

NBS Specification

18041-HNW-XX-XX-SP-A-W810 – Spring Business Park - Havant

Date: 04/09/2019

Status: contract

Rev	Amendments	By	Checked by	Date
A	TENDER ISSUE	LJ	KW	06/09/19
B	Update to tender documents to reflect cladding change, update to window U-value in line with S-Bem calcs, raised access floors, colours etc.	LJ	KW	23/10/19
C	Contract Issue	LJ	KW	19/12/19



NOTES:

Where specific products or systems are referenced within the specification, alternative equivalent products may be proposed for consideration.

Where alternative products or systems are proposed, the contractor must provide sufficient evidence, including an alternative NBS specification, technical details and any necessary BREEAM certification documentation, to demonstrate that the alternative proposals can be incorporated & provide equivalent or improved technical and where necessary aesthetic performance characteristics to that of the product/system originally specified.

A minimum period of 5 working days should be allowed following submission of all necessary evidence in relation to any alternative proposal to enable it to be assessed for suitability/ acceptability.

This specification should be read in conjunction with all other project drawings & documentation. Should any conflicts be noted between documents it should not be assumed that one takes priority over another & clarification should be sought from the Architect before proceeding.

Where the project is subject to a BREEAM rating assessment and where relevant credits are to be targeted, the following additional product requirements will be applicable and should be read in conjunction with the detailed requirements within each section of the specification:

All paints and varnishes are to comply with the performance standards of BS EN 13300:2001 and EU Directive 2004/42/CE21

All wood based panels/products shall be Formaldehyde Class E1 in accordance with BS EN 13986: 2004.

Timber structural components (CLT, glulam etc) are to be Formaldehyde Class E1 in accordance with BS EN 14080: 2013.

Suspended ceiling tiles are to be Formaldehyde Class E1 in accordance with BS EN 13964: 2014.

Resilient textile and laminated floor coverings (vinyl, linoleum, cork, rubber, carpet, laminated wood flooring etc.) are to be Formaldehyde Class E1 in accordance with BS EN 14041: 2006.

Flooring adhesives are to be absent of all carcinogenic or sensitising volatile substances when measured in accordance with BS EN 13999:2007 Parts 1, 2, 3 & 4.

All timber used on the project is to be sourced and evidence provided (certificates) in accordance with the UK Government's Timber Procurement Policy – FSC/PEFC

Materials that make-up major building elements (Frame, Ground floor, Upper floors, Roof, Walls, Foundations, Staircases) must be responsibly sourced from suppliers with BES6001 certification (or at the very least EMS to ISO14001).



18041 - Spring Business Park, Havant

23 October 2019

Table of Contents

Title		Page
E	In situ concrete/Large precast concrete	4
E60	Precast/ composite concrete floors/ roof decks	6
H	Cladding/Covering	7
H43	Metal composite panel cladding/ covering	9
H72	Aluminium strip/ sheet coverings/ flashings	14
J	Waterproofing	15
J40	Flexible sheet waterproofing/ damp proofing	17
K	Linings/Sheathing/Dry partitioning	18
K10	Plasterboard dry linings/ partitions/ ceilings	20
K32	Panel cubicles/ duct and wall linings/ screens	24
K40	Demountable suspended ceilings	26
K41	Raised access floors	29
L	Windows/Doors/Stairs	31
L10	Windows/ Rooflights/ Screens/ Louvres	33
L20	Doors/ shutters/ hatches	36
L30	Stairs/ ladders/ walkways/ handrails/ balustrades	40
L40	General glazing	42
M	Surface finishes	43
M40	Stone/ concrete/ quarry/ ceramic tiling/ mosaic	45
M50	Rubber/ plastics/ cork/ lino/ carpet tiling/ sheeting	49
M60	Painting/clear finishing	52
M61	Intumescent coatings for fire protection of steelwork	55
N	Furniture/Equipment	57
N10	General fixtures/ furnishings/ equipment	59
N11	Domestic kitchen fittings, furnishings and equipment	62
N13	Sanitary appliances and fittings	64
N15	Internal fire and safety signage systems	67
P	Building fabric sundries	68
P20	Unframed isolated trims/ skirtings/ sundry items	70
P21	Door/ window ironmongery	72
Q	Paving/Planting/Fencing/Site furniture	75
Q10	Kerbs/ edgings/ channels/ paving accessories	77
Q22	Asphalt roads/ pavings	79
Q23	Gravel/ Hoggin/ Woodchip/ Resin bound roads/ pavings/ overlays	82
Q40	Fencing	84
Q50	Site/ street furniture/ equipment	87
R	Disposal systems	88
R10	Rainwater drainage systems	90
Z	Building fabric reference specification	93
Z10	Purpose made joinery	95
Z11	Purpose made metalwork	97
Z20	Fixings and adhesives	101

