard Drawer Box.
- Side panels, plinths and shelves:
 - Material: To match doors.
 - Finish and colour: To match doors.
 - Edges: To match doors.
- Accessories:
 - Fully adjustable legs;
 - Circular bar handle suite, brushed steel;
 - Further accessories TBC.

320 FITTED WALL UNITS TO OFFICES & NURSERY

- Standard: To BS 6222 -2 and -3, and BS EN 14749.
- Manufacturer: Submit proposal.
 - Product reference: Submit proposal.
- Structural performance: To BS 6222-2, test level H.
- Dimensions: To BS EN 1116.
- Surface finishes: To BS 6222-3.
- Doors and drawer fronts:
 - Material: PVC foil laminate on MDF.
 - Style: Slab.
 - Finish and colour: Satin white.
 - Edges: All round with durable PVC edging.
 - Other requirements: Concealed adjustable metal door hinges.
- Side panels and shelves:
 - Material:
 - Side panels: PVC foil laminate on MDF;
 - Cabinet/plinth/shelves: Laminated MFC 18mm (backs 15mm).
 - Finish and colour:
 - Side panels/plinth: Satin white.
 - Cabinet/shelves: Manufacturer's standard.
 - Edges: All round with durable PVC edging.
- Accessories:
 - Circular bar handle suite, brushed stainless steel;
 - Concealed worktop lighting;
 - Further accessories TBC.

321 FITTED WALL UNITS TO FLATS

- Standard: To BS 6222 -2 and -3, and BS EN 14749.
- Manufacturer: As base units Clause 311.
 - Product reference: Greenwich Light Oak. MFC Slab door.
 - Wall units: 720mm high x 290mm deep with adjustable hanging brackets for levelling.
 - 3mm MDF back. Square section cornice..
- Structural performance: To BS 6222-2, test level G.
- Dimensions: To BS EN 1116.
- Surface finishes: To BS 6222-3.
- Doors and drawer fronts:
 - Material: MFC.
 - Finish and colour: Greenwich Light Oak.
 - Edges: 1.5mm ABS.
 - Other requirements: Concealed adjustable metal door hinges.
- Side panels and shelves:
 - Material: As doors.
 - Finish and colour: As doors. .
 - Edges: As doors.
- Accessories:
 - Circular bar handle suite, brushed stainless steel;
 - Concealed worktop lighting -refer to ;
 - Further accessories TBC.

340 WORKTOPS TO OFFICE & NURSERY KITCHENS

- Standard: To BS 6222-3.
- Manufacturer: Howden Joinery. Other suppliers and ranges subject to approval.
 - Product reference: Submit proposals.
- Material: HPL covered E1 grade high density particle board. 8mm bullnose.
 - Finish/colour: TBA.
- Dimensions:
 - Thickness: 38mm
 - Width: approx. 616mm
 - Length: refer to architect's drawings.
- Exposed edges: HPL post-formed with drip groove.
- Support: Base units as in clause 310.
- Other requirements: Mitred corners.

341 WORKTOPS TO KITCHEN IN FLATS

- Standard: To BS 6222-3.
- Manufacturer: Howden Joinery. Other suppliers and ranges subject to approval.
 - Product reference: Submit proposals.
- Material: HPL covered E1 grade high density particle board.
 - Finish/colour: TBC.
- Shape: L shaped.
- Dimensions:
 - Thickness: 38mm
 - Width: approx. 616mm
 - Length: refer to architect's drawings.
- Exposed edges: HPL post-formed with drip groove.
- Support: Base units as in clause 311.
- Other requirements: Mitred corners.

350A SINK

- Manufacturer:
 - Franke Sissons
 - Tel [REDACTED]
 - Fax [REDACTED]
 - Web: www.franke-ws.com Anderson, GEC Ltd..
 - Product reference: Ascona Stainless steel ASX 651 or similar
- Configuration: Single bowl and drainer.

350B KITCHEN, TAPS, TRAPS AND WASTES

- Manufacturer: Twyford Bathrooms.
 - Web: www.twyfordbathrooms.com.
 - Email: twyford.technical@twyfordbathrooms.com.
- Taps: [Mixer].
 - Product reference: Aquations Low Flow Kitchen Mono 5l AQ5925 or similar.
- Wastes: Basket strainer waste.
 - Standard: To BS EN 274-1, -2 and -3.
 - Manufacturer: Submit proposal.
 - Product reference: Submit proposal.
 - Size: To fit sink.
 - Material: Chromed steel.
 - Tail: Unslotted.
- Traps: Tubular, P type.
 - Standard: To BS EN 274-1, -2 and -3.
 - Manufacturer: [Submit proposal].
 - Product reference: [Submit proposal].
 - Size: To fit waste.
 - Material: Plastic.
 - Depth of seal (minimum): 75 mm.

390 SEALANT

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

EXECUTION

610 MOISTURE CONTENT OF WOOD AND WOOD BASED BOARDS

- Control and monitoring:
 - Method statement: Submit.

620 INSTALLATION GENERALLY

- Fixings and adhesives: As section Z20.
- Services: As Engineering Services specification.

630 INSTALLING UNITS AND WORKTOPS

- General: Well fitting, stable and secure.

640 INSTALLING APPLIANCES

- Connections: Provide to electric, gas, and hot and cold water services.

650 INSTALLING SINKS, TAPS AND WASTES

- Water supply: To BS EN 806-2 and -4.
- Taps:
 - Fixing: Secure, watertight seal with the appliance.
 - Positioning: Hot tap to left of cold tap as viewed by the user of the appliance.
- Wastes:
 - Bedding: Waterproof jointing compound.
 - Fixing: With resilient washer between appliance and backnut.

660 SEALANT BEDDING AND POINTING

- Application: As section Z22.
- Bedding: Inset sink and hob unit.
- Pointing: Between units and splash backs.

COMPLETION**910 GENERAL**

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

920 APPLIANCE COMMISSIONING

- Appliance operation, functions and controls: Verify.
- Documentation: Submit guarantees, instruction manuals, etc.

N13

Sanitary appliances and fittings

N13 Sanitary appliances and fittings

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.

PRODUCTS

300A WCS AND CISTERNS CLOSE COUPLED

- Manufacturer: Twyford Bathrooms.
 - Web: www.twyfordbathrooms.com.
 - Email: twyford.technical@twyfordbathrooms.com.
 - Product reference: Galerie HO close coupled WC suite with total install
- Pan: GN1148WH or similar
- Seat and cover: GN7815WH.
- Pan connector: WF1240WH.
- Cistern: GN2396WH

300B WCS AND CISTERNS [CONCEALED CISTERN]

- Manufacturer: Twyford Bathrooms.
 - Web: www.twyfordbathrooms.com.
 - Email: twyford.technical@twyfordbathrooms.com.
 - Product reference: Galerie back to wall WC suite
- Pan: GN1438WH
- Seat and cover: GN7865WH
- Pan connector: WF1240WH.
- Cistern: CX9642XX.
- Operation: CF9032CP.

311A UNISEX ACCESSIBLE CORNER WC EQUIPMENT PACKAGES (DOCUMENT M)

- Manufacturer: Twyford Bathrooms.
 - Web: www.twyfordbathrooms.com.
 - Email: twyford.technical@twyfordbathrooms.com.
 - Product reference: PK8145BE Doc M Rimless Value or similar.
- WC outlet connector: WF1240WH.

311B UNISEX ACCESSIBLE CORNER SHOWER PACKAGES (DOCUMENT M)

- Manufacturer: Twyford Bathrooms.
 - Web: www.twyfordbathrooms.com.
 - Email: twyford.technical@twyfordbathrooms.com.
 - Product reference: Doc.M shower pack with blue grab rails and seat, ref PK7005BE or similar.