Z21	Mortars	104
Z22	Sealants	106
Z31	Powder coatings	108
Z33	Anodizing	111

E

In situ concrete/Large precast concrete

E60 Precast/ composite concrete floors/ roof decks

To be read with Preliminaries/ General conditions.

PROPRIETARY FLOORS/ ROOF DECKS

- 181 PRECAST STAIRS To Mezzanine Level
- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
 - Parameters: Refer to drawings
 - Finish:
 - Exposed faces: Suitable for direct decoration.
 - Treads and risers: Manufacturer's standard.
 - Other requirements: Cast in Pockets for Balustrade fixings.

GENERAL/ PERFORMANCE

- 240 DETAILING OF PROPRIETARY SYSTEM
- Installation details: Submit location and assembly drawings showing every aspect of the construction, incorporated components and features, trimming for voids, holes for services, and related work by others.
 - Purpose: To allow checking of compatibility with surrounding structure and coordination of services.
 - Method statement and risk assessment for installation: Submit.
 - Programme: Submit well in advance of construction.

INSTALLATION

- 320 CONCRETE INFILL
- Designated concrete: To BS 8500-2.
 - Designation: Submit proposals.
 - Aggregate size (maximum): Submit proposals.
 - Preparation: Thoroughly clean and wet surfaces of precast units.
 - Placing: Avoid segregation and compact thoroughly to eliminate voids.
 - Extent: Fill troughs and other holes.
 - Finish: Flush with top of precast units.
 - Protection: Prevent movement of units until concrete has gained sufficient strength.
- 325 GROUTING
- Mix: Contractor's choice.
 - Preparation: Thoroughly clean and wet surfaces.
 - Fill all joints and surface irregularities.

H
Cladding/Covering

H43 Metal composite panel cladding/ covering

To be read with Preliminaries/ General conditions.