312 WC FOR AMBULANT DISABLED PEOPLE GENERALLY

- Manufacturer: Ideal Standard (UK) Ltd, The Bathroom Works, National Avenue, Kingston upon Hull HU5 4HS
Tel [REDACTED] Fax [REDACTED]
Email: info@idealspec.co.uk, Web: www.idealspec.co.uk.
- Product reference:
S3077 (WC HD) Contour 21 rimless wall mounted WC pan horizontal outlet, 70cm HTM projection
S9139 Support bracket for wall mounted WC raised height with bolts.
- Material: Vitreous china, white.
- Seat and cover:
 - Standard: To BS 1254.
 - Manufacturer: Ideal Standard (UK) Ltd.
Product reference: S4066 Contour 21 seat no cover, top fixing hinges and retaining buffers.
 - Material: Plastic.
 - Finish/ Colour: Black.
- Pan connector:
 - Standard: To BS 5627.
 - Manufacturer: Ideal Standard (UK) Ltd.
Product reference: S4303 Contour 21 Extension Connector outlet for 70/75cm WC pan outlet.
 - Colour: White.
- Cistern:
 - Standard: Not applicable.
 - Manufacturer: Ideal Standard (UK) Ltd.
Product reference: S4259 Conceala 2 cistern 4.5 Litre syphon low level side supply and internal overflow plastic flushbends, spatula lever.
 - Material: Plastic.
- Flush pipe: Concealed.
 - Manufacturer: Ideal Standard (UK) Ltd.
 - Product reference: S4302 Contour 21 flushpipe constructed, necessary for installation.
 - Material: Plastic.
- Accessories:
 - Ideal Standard Ltd. S6481 Contour 21 back support rail for 70cm projection HTM64 WC, 40 x 17 x 35mm diameter tube;
 - Ideal Standard Ltd. S6884 Cushion for back support with clips
 - Grab rails as per clause 436 (2no) installed vertically and horizontally in accordance with BS8300
 - Hinged support rail as per clause 437 (1no) installed in accordance with BS8300
 - Colostomy shelf d/w 150mm x 400mm, white vitreous china.

321A WATERLESS URINAL

- Manufacturer: Twyford Bathrooms.
- Web: www.twyfordbathrooms.com.
- Email: twyford.technical@twyfordbathrooms.com.
- Product reference: VC7530WH -
- Accessories: SR5706XX.

331 SINKS - CLEANERS

- Standard: To BS 1206.
- Manufacturer: Twyford Bathrooms.
 - Web: www.twyfordbathrooms.com.
 - Email: twyford.technical@twyfordbathrooms.com.
 - Product reference: High back cleaner's sink with grating ref FC1044WH.
- Size: H525 W470 D400.
- Material: Glazed fireclay, white.
- Tap/ Chainstay/ Overflow holes: No tap holes.
- Water supply fittings: Wall mounted above sink.
 - Water supply temperature (maximum): To Service engineer's specification.
 - Flow rate (maximum): 50l/min.
 - Manufacturer: Twyford Bathrooms.
 - Product reference: Pair of ½" chrome plated bib taps with exposed inlet and wall plate – 190 mm projection ref SF2702CP & SF2302CP.
- Wastes: Grated.
 - Standards: To BS EN 274-1, -2 and -3.
 - Manufacturer: Twyford.
 - Product reference: WF4343CP.
 - Size: To fit sink.
 - Material: Metal, chrome plated.
 - Tail: Unslotted.
- Traps: Bottle.
 - Standards: To BS EN 274-1, -2 and -3.
 - Manufacturer: Twyford.
 - Product reference: White plastics bottle P trap, ref WF8483XX.
 - Size: To fit waste.
 - Material: Plastics, self colour.
 - Depth of seal (minimum): 75 mm.
- Accessories: Legs and supports, ref SR3048XX.

335A WASH BASIN PEDESTAL

- Manufacturer: Twyford Bathrooms.
 - Web: www.twyfordbathrooms.com.
 - Email: twyford.technical@twyfordbathrooms.com.
 - Product reference: Galerie 600, ref GN4321WH
- Tap/ Chainstay/ Overflow holes: Central tap hole with overflow.
- Water supply fittings for central tap hole basin: Aquations Premiere chrome plated basin monobloc complete with pop-up waste, ref AQ5128CP.
 - Tap handles: Not required.
- Water supply fittings for two tap hole basin: Not required.
 - Tap handles: Not required.
- Wastes: Chrome plated grid waste fitting, ref WF4345CP.
- Traps: White plastics bottle P trap, ref WF8482XX.
- Accessories: Total Install View pedestal, ref VW4910WH.

335B SEMI-RECESSED WASH BASIN

- Manufacturer: Twyford Bathrooms.
 - Web: www.twyfordbathrooms.com.
 - Email: twyford.technical@twyfordbathrooms.com.
 - Product reference: Galerie 500 semi-recessed with Total Install, ref GN4621WH.
- Tap/ Chainstay/ Overflow holes: Central tap hole with overflow.
- Water supply fittings for central tap hole basin: Aquations Premiere chrome plated basin monobloc complete with pop-up waste, ref AQ5128CP.
 - Tap handles: Not required.
- Water supply fittings for two tap hole basin: Not required.
 - Tap handles: Not required.
- Wastes: Chrome plated grid waste fitting, ref WF4345CP.
- Traps: White plastics bottle P trap, ref WF8482XX.

335C HANDRINSE BASIN

- Manufacturer: Twyford Bathrooms.
 - Web: www.twyfordbathrooms.com.
 - Email: twyford.technical@twyfordbathrooms.com.
 - Product reference: Galerie handrinse washbasin, ref GN4821WH.
- Tap/ Chainstay/ Overflow holes: Central tap hole with overflow.
- Water supply fittings for central tap hole basin: Siron chrome plated basin monobloc complete with pop-up waste and handles, ref SN5129CP.
 - Tap handles: Not required.
- Water supply fittings for two tap hole basin: Not required.
 - Tap handles: Not required.
- Wastes: Chrome plated grid waste fitting, ref WF4345CP.
- Traps: White plastics bottle P trap, ref WF8482XX.
- Accessories: Pedestal, ref GN4920WH.

355A ACRYLIC BATH

- Manufacturer: Twyford Bathrooms.
 - Web: www.twyfordbathrooms.com.
 - Email: twyford.technical@twyfordbathrooms.com.
 - Product reference: Galerie bath with Total Install, ref GN8552WH.
- Tap/ Chainstay/ Overflow holes: Two centre tap holes with overflow.
- Taps for no tap hole bath: -.
- Taps for two tap hole bath: Clause 375E.
- Wastes: Contractor's choice.

375 SHOWER UNITS DOMESTIC

- Tray: Not applicable.
 - Manufacturer: Not applicable.
 - Product reference: Not applicable.
 - Size: Not applicable.
 - Material: Not applicable.
- Shower fittings: Thermostatic shower mixer, concealed, handspray and hose.
 - Manufacturer: Ideal Standard (UK) Ltd.
 - Product reference:
 - Thermostatic mixer: A4105 TT Active shower faceplate and handles + A3969 TT built in thermostatic shower valve, body only. TMV 3;
 - Shower kit: B9416 Idealrain M3 shower kit with 3 function 100mm shower handspray, 600mm rail & 1.35m hose.
 - Finish: Chrome plated.
 - Operating control: Manual.
 - Water supply temperature (maximum): 40°C.
 - Flow rate: 8 L/ min.
- Wastes: Not applicable .
 - Standards: To BS EN 274-1, -2 and -3.
 - Manufacturer: Not applicable.
 - Product reference: Not applicable.
 - Size: DN 40.
 - Material: Not applicable.
 - Tail: Unslotted.
- Traps: Not applicable.
 - Standards: To BS EN 274-1, -2 and -3.
 - Manufacturer: Not applicable.
 - Product reference: Not applicable.
 - Size: DN 40.
 - Material: Not applicable.
 - Depth of seal (minimum): 50 mm.
- Enclosure: White nylon curtain.
 - Manufacturer: Refer to clause 492.
 - Product reference: Refer to clause 492.
- Accessories: As recommended by manufacturer to complete installation.

375A WET FLOOR CONCEALED FORMERS

- Manufacturer: On The Level.
 - Web: www.onthelevel.co.uk.
 - Email: sales@onthelevel.co.uk.
 - Product reference: Concealed Trays For Level Access
- Type: Wheelchair flat: 1200 square
 - 4 Bed flat: 1200 x 1000.
- Grating: -.
- Gully: OTL TSG2 SS.
- Screens/ Doors/ Curtains: -.
- Accessories: batten or board to bring former level with existing floor level. (estimated 40mm screed depth).

375B SHOWER PANELS

- Manufacturer: Delabie UK Ltd.
 - Web: www.douglasdelabie.co.uk.
 - Email: technical@douglasdelabie.co.uk.
 - Product reference: 714700GR and 825216 or similar.
- Spray grid: Required.
- Soap dish: 710500.

375C STRAIGHT CURTAIN RAILS

- Manufacturer: Delabie UK Ltd.
 - Web: www.douglasdelabie.co.uk.
 - Email: technical@douglasdelabie.co.uk.
 - Product reference:
 - 4359 - 2m length, 20mm diameter or similar
 - 1358 - telescopic max 2.16m aluminium.
- Fixings: 2391.
- Shower curtain: 387.
- Accessories: 390 bis.

375D ANGLED CURTAIN RAILS

- Manufacturer: Delabie UK Ltd.
 - Web: www.douglasdelabie.co.uk.
 - Email: technical@douglasdelabie.co.uk.
 - Product reference: 900x900 20mm diameter stainless steel. Reference: 1267 or similar.
- Fixings: incl.
- Shower curtain: 387.
- Accessories: 390 bis.

375E THERMOSTATIC SHOWER MIXER FOR BATHS

- Manufacturer: GROHE Ltd.
 - Web: www.grohe.co.uk.
 - Email: martin.rowell@grohe.com.
 - Product reference:
 - 34484001 GROHTherm 2000 with CoolTouch or similar
 - 18121000 pair pillar unions for bath mounting
 - 2759800E shower rail, handset and hose. 5.8l/min maximum flow .

375F THERMOSTATIC SHOWER MIXER

- Manufacturer: GROHE Ltd.
 - Web: www.grohe.co.uk.
 - Email: martin.rowell@grohe.com.
 - Product reference:
 - 27922000 GROHE New Tempesta Cosmopolitan shower System 160 for wall mounting or similar.

379A DRINKING FOUNTAINS

- Manufacturer: Franke Sissons Ltd.
 - Web: www.franke-ws.com.
 - Email: ws-marketing.gb@franke.com.
 - Product reference: ANMX306 or similar. fountain and bottle filler.

436 HANDRAILS AND GRAB BARS TO AMBULANT DISABLED WC

- Manufacturer: Ideal Standard (UK) Ltd, The Bathroom Works, National Avenue, Kingston upon Hull HU5 4HS
 Tel [REDACTED] Fax [REDACTED]
 Email: info@idealspec.co.uk, Web: www.idealspec.co.uk.
 - Product reference: S6454 Contour 21 grab rail straight.
 - Installation: Wall mounted vertically and horizontally in accordance with BS8300.
 - Diameter: 35mm. - Length: 600mm .
 - Material: Aluminium .
 - Finish/ Colour: Polyester powder coated, colour TBC .

- 436A HANDRAILS AND GRAB BARS
 - Manufacturer: Twyford Bathrooms.
 - Web: www.twyfordbathrooms.com.
 - Email: twyford.technical@twyfordbathrooms.com.
 - Product reference: Avalon support grab rail 600 mm long, ref SR5902WH (white) for door mounting - or similar.

- 437 DROP DOWN SUPPORT RAIL TO AMBULANT DISABLED WC
 - Manufacturer: Ideal Standard (UK) Ltd, The Bathroom Works, National Avenue, Kingston upon Hull HU5 4HS
 - Tel [REDACTED] Fax [REDACTED]
 - Email: info@idealspec.co.uk, Web: www.idealspec.co.uk.
 - Product reference: S6467 Contour 21 hinged arm support rail.
 - Diameter: 35mm. - Projection: 800mm .
 - Material: Aluminium .
 - Finish/ Colour: Polyester powder coated, colour TBC .
 - Installation: Wall mounted in accordance with BS8300 .
 - Accessories: S6468 Toilet roll holder for Contour 21 hinged support arm .

- 462 TOILET PAPER HOLDERS GENERALLY
 - Manufacturer: Submit proposals
 - Type: Jumbo toilet roll holder.
 - Product reference: Submit proposals.
 - Material/ finish: Brushed stainless steel.
 - Finish/ Colour: Satin.

- 462A TOILET PAPER HOLDERS
 - Manufacturer: Laidlaw Solutions.
 - Web: www.laidlaw.net.
 - Email: technical@laidlaw.net.
 - Product reference: Orbis Classic Toilet Roll Holder
 - Type: 80 801.
 - Finish: SS7.

- 466A TOWEL RAILS [BATHROOMS]
 - Manufacturer: Ideal Standard (UK) Ltd.
 - Web: www.idealspec.co.uk.
 - Email: ukcustcare@idealstandard.com.
 - Product reference: N1320 single towel rail or similar

- 472A HAND DRIERS GENERAL
 - Standard: To BS EN 60335-2-23.
 - Type: High velocity air.
 - Manufacturer: Xlerator.
 - Product reference: Xlerator Hand Dryer White -XLW 500W or similar.
 - Operation: Automatic.
 - Heater power rating: 500W.
 - Enclosure: Powder coated aluminium.
 - Colour: TBA.
 - Fixing arrangement: Surface.
 - Ingress protection to BS EN 60529: IP23.
 - Noise level at 1 m (maximum): -.
 - Features: Hands only.

492 PRIVACY CURTAINS ACCESSIBLE SHOWERS.

- Manufacturer: Submit proposals.
 - Type: Straight rail with curtain.
 - Product reference: Submit proposals
 - Length: Approx. 1100mm.
- Material:
 - Rail: Chrome plated brass.
 - Curtain: Nylon, white.
- Finish/ Colour: N/A.

505 LINEAR DRAINAGE TO TILED FLOORS

- Type: ACO Modular 125.
- Manufacturer: ACO Building Drainage Helpline on [REDACTED], e-mail buildingdrainage@aco.co.uk.
 - Product reference: ACO Modular 125. Intercept Grating (Locked).
- General dimensions: 125mm grating, 50mm min depth, 500 modular length - refer to drawings.
- Outlet connection: Horizontal trapped outlet.
- Thickness of floor finish: 9mm tile + 3mm adhesive.

510 POINT DRAINAGE - FLOOR GULLY TO VINYL FLOORS

- Type: Sheet floor gully, trapped. Stainless steel cover plate and clamping ring.
- Manufacturer: On The Level
 - Web: www.onthelevel.co.uk
 - Email: sales@onthelevel.co.uk
 - Tel: [REDACTED]
 - Fax: [REDACTED]
 - Address: Unit 8 Youngs Industrial Estate, Stanbridge Road, Leighton Buzzard, Bedfordshire LU7 4BQ.
 - Product reference: TSG2SS.
- General dimensions: 2" outlet 130mm height.
- Outlet connection: To be confirmed by Service engineer.
- Thickness of floor finish: 2mm excl screed and latex.

580 SEALANT FOR POINTING

- Standard: To BS EN ISO 11600.
 - Class: F20HM.
- Type: Silicone based to BS 5885. Type B with fungicide.
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Colour: TBC.

EXECUTION

610 INSTALLATION GENERALLY

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

613 COMPATIBILITY OF COMPONENTS

- General: Each sanitary assembly must consist of functionally compatible components, preferably obtained from a single manufacturer.
- Exceptions: None.

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.

650 INSTALLING WC PANS

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

660 INSTALLING SLAB URINALS

- Waterproofing of walls and floor (specified elsewhere): Completed before fixing urinal components.
- Gap between components: 3 mm.
- Space behind channels and slabs: Grout with 1:5 cement:sand grout.
- Pointing: Rake out joints to 10 mm depth. Point flush with waterproof jointing compound recommended by urinal manufacturer.

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.

755 SEALANT BEDDING AND POINTING

- Bedding: Bed and point basins to underside of vanity units. .
- Pointing: Joints between appliances and splashbacks. .

N14

General internal signage systems

N14 General internal signage systems

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

GENERAL

110 SIGNAGE SYSTEM FOR DIRECTORY AND WAYFINDING

- System manufacturer: Submit proposals .
 - Product reference: Submit proposals .
- Layout and dimensions: TBC .
- Lettering:
 - Language: English .
 - Font: Foundry TBC .
 - Colour: RAL colour TBC .
 - Size: TBC .
- Symbols and graphics: Logo .
 - Colour: Corporate colour RAL TBC .
 - Size: TBC .
- Background colour: RAL colour TBC .
- Sign type: Aluminium plate .
 - Inserts: Manufacturer's standard .
 - Manufacturing process: Screen print .
- Supports/ Fixings: Wall mounted, screw-fixed concealed .
- Accessories: To be compliant with AD Part M and BS8300 requirements .

111 SIGNAGE SYSTEM FOR DOORS

- System manufacturer: Submit proposals .
 - Product reference: Submit proposals .
- Layout and dimensions: TBC .
- Lettering:
 - Language: English .
 - Font: Foundry TBC .
 - Colour: RAL colour TBC .
 - Size: TBC .
- Symbols and graphics: Not applicable .
 - Colour: Not applicable .
 - Size: Not applicable .
- Background colour: RAL colour TBC .
- Sign type: Aluminium plate .
 - Inserts: Manufacturer's standard .
 - Manufacturing process: Screen print .
- Supports/ Fixings: Wall mounted, screw-fixed concealed .
- Accessories: To be compliant with AD Part M and BS8300 requirements .

- 130 EXTERNAL SIGNAGE SYSTEM DIRECTORY POST MOUNTED
- System manufacturer: Submit proposals .
 - Product reference: Submit proposals .
 - Layout and dimensions: TBC .
 - Lettering:
 - Language: English .
 - Font: Foundry TBC .
 - Colour: RAL colour TBC .
 - Size: TBC .
 - Symbols and graphics: Logo, arrows .
 - Colour: TBC .
 - Size: TBC .
 - Background colour: RAL colour TBC .
 - Sign type: Stove enamelled .
 - Inserts: Manufacturer's standard .
 - Manufacturing process: Contractor's choice .
 - Supports/ Fixings: Posts for external signs .
 - Accessories: To be compliant with AD Part M and BS8300 requirements .
- 131 EXTERNAL SIGNAGE SYSTEM WAYFINDING WALL MOUNTED
- System manufacturer: Submit proposals .
 - Product reference: Submit proposals .
 - Layout and dimensions: TBC .
 - Lettering:
 - Language: English .
 - Font: Foundry TBC .
 - Colour: RAL colour TBC .
 - Size: TBC .
 - Symbols and graphics: Logo, arrows .
 - Colour: TBC .
 - Size: TBC .
 - Background colour: RAL colour TBC .
 - Sign type: Stove enamelled .
 - Inserts: Manufacturer's standard .
 - Manufacturing process: Contractor's choice .
 - Supports/ Fixings: Wall mounted, concealed screw fixed .
 - Accessories: To be compliant with AD Part M and BS8300 requirements .

SYSTEM PERFORMANCE

- 210 GENERAL REQUIREMENTS
- Signage system: Complete to BS 559, including facing information, components, inserts, accessories and fixings necessary to complete the system.
 - Comply with the requirements of: Wayfinding strategy.
 - Geometric shapes, colours and layout: In accordance with BS 8501.
 - Design standard for disabled people: In accordance with BS 8300.
 - Proposals: Submit drawings, schedules, technical information, calculations and manufacturer's literature.
- 240 FIRE REACTION OF INTERNAL SIGNAGE SYSTEM
- Non flammable surface:
 - Standard: Min. Class 1 to BS 476-7 .
- 280 DESIGN LIFE SIGNAGE SYSTEMS GENERALLY
- Duration: 10 years .
 - Subject to reasonable wear and tear.
 - Condition of use: Subject to regular maintenance.

295 SIGNAGE SAMPLES BOARD

- Samples board: Submit.
 - Content: Selected labelled signs, showing methods of fixing.
 - Conformity: Retain samples on site for the duration of the contract or until instructed to remove.
 - Delivered product: To conform with labelled samples.

PRODUCTS**305 PRODUCTS GENERALLY**

- Standard: To BS 559.

EXECUTION**610 FIXING SIGNS GENERALLY**

- Installation: To BS 559.
 - Secure, plumb and level.
- Strength of fasteners: Sufficient to support all live and dead loads.
- Fasteners and or adhesives: As section Z20.
- Fixings showing on surface of sign: Must not detract from the message being displayed.

COMPLETION**910 DOCUMENTATION**

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

N15

Internal fire and safety signage systems

N15 Internal fire and safety signage systems

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

GENERAL

120 SAFETY SIGNAGE SYSTEMS FOR MANDATORY ACTION EXTERNAL

- System manufacturer: Submit proposals .
 - Product reference: Submit proposals .
- Layout and dimensions: TBC .
 - Language: English.
- Sign type: Adhesive vinyl on Aluminium Sheet .
 - Manufacturing process: Manufacturer's standard .
- Supports/ Fixings: Wall mounted, screw fixed .
- Accessories: As required to complete installation .

121 SAFETY SIGNAGE SYSTEMS FOR MANDATORY ACTION INTERNAL

- System manufacturer: Submit proposals .
 - Product reference: Rigid PVC Stock Signs .
- Layout and dimensions: TBC .
 - Language: English.
- Sign type: Plastics sheet .
 - Manufacturing process: Screen print .
- Supports/ Fixings: Wall mounted, screw fixed .
- Accessories: As required to complete installation .

SYSTEM PERFORMANCE

210 GENERAL REQUIREMENTS

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

240 SIGNAGE SYSTEM SPECIFICATION

- Content: Signs including facing information, components, inserts, accessories and fixings necessary to complete the system.
- Geometric shapes, colours and layout: To BS ISO 3864-1.
- Escape route: In accordance with BS 5499-4 and BS ISO 16069.
- Safety meaning: In accordance with BS ISO 7010.
- Water safety: In accordance with BS ISO 20712-1.

270 FIRE REACTION OF FIRE SIGNAGE SYSTEM

- Non flammable surface:
 - Standard: Min. Class 1 to BS 476-7 .

280 DESIGN LIFE OF FIRE SIGNAGE SYSTEM

- Duration: Ten years .
 - Subject to reasonable wear and tear.
- Condition of use: Subject to regular maintenance.

PRODUCTS**305 INTERNAL SIGNAGE PRODUCTS GENERALLY**

- Standard: To BS 559.
- Colorimetric and photometric properties: To BS ISO 3864-4.

EXECUTION**610 FIXING SIGNS GENERALLY**

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

COMPLETION**910 DOCUMENTATION**

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

P

Building fabric sundries

P10

Sundry insulation/ proofing work

P10 Sundry insulation/ proofing work**SUNDRY INSULATION/ PROOFING WORK**

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

TYPES OF INSULATION**191 INSULATION FITTED BETWEEN MULLIONS BEHIND SPANDREL PANELS**

- Manufacturer: Rockwool Limited, Pencoed, Bridgend, CF35 6NY
Tel: [REDACTED] Email: customer.support@rockwool.co.uk, Web: www.rockwool.co.uk.
 - Product reference: RW4, factory faced.
 - Density: Not less than 80kg/m³
- Material: Mineral wool to BS EN 13162.
 - Facing: Tissue or aluminium foil faced as required.
- Recycled content: Submit proposals.
- Thickness: To achieve a U value of 0.15 W/m²K.
- Installation requirements:
 - Joints: Butted, no gaps. Seal joints with adhesive tape.
 - Fasteners: Use where necessary to retain insulation and/ or prevent slumping.

218 INSULATION FIXED TO BACKING WALL GENERALLY

- Manufacturer: Rockwool Limited, Pencoed, Bridgend, CF35 6NY
Tel: [REDACTED] Email: customer.support@rockwool.co.uk, Web: www.rockwool.co.uk.
 - Product reference: RW5, factory faced.
 - Density: Not less than 100kg/m³
- Material: Mineral wool to BS EN 13162.
 - Facing: Tissue or aluminium foil faced as required.
- Recycled content: Submit proposals.
- Thickness: To achieve a U value of 0.15 W/m²K.
- Installation requirements:
 - Joints: Butted, no gaps. Cut and fit tightly between/around cladding supports.
 - Fasteners: Use where necessary to retain insulation and/ or prevent slumping.

235 COMPRESSIBLE INSULATION IN GAPS

- Manufacturer: Rockwool Limited, Pencoed, Bridgend, CF35 6NY
Tel: [REDACTED] Email: customer.support@rockwool.co.uk, Web: www.rockwool.co.uk.
 - Product reference: Flexible Slabs RWA45.
 - Density: Not less than 45kg/m³
- Material: Mineral wool to BS EN 13162.
 - Facing: Not required.
- Recycled content: Submit proposals.
- Thickness: To suite application available in 30/ 40/ 50/ 60/ 75/ /100mm.
- Installation requirements:
 - Joints: Butted, no gaps. Cut and fit tightly between/around cladding supports.
 - Fasteners: Use where necessary to retain insulation and/ or prevent slumping.

255 RIGID BOARD INSULATION GRC CLADDING

- Material: Zero ODP rigid polyisocyanurate insulation board.
Manufacturer: Celotex Ltd, Lady Lane Industrial Estate, Hadleigh Ipswich Suffolk IP7 6BA
T: [REDACTED]
Web: celotex.co.uk, Email: technical@celotex.co.uk.
- Product reference: FR5000 (aluminium foil faced both sides).
- Performance: To achieve U-value 0.15W/m²K.
- Thickness: No less than 100mm.
- Conductivity: 0.021W/mK.
- Supports: RC column.
- Installation: Tightly fitted as continuous layer with closely butted joints, leaving no gaps.
Cut and fit tightly between/around cladding supports.

256 RIGID BOARD INSULATION BELOW GROUND/DPC

- Material: Zero ODP rigid extruded polystyrene board.
- Manufacturer: Kingspan Insulation Ltd, Pembridge, Leominster, Herefordshire HR6 9LA
Tel: [REDACTED] Fax: [REDACTED]
Email: info@insulation.kingspan.com, Web: www.insulation.kingspan.com.
- Product reference: Styrozone H350 R.
- Performance: To prevent/reduce cold bridging.
- Thickness: min. 30mm to max. 120mm.
- Conductivity: 0.029W/mK.
- Density: 30 kg/m³
- Compressive strength: 300kPa.
- Supports: RC slab horizontally, varies vertically.
- Installation: Tightly fitted as continuous layer with closely butted joints, leaving no gaps.

258 RIGID BOARD INSULATION TO DRAINAGE CAVITY

- Material: Zero ODP rigid thermoset phenolic insulation board.
- Manufacturer: Kingspan Insulation Ltd, Pembridge, Leominster, Herefordshire HR6 9LA
Tel: [REDACTED] Fax: [REDACTED]
Email: info@insulation.kingspan.com, Web: www.insulation.kingspan.com.
- Product reference: Kooltherm K8.
- Performance: To achieve U-value 0.15W/m²K in conjunction with clause K10/155.
- Thickness: TBC.
- Conductivity: 0.021W/mK (average).
- Compressive strength: 100kPa.
- Supports: RC slab edge and cement fibre board.
- Installation: Tightly fitted as continuous layer with closely butted joints, leaving no gaps.

310 VAPOUR CONTROL LAYER GENERALLY

- Manufacturer: Industrial Textiles & Plastics Ltd, Stillington Road, Easingwold, York YO61 3FA
Tel: [REDACTED] Fax: [REDACTED]
Email: info@itpltd.com, Web: www.itpltd.com.
- Product reference: Powerlon VCL150.
- Material: Polyethylene-based membranes with a mono-filament scrim for tensile strength.
- Minimum vapour resistance: 272 MNs/g.
- Installation requirements:
 - Setting out: Joints minimized.
 - Method of fixing: Laid loose and sealed at edges to manufacturer's recommendation to provide continuity.
 - Joints: At supports only, lapped 150 mm minimum.
 - Openings: Membrane fixed to reveals.
 - Joints and edges: Sealed with double sided tape with vapour resistivity not less than the vapour control layer.
- Penetrations: Sealed.
- Other requirements: As required to complete installation.

320 BREATHER MEMBRANE

- Manufacturer: Manufacturer and reference: Industrial Textiles & Plastics Ltd, Stillington Road, Easingwold, York YO61 3FA
Tel: [REDACTED] Fax: [REDACTED]
Email: info@itpltd.com, Web: www.itpltd.com.
- Product reference: UltraPerm Lite.
- Water vapour permeability: min. 1700g/m²/24hrs.
- Material: Non-woven polyolefin triple laminate membrane.
- Installation requirements:
 - Setting out: Joints minimized. Membrane to form a continuous barrier to prevent water, snow and wind blown dust reaching the substrate.
 - Method of fixing: Laid loose and sealed at edges to manufacturer's recommendation to provide continuity.
 - Joints: Lapped 100 mm minimum horizontally and 150 mm minimum vertically.
 - Openings: Membrane fixed to reveals.
 - Bottom edges: Membrane lapped over flashings, sills, etc. to allow free drainage to the exterior.
- Penetrations: Sealed.

430 WIRED MINERAL WOOL SMALL CAVITY BARRIERS

- Material: Wire reinforced mineral wool minimum 50 mm thick.
- Fire resistance rating: To BS EN 1363, EI 30.
- Installation requirements:
 - Fasteners: Staples at maximum 150 mm centres. Fold cavity barrier if necessary to ensure a tight fit.
 - Joints and intersections: Butted, no gaps.

432 CAVITY BARRIERS

- Manufacturer: Rockwool Limited, Pencoed, Bridgend, CF35 6NY
Tel: [REDACTED] Email: customer.support@rockwool.co.uk, Web: www.rockwool.co.uk.
- Product reference: SP 60 Firestop Slab.
- Fire resistance rating: Integrity/ Insulation when tested to BS 476-20: 60/60.
- Thickness: 75mm.
 - Installation requirements: Continuous, with minimum joints.
 - Fasteners: Cavity barrier installed in accordance with manufacturers instructions, slab edge fire-stopping installed to ensure integrity of installation including fibre-migration, acoustic sealing and fire stopping.
- Other requirements: Run horizontal at floor plate/ vertical at wall abutments.

435 VENTILATED CAVITY BARRIERS

- Manufacturer: Downer Cladding Systems Ltd, Oaksmere Business Park, Yaxley, Eye, Suffolk IP23 8BW
Tel: [REDACTED] Fax: [REDACTED]
Web: <http://www.downercladding.com>.
 - Product reference: Lamatherm CW-RSH60 (horizontal), Lamatherm CW-RSV60 (vertical).
- Material:
 - Horizontal: Mineral wool lamella faced with reinforced aluminium foil and intumescent edge strip.
 - Vertical: Mineral wool lamella faced with reinforced aluminium foil on all sides .
- Size: Width to suit cavity, length cut to fit.
- Thickness: 90mm.
- Fire resistance rating: 30/30 to BS 476, Part 20:1987 and BS EN 1366-4:2006.
- Free air provision: To leave 25mm ventilation gap horizontally; vertically tightly packed.
- Installation requirements: Continuous, with minimum joints.
 - Fasteners: Lamatherm angle brackets fixed in accordance with manufacturer's recommendations.
- Other requirements: C.

P20

Unframed isolated trims/ skirtings/ sundry items

P20 Unframed isolated trims/ skirtings/ sundry items

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS

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- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- All manufacturers of MDF boards must provide evidence that their product is tested in accordance with EN 13986:2004 and complies with Formaldehyde class E1. They must verify that regulated wood preservatives are absent as defined by the standard.
- All timber supplied or used in timber products must be from certified sources. Evidence must be provided by the supplier/manufacturer in form of FSC or PEFC certificates. Additional CEPT documentation may be supplied for verification purposes.

180 PROPRIETARY PIPEWORK ENCASEMENT

- Manufacturer: Alumasc Interior Building Products, Halesfield 19, Telford, Shropshire TF7 4QT
Tel: [REDACTED] Fax: [REDACTED]
Web: <http://www.pendock.co.uk>, Email: sales@pendock.co.uk.
- Product reference: Pendock TK & TKD Plywood Casing System .
- Size: Refer to drawing (04)200, (04)201, (42)200.
- Finish/ Colour: Melamine/White.
- Accessories:
 - Internal and external corners;
 - Butt joint covers;
 - Stop ends.
- Fixing: Face fixed to softwood battens with zinc screws with decorative white caps and collars.
 - Position of fixings: 50 mm from each end and equally spaced along the profile at approx. 600 centres.
 - Jointing: Butt joints incorporating 'push fit' joint covers.

201 MEDIUM DENSITY FIBREBOARD SKIRTING BOARDS

- Manufacturer: Submit proposals.
- Product reference: Contractor's choice.
- Standard: To BS EN 622-5.
- Type: MDF.
- Formaldehyde class: To BS EN 622-1, Class E1.
- Fire rating: Not applicable.
- Thickness: 15mm
- Height: 110mm.
Edges: Pencil rounded outward facing top edge 2mm.
- Finish: Painted, colour TBC.
- Support/ Fixing: Concealed screw fixing with plugs.
- Other requirements: No regulated wood preservatives

203 MEDIUM DENSITY FIBREBOARD TRIMS & ARCHITRAVES

- Manufacturer: Submit proposals.
 - Product reference: Contractor's choice.
- Standard: To BS EN 622-5.
 - Type: MDF.
 - Formaldehyde class: To BS EN 622-1, Class E1.
- Fire rating: Not applicable.
- Thickness: 25mm.
- Edges: Square shaped edges.
- Finish: Painted, colour TBC.
- Support/ Fixing: Fix to softwood grounds with lost head nails at 600 mm centres.
- Other requirements: No regulated wood preservatives

240A PLYWOOD WINDOW REVEALS AND CILLS

- Manufacturer: Specialised Panel Products Ltd
 contact: Bruce Inker Tel: [REDACTED] Mobile: [REDACTED]
 - Product reference: Birch faced ply 15mm.
- ply species: Birch throughout.
- Appearance class to BS EN 635: Class I/II.
- Bond quality to BS EN 314-2: Class 1.
- Fire rating: Class 1 (using the UK testing methods) or Class C-s3, d2 (using the European testing methods).
- Thickness: 15mm.
- Edges: birch lipping, pinned and glued. Size to cover edge of new and existing cladding.
- Finish: Prepared and primed as section M60 .
- Support/ Fixing: Pinned and glued to softwood grounds and existing window surround..

EXECUTION

510 INSTALLATION GENERALLY

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

P21

Door/ window ironmongery

P21 Door/ window ironmongery

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

GENERAL

121 IRONMONGERY FROM SINGLE PROPRIETARY RANGE

- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands, WS1 4DL,
Tel. [REDACTED] Fax: [REDACTED]
Web: www.security.ingersollrand.com .
- Product reference: Briton Specification Series Door Hardware .
- Principal material/ finish: Satin stainless steel, 316 Grade .
- Items unavailable within selected range: Submit proposals.

141 SAMPLE BOARDS

- General: Before placing orders with suppliers submit a sample board, containing labelled samples of ironmongery and showing methods of fixing.
- Range: Include Lever handles, escutcheon, lockcase, pull handles, push plates and WC gender signs .
- Conformity: Retain board on site in an approved location for the duration of the contract.
Ensure conformity of ironmongery as delivered with labelled samples.

170 IRONMONGERY FOR FIRE DOORS

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

180 CATEGORY OF DUTY FOR DOOR IRONMONGERY

- Standard: To DD 171.
- Category of duty of doors: As per section L20 .
- General: Durability of ironmongery components to be compatible with stated category of duty of each door leaf.
- Exclusions: Ironmongery with specific duty or 'category of use' defined elsewhere.
Documentation: Before placing orders with suppliers submit documentation showing product compliance with stated category of duty.

DOOR HANGING DEVICES

320 DOOR HINGES GENERALLY

- Manufacturer: Submit proposals .
 - Product reference: To manufacturer's/supplier's recommendation .
- Type: Ball bearing butt hinges to BS EN1935 Grade 13 .
- Size: 102x76x3mm .
- Material/ finish: Satin stainless steel .
- Other requirements: None .

DOOR OPERATING DEVICES

410 OVERHEAD DOOR CLOSERS GENERALLY

- Standard: To BS EN 1154.
 - Door closing devices to fire/ smoke control doors: CE marked.
- Manufacturer: DORMA UK Limited, Door controls Division, Wilbury Way, Hitchin, Hertfordshire, SG4 0AB
 Tel: [REDACTED] Fax: [REDACTED]
 Email: hardware@dorma-uk.co.uk, Web: www.dorma-uk.co.uk .
 - Product reference: DORMA TS 92 .
- Type: Surface mounted cam action closer
 CERRIFIRE approved. cert. no. CF119 .
- Power size: EN 2-4 .
- Other functions: As schedule .
- Casing finish: Stainless steel .
- Operational adjustment:
 - Variable power: Matched to size, weight and location of doors.
 - Latched doors: Override latches and/ or door seals when fitted.
 - Unlatched doors: Hold shut under normal working conditions.
 - Closing against smoke seals of fire doors: Positive. No gaps.

411 OVERHEAD DOOR CLOSERS TO DOOR WITHOUT DOORSTOP

- Standard: To BS EN 1154.
 - Door closing devices to fire/ smoke control doors: CE marked.
- Manufacturer: DORMA UK Limited, Door controls Division, Wilbury Way, Hitchin, Hertfordshire, SG4 0AB
 Tel: [REDACTED] Fax: [REDACTED]
 Email: hardware@dorma-uk.co.uk, Web: www.dorma-uk.co.uk .
 - Product reference: DORMA TS 93 .
- Type: Surface mounted cam action closer
 CERRIFIRE approved. cert. no. CF119 .
- Power size: EN 2-5 .
- Other functions: Adjustable backcheck .
- Casing finish: Stainless steel .
- Operational adjustment:
 - Variable power: Matched to size, weight and location of doors.
 - Latched doors: Override latches and/ or door seals when fitted.
 - Unlatched doors: Hold shut under normal working conditions.
 - Closing against smoke seals of fire doors: Positive. No gaps.

DOOR SECURING DEVICES

- 510 THIEF RESISTANT DOOR LOCKS ENTRANCE DOORS TO FLATS, OFFICES & COMMUNITY ROOM
- Standard: To BS 3621 and Kitemarked.
 - Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands WS1 4DL .
Tel. [REDACTED] Fax. [REDACTED]
Web: www.security.ingersollrand.com .
 - Product reference: Briton 5520 Cylinder Sashlock .
 - Type: Mortice sashlock for europrofile cylinder
 - Cylinder: CISA Astral S with Grade 1 attack resistance .
 - Backset: 60mm .
 - Material/ finish:
 - Case: Mild steel 1.5mm with a black powder coated finish;
 - Forend & strike: Satin stainless steel;
 - Cylinder: Satin nickel plated stainless steel .
 - Keying: TBC .
- 515 DOOR LOCKS OFFICES, NURSERY, BOXING CLUB, COMMUNITY ROOM
- Standard: To BS EN 12209.
 - Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands WS1 4DL .
Tel. [REDACTED] Fax. [REDACTED]
Web: www.security.ingersollrand.com .
 - Product reference: Briton 5520 Cylinder Sashlock .
 - Type: Mortice sashlock for standard europrofile cylinder .
 - Backset: 60mm .
 - Material/ finish:
 - Case: Mild steel 1.5mm with a black powder coated finish;
 - Forend & strike: Satin stainless steel .
 - Keying: TBC .
- 516 DOOR LOCKS FLATS
- Standard: To BS EN 12209.
 - Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands WS1 4DL .
Tel. [REDACTED] Fax. [REDACTED]
Web: www.security.ingersollrand.com .
 - Product reference: Legge 2736 Lever Sashlock .
 - Type: Mortice sashlock for lever key .
 - Backset: 57 mm .
 - Material/ finish:
 - Case: Mild steel with a black powder coated finish;
 - Forend: Satin stainless steel .
 - Keying: TBC .

520 BATHROOM DOOR LOCKS GENERALLY

- Standard: To BS EN 12209.
- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands WS1 4DL .
- Tel. [REDACTED] Fax. [REDACTED]
- Web: www.security.ingersollrand.com .
- Product reference: Briton 5520 Cylinder Sashlock .
- Type: Mortice sashlock for bathroom turn and indicator .
- Backset: 60mm .
- Material/ finish:
 - Case: Mild steel 1.5mm with a black powder coated finish;
 - Forend & strike: Satin stainless steel .
- Keying: TBC .

521 BATHROOM DOOR LOCKS SLIDING DOORS

- Standard: To BS EN 12209.
- Manufacturer: Submit proposals .
- Product reference: Submit proposals .
- Type: Clawbolt operated by turn/emergency release .
- Backset: 57mm .
- Material/ finish: Stainless steel .
- Keying: Not applicable .

577 PANIC EXIT DEVICES TO ESCAPE DOORS

- Standard: To BS EN 1125.
- Panic exit devices for locked doors on escape routes: CE marked.
- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands WS1 4DL .
- Tel. [REDACTED] Fax. [REDACTED]
- Web: www.security.ingersollrand.com .
- Product reference: Briton 570 .
- Type: Touchbar 2/3 point locking panic device with upper and lower pullman catches .
- Material/ finish: Powder coated steel, colour to match door furniture .
- Additional requirements: Security alarmed .

DOOR FURNITURE

610 LEVER HANDLES GENERALLY

- Standard: To BS EN 1906.
- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands WS1 4DL .
- Tel. [REDACTED] Fax. [REDACTED]
- Web: www.security.ingersollrand.com .
- Product reference: Briton 4640.20.R.SS .
- Style: Return to door lever handle on rose .
- Size: 20mm dia .
- Material/ finish: Satin stainless steel, grade 316 .
- Mounting: To manufacturer's recommendation .
- Additional requirements: None .

641 PULL HANDLES GENERALLY

- Standard: To BS 8424.
- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands WS1 4DL .
Tel. [REDACTED] Fax. [REDACTED]
Web: www.security.ingersollrand.com .
- Product reference: Briton 4600.20.400.1 .
- Shape: D handle .
- Diameter: 20 mm .
- Distance between centres: 400mm .
- Material/ finish: Satin stainless steel, grade 316 .
- Mounting: To manufacturer's recommendation .
- Additional requirements: None .

642 PULL HANDLES ACCESSIBLE WC & SHOWER

- Standard: To BS 8424.
- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands WS1 4DL .
Tel. [REDACTED] Fax. [REDACTED]
Web: www.security.ingersollrand.com .
- Product reference: Briton 4600.20.300.3 .
- Shape: D handle .
- Diameter: 20 mm .
- Distance between centres: 300mm .
- Material/ finish: Satin stainless steel, grade 316 .
- Mounting: To manufacturer's recommendation .
- Additional requirements: Horizontally concealed face fixed to pull side of door .

670 PUSH PLATES GENERALLY

- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands WS1 4DL .
Tel. [REDACTED] Fax. [REDACTED]
Web: www.security.ingersollrand.com .
- Product reference: Briton 4080.475 with square end, drilled .
- Size: 475x75mm .
- Material/ finish: Satin stainless steel, grade to be confirmed .
- Mounting: Screw fixed, countersunk screw heads .
- Additional requirements: None .

690 KICK PLATES GENERALLY

- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands, WS1 4DL
Tel. [REDACTED] Fax. [REDACTED]
Web: www.security.ingersollrand.com .
- Product reference: Submit proposals .
- Size: Height 400mm, width to suit door leaf .
- Material/ finish: Satin stainless steel, grade to be confirmed .
- Mounting: Screw fixed, countersunk screw heads .
- Additional requirements: None .

- 710 ESCUTCHEONS EUROPROFILE CYLINDER
- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands, WS1 4DL
Tel. [REDACTED] Fax. [REDACTED]
Web: www.security.ingersollrand.com .
- Product reference: Briton 4020.5.SS .
 - Material/ finish: Satin stainless steel, grade 316 .
 - Keyhole type: Euro profile cylinder .
 - Usage: Locks as specified in clause 510 and 515 .
- 711 ESCUTCHEONS LEVER KEY
- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands, WS1 4DL
Tel. [REDACTED] Fax. [REDACTED]
Web: www.security.ingersollrand.com .
- Product reference: Briton 4010.5.SS .
 - Material/ finish: Satin stainless steel, grade 316 .
 - Keyhole type: Lever keyhole .
 - Usage: Locks as specified in clause 516 .
- 712 ESCUTCHEONS WC GENERALLY
- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands, WS1 4DL
Tel. [REDACTED] Fax. [REDACTED]
com, Web: www.security.ingersollrand.com .
- Product reference: Briton 4030.5.SS .
 - Material/ finish: Satin stainless steel, grade 316 .
 - Keyhole type: Bathroom turn and release & indicator .
 - Usage: Locks as specified in clause 520 & 521 .
- 713 ESCUTCHEONS ACCESSIBLE WC & SHOWER
- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands, WS1 4DL
Tel. [REDACTED] Fax. [REDACTED]
Web: www.security.ingersollrand.com .
- Product reference: Briton 4035.5.SS .
 - Material/ finish: Satin stainless steel, grade 316 .
 - Keyhole type: Bathroom turn and release & indicator .
 - Usage: Locks as specified in clause 520 & 521 .
- 720 DOOR STOPS
- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands, WS1 4DL
Tel. [REDACTED] Fax. [REDACTED]
Web: www.security.ingersollrand.com .
- Product reference: Briton 4070 .
 - Type: Floor mounted rubber buffer .
 - Usage: As schedule .
- 811 DOOR MOUNTED COAT HOOKS WC
- Manufacturer: Ingersoll Rand Security Technologies, Bescot Crescent, Walsall, West Midlands, WS1 4DL
Tel. [REDACTED] Fax. [REDACTED]
Web: www.security.ingersollrand.com .
- Product reference: 0305 01 .
 - Type: Coat hook .
 - Material/ finish: Nylon, colour TBC .

890 DOOR VIEWERS FLATS

- Manufacturer: Submit proposals .
 - Product reference: Submit proposals .
- Angle of vision: 200° .
- Material/ finish: Brass nickel plated .
- Viewer body diameter: 14mm;
 - Accessories: Security flap included .
- Door thickness: 40-55mm .

895 DOOR MOUNTED AIR TRANSFER GRILLES GENERALLY

- Manufacturer: Submit proposals .
 - Product reference: To meet service engineer's requirements .
- Type: Through door composite fitting to be approved by M&E engineer .
- Size: As schedule .
- Material/ finish: As schedule .

896 DOOR MOUNTED FIRE RESISTING AIR TRANSFER GRILLES

- Manufacturer: Submit proposals .
 - Product reference: To meet service engineer's requirements .
- Type: Through door composite fitting to be approved by M&E engineer .
- Size: As schedule .
- Fire resistance: As schedule .
- Material/ finish: As schedule .

WINDOW FURNITURE**935 REMOTE WINDOW OPENERS GENERALLY**

- Manufacturer: Submit proposals .
 - Product reference: Submit proposals, to be approved by M&E engineer .
- Type: Chain opener, electrically operated .
- Material/ finish: Polyester powder coated, RAL colour and gloss level TBC .
- Features: To be controlled by smoke detection and/ or fire alarm system .

R Disposal systems

R10

Rainwater drainage systems

R10 Rainwater drainage systems

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.
- The manufacturers noted within this specification are indicative and may be substituted with similar or equal alternatives.
- Manufacturers should either provide a BRE Global BES6001 Product certificate or supply evidence of a independently certified Environmental Management System.

GENERAL

110 GRAVITY RAINWATER DRAINAGE SYSTEM

- Rainwater outlets: None.
- Gutters: PVC-U angular.
- Pipework: PVC-U.
- Below ground drainage: Submit proposals.
- Disposal: To surface water drainage.
- Controls: Not applicable.
- Accessories: Anticlimb rainwater pipe covers.

SYSTEM PERFORMANCE

221 COLLECTION AND DISTRIBUTION OF RAINWATER

- General: Complete, and without leakage or noise nuisance.

PRODUCTS

350 PVC-U GUTTERS

- Standard: To the relevant parts of BS EN 607 and BS EN 1462, Kitemark certified.
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Recycled content: 10% (minimum) to BS EN ISO 14021.
- Profile: Box.
- Nominal size: 114 mm.
- Colour: Black.
- Brackets: PVC-U 2 screw type.
 - Fixings: Stainless steel screws.
 - Size: 114mm.
- Accessories:
 - Gutter stop ends;
 - Running outlets;
 - Angles.

420 PVC-U PIPEWORK - EXTERNAL

- Standard: To BS EN 12200-1, Kitemark certified.
- Manufacturer: Submit proposals.
 - Product reference: Submit proposals.
- Recycled content: 10% (minimum) to BS EN ISO 14021.
- Section: Rectangular.
- Nominal size: DN63.
- Colour: Black.
- Brackets: PVC-U clips, black.
 - Fixings: Stainless steel screws.
 - Size: To suit pipework.
- Accessories:
 - Access fittings;
 - Adjustable offset units;
 - Connectors;
 - Bends.

EXECUTION

600 PREPARATION

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

605 INSTALLATION GENERALLY

- 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.
- Protection:
 - Fit purpose made temporary caps to prevent ingress of debris.
 - Fit access covers, cleaning eyes and blanking plates as the work proceeds.

610 FIXING AND JOINTING GUTTERS

- Joints: Watertight.
- Brackets: Securely fixed.
 - Fixings: Plugged and screwed into masonry and concrete.
 - Fixing centres: 600 mm.
 - Additional brackets: Where necessary to maintain support and stability, provide at joints in gutters and near angles and outlets.
- Roofing underlay: Dressed into gutter.

635 FIXING PIPEWORK

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

640 FIXING VERTICAL PIPEWORK

- Bracket fixings: Screwed into substrate.
- Distance between bracket fixing centres (maximum): To manufacturer's recommendations.

650 JOINTING PIPEWORK AND GUTTERS

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

700 ACCESS FOR TESTING AND MAINTENANCE

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

COMPLETION

910 GUTTER TEST

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

915 MAINTENANCE INSTRUCTIONS

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

920 IMMEDIATELY BEFORE HANDOVER

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

Z

Building fabric reference specification

Z10

Purpose made joinery

Z10 Purpose made joinery

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.

110 FABRICATION

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

120 CROSS SECTION DIMENSIONS OF TIMBER

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

130 PRESERVATIVE TREATED WOOD

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

140 MOISTURE CONTENT

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

210 LAMINATED PLASTICS VENEERED BOARDS/ PANELS

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

220 WOOD VENEERED BOARDS/ PANELS

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

250 FINISHING

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

Z11

Purpose made metalwork

Z11 Purpose made metalwork

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.

310 MATERIALS GENERALLY

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

320 STEEL LONG AND FLAT PRODUCTS

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

330 STEEL PLATE, SHEET AND STRIP

- Plates and wide flats, high yield strength steel: To BS EN 10025-6.

340 HOT ROLLED STEEL PLATE, SHEET AND STRIP

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

350 COLD ROLLED STEEL PLATE, SHEET AND STRIP

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

360 COATED STEEL FLAT PRODUCTS

- Hot dip zinc coated carbon steel sheet and strip for cold forming: To BS EN 10346 and BS EN 10143.
- Hot dip zinc coated structural steel sheet and strip: To BS EN 10143 and BS EN 10346.
- Hot dip zinc-aluminium (za) coated sheet and strip: To BS EN 10346.
- Hot dip aluminium-zinc (az) coated sheet and strip: To BS EN 10346.
- Organic coated flat products: To BS EN 10169.

370 STEEL STRUCTURAL HOLLOW SECTIONS (SHS)

- Non alloy and fine grain steels, hot finished: To BS EN 10210-1 and -2.
- Non-alloy and fine grain steels, cold formed welded: To BS EN 10219-2.
- Weather resistant steels, hot finished: To BS 7668.

380 OTHER STEEL SECTIONS

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

400 STAINLESS STEEL PRODUCTS

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

410 ALUMINIUM ALLOY PRODUCTS

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

FABRICATION

515 FABRICATION GENERALLY

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

520 COLD FORMED WORK

- Profiles: Accurate, with straight arrises.

525 ADHESIVE BONDING

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

527 WELDING GENERALLY.

- Welding procedures:
 - Method and standard: Metal arc welding to BS EN 1011-1 and -2 and TIG welding to BS EN 1011-3.
 - Welding Procedure Specification (WPS): Submit 2 copies before commencement of welding.
- Preparation:
 - Joint preparation: Clean thoroughly.
 - Surfaces of materials that will be self-finished and visible in the completed work: protect from weld splatter.
- Jointing:
 - Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
 - Dissimilar metals: Welding not permitted.
 - Strength requirements: Welds to achieve design loads.
 - Heat straightening: Not permitted.
 - Complex assemblies: Agree priority for welding members to minimize distortion caused by subsequent welds.
 - Tack welds: Use only for temporary attachment.
 - Jigs: Provide to support and restrain members during welding.
 - Filler plates: Not permitted.
 - Lap joints: Minimum 5 x metal thickness or 25 mm, whichever is greater.
 - Weld terminations: Clean and sound.

530 STAINLESS STEEL FABRICATION

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

555 BRAZING

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

FINISHING

710 FINISHING WELDED AND BRAZED JOINTS VISIBLE IN COMPLETE WORK

- Standard: To BS EN ISO 8501-3.
 - Preparation grade: P3.
- Butt joints: Smooth, and flush with adjacent surfaces.
- Fillet joints: Neat.
- Grinding: Grind smooth where indicated on drawings.

745 PREPARATION FOR APPLICATION OF COATINGS

- General: Complete fabrication, and drill fixing holes before applying coatings.
- Paint, grease, flux, rust, burrs and sharp arrises: Remove.

780 GALVANIZING

- Standard: To BS EN ISO 1461.
- Preparation:
 - Vent and drain holes: Provide in accordance with BS EN ISO 14713-1 and -2. Seal after sections have been drained and cooled.
 - Components subjected to cold working stresses: Heat treat to relieve stresses before galvanizing.
 - Welding slag: Remove.
 - Component cleaning: To BS EN ISO 8501-3.
 - Grade: St 2½.

COMPLETION**910 DOCUMENTATION**

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

920 COMPLETION

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

Z12

Preservative/ fire retardant treatment

Z12 Preservative/ fire retardant treatment

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.

110 TREATMENT APPLICATION

- Timing: After cutting and machining timber, and before assembling components.
- Processor: Licensed by manufacturer of specified treatment solution.
 - Operatives: Must have completed the WPA training scheme .
- Certification: For each batch of timber provide a certificate of assurance that treatment has been carried out as specified.

120 COMMODITY SPECIFICATIONS

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

130 PRESERVATIVE TREATMENT SOLUTION STRENGTHS/ TREATMENT CYCLES

- General: Select to achieve specified service life and to suit treatability of specified wood species.

160 ORGANIC SOLVENT PRESERVATIVE TREATMENT

- Solution:
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Application: Double vacuum + low pressure impregnation, or immersion.
- Moisture content of wood:
 - At time of treatment: As specified for the timber/ component at time of fixing.
 - After treatment: Timber to be surface dry before use.

165 WATER-BASED MICROEMULSION PRESERVATIVE TREATMENT

- Solution:
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Application: Double vacuum + low pressure impregnation.
- Moisture content of wood:
 - At time of treatment: As specified for the timber/ component at time of fixing.
 - After treatment: Timber to be surface dry before use.

167 BORON COMPOUND PRESERVATIVE TREATMENT

- Solution:
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Application: High pressure impregnation.
- Moisture content of wood:
 - At time of treatment: Not more than 28%.
 - After treatment: Timber to be surface dry before using.

210 FIRE RETARDANT TREATMENT

- Solution type: Dry interior.
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Application: Vacuum + pressure impregnation.
- Moisture content of wood:
 - At time of treatment: As specified for the timber/ component at time of fixing.
 - After treatment: Timber to be redried slowly at temperatures not exceeding 65°C to minimize distortion and degradation.

610 MAKING GOOD TO PRESERVATIVE TREATMENT ON-SITE

- Preservative solution: Compatible with off-site treatment.
- Application: In accordance with preservative manufacturer's recommendations.

620 MAKING GOOD TO FIRE RETARDANT TREATMENT ON-SITE

- Fire retardant: Compatible with off-site treatment.
- Application: In accordance with fire retardant manufacturer's recommendations.

Z20

Fixings and adhesives

Z20 Fixings and adhesives

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.

PRODUCTS

310 FASTENERS GENERALLY

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

320 PACKINGS

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

330 NAILED TIMBER FASTENERS

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

340 MASONRY FIXINGS

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

350 PLUGS

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

360 ANCHORS

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

370 WOOD SCREWS

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

380 MISCELLANEOUS SCREWS

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

390 ADHESIVES GENERALLY

- Standards:
 - Hot-setting phenolic and aminoplastic: To BS 1203.
 - Thermosetting wood adhesives: To BS EN 12765.
 - 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.

650 NAILED TIMBER FIXING

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

660 SCREW FIXING

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

670 PELLETED COUNTERSUNK SCREW FIXING

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

680 PLUGGED COUNTERSUNK SCREW FIXING

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

690 USING POWDER ACTUATED FIXING SYSTEMS

- Powder actuated fixing tools: To BS 4078-2 and Kitemark certified.
- Operatives: Trained and certified as competent by tool manufacturer.

700 APPLYING ADHESIVES

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

Z21
Mortars

Z21 Mortars

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000

CEMENT GAUGED MORTARS

110 CEMENT GAUGED MORTAR MIXES

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

120 SAND FOR SITE MADE CEMENT GAUGED MASONRY MORTARS

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

160 CEMENTS FOR MORTARS

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

180 ADMIXTURES FOR SITE MADE CEMENT GAUGED MORTARS

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

190 RETARDED READY TO USE CEMENT GAUGED MORTAR

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

200 STORAGE OF CEMENT GAUGED MORTAR MATERIALS

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

210 MAKING CEMENT GAUGED MORTARS

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

Z22
Sealants

Z22 Sealants

TO BE READ WITH PRELIMINARIES/GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.

PRODUCTS

310 JOINTS GENERALLY

- 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.

Z31
Powder coatings

Z31 Powder coatings

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

- Notwithstanding the descriptions of workmanship described in various parts of this NBS/NES; the contents of BS8000, where applicable, shall take precedence except where workmanship described is superior to BS8000.

120 POWDER COATING MATERIALS

- Manufacturer: Obtain from one only of the following: Contractor's choice.
- Selected manufacturer: Submit details before commencement of powder coating including:
 - Name and contact details.
 - Details of accreditation schemes.
 - Technical data of product including current Agrément certificates.

210 WORKING PROCEDURES

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

220 POWDER COATING APPLICATORS

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

225 GUARANTEES

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

230 CONTROL SAMPLES

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

240 QUALITY ASSURANCE SYSTEM

- Requirement: Powder and coating application to the following designated components is to be tested and approved in accordance with the Qualicoat system.
 - Designated components: All.

250 COMPONENT DESIGN

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

310 PRETREATMENT OF ALUMINIUM COMPONENTS

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

320 PRETREATMENT OF STEEL COMPONENTS

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

430 EXTENT OF POWDER COATINGS

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

435 APPLICATION OF POWDER COATINGS

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

440 PERFORMANCE AND APPEARANCE OF POWDER COATINGS

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

450 ALUMINIUM ALLOY FABRICATIONS

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

460 STEEL FABRICATIONS

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

470 FIXINGS

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

480 DAMAGED COMPONENTS - REPAIR/ REPLACEMENT

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

510 PROTECTION

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

535 DOCUMENTATION

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

540 COMPLETION

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