122 METAL COMPOSITE PANEL ROOF CLADDING

- Support structure: Kingspan Structural Multibeam cold rolled purlins or similar or as otherwise specified by Structural Engineer.
 - Bearing width (minimum): 50 mm.
 - Pitch: 6°.
- Manufacturer and reference:
 - Manufacturer: Kingspan Insulated Panels, roof cladding system for standard internal & external non-corrosive, inland environments also Loss Prevention Certification Board certified to LPS 1181 Grade EXT-B..
- Test results
 - L PS1181: 2014: Part 1: Issue 1.2, series of fire growth tests for LPCB approval and is certified to LPS 1181 Grade EXT-B.
 - Reaction to Fire classification: B-s1,d0 to BS EN13501-1: 2007
 - Class 1 Surface spread of flame to BS 476 Part 6: 2009 & Part 7: 1997 (Class 0 as defined by the Building Regulations)
 - SAA rated to BS476 Part 3: 2004.
- Panels
 - Profile reference: KS1000 RW - Trapezoidal Insulated Roof Panel..
 - External facing material: 0.5mm nominal Metallic protected steel to BS EN 10346: 2009..
 - Finish: Kingspan XL Forté.
 - Colour: Silver Grey (RAL 9006) - See 18041-HNW-ZZ-ZZ-DR-A-3310/18041-HNW-B2-ZZ-DR-A-3320 for more details.
 - Internal facing material: 0.4mm nominal Metallic protected steel to BS EN 10346: 2009.
 - Finish: CLEANsafe 15..
 - Colour: White.
- Core insulation: FireSafe, EcoSafe, HCFC, CFC & HFC free LPCB certificated PIR formulation.
- Panel thickness: 115mm. .
- Accessories: Profile fillers as clause 300A.
 - Thermal Transmittance (U Value) calculated using the method required by the Building Regulations Part L2A (England & Wales) and Building (Scotland) Regulations Section 6: Target value 0.18 W/m2K .
 - Air leakage rate of 3m3/hr/m2 at 50 Pa, based on the assumption that the full building envelope is constructed using Kingspan panels...
- Rooflights: Kingspan Day-Lite Trapezoidal Plus. KS1000 DLTR PLUS 1.3 (U-value 1.3W/m2K)
- Fasteners: As determined by clause 220A..
 - Primary fasteners: As determined by clause 197A, but with each panel fixed to each support using not less than three fastenings. Fix through every valley of profile, as recommended by cladding manufacturer.
 - Secondary fasteners: The first stitching screw on the panel side lap (and at all end lap crowns) is positioned 35mm up from the panel end lap. The next is positioned 170mm up from the panel end lap. Thereafter the stitching screws are located at 450mm max centres (in-line with Envirocare update EU86).
- End laps size (minimum): 150 mm .
- Sealing laps:
 - End laps: Triple line of factory applied weather seals (FAWS) on underside of panel cut-bac .
 - Side laps: Single line factory applied weather seal (FAWS) on underside of panel side-lap .
- Other Requirements: Single line of non-setting gun-grade, PremSeal CV or similar, site applied across panel side lap in line with internal air seal, located at eaves and ridge locations.
- Sealing: Single line of 8mm diameter butyl rubber tape, Class A, ref: NFRC TB36, site applied between internal face of panel and internal flashings / steelwork at perimeter edges.
- Any joints in the secondary steel frame and cleader angles, which are forming part of the building air seal line, must be sealed with a Film backed butyl tape/PremSeal SWRPIO or similar.
- Manufacturers guarantee:-
 - 40 year maintenance and inspection free coating guarantee. Manufacturers coating guarantee to be available on project completion and be fully transferrable for future changes of building ownership.
 - 25 year thermal performance guarantee.
 - 25 year structural performance guarantee.
- Panels manufactured under the following standards:-
 - ISO 9001, Quality Management Systems.
 - ISO 14001, Environmental Management Systems.
 - ISO 18001, Occupational Health and Safety Management Systems.
 - ISO 50001, Energy Management Certificate.
- Kingspan recommend that the appointed cladding sub-contractor attends the appropriate product installation training course at our offices in Holywell prior to commencing installation on site.

125 METAL COMPOSITE PANEL WALL CLADDING

- Support structure: Kingspan Structural Multibeam cold rolled rails or similar or as otherwise specified by Structural Engineer..
 - Bearing width (minimum): Min 60mm intermediate, min 130mm vertical joint..
- Manufacturer and reference: Kingspan Limited, horizontally laid wall cladding system for standard internal & external non-corrosive, inland environments also Loss Prevention Certification Board certified to LPS 1181 Grade EXT-B*..

Test results

 - LPS 1181: 2014: Part 1: Issue 1.2, series of fire growth tests for LPCB approval and is certified to LPS 1181 Grade EXT-B.
 - Reaction to Fire classification: B-s1,d0 to BS EN13501-1: 2007
 - Class 1 Surface spread of flame to BS 476 Part 6: 2009 & Part 7: 1997 (Class 0 as defined by the Building Regulations)
- Panels:

Profile reference: KS1000 MR – Micro-Rib Insulated Wall Panel.

 - External facing material: 0.5mm nominal Metallic protected steel to BS EN 10346: 2009..

Finish: Kingspan XL Forté.

Colour: Silver Grey (RAL 9006)/Graphite (RAL 9023) - See 18041-HNW-ZZ-ZZ-DR-A-3310/18041-HNW-B2-ZZ-DR-A-3320 for more details.
 - Internal facing material: 0.4mm nominal Metallic protected steel to BS EN 10346: 2009.

Finish: CLEANsafe 15..

Colour: White.
- Core insulation: FireSafe, EcoSafe, HCFC, CFC & HFC free LPCB certificated PIR formulation..
- Panel thickness: 80mm..
- Male/female panel joint sealant:
 - Factory applied weather seal set in rebate.
 - Kingspan AWP filler and non-setting gun-grade, PremSeal CV or similar, site applied at the end of each panel where flashings pass over the joint.
 - Bridging seal across panel joint in line with AWP filler and internal air seal to be nonsetting gun-grade, PremSeal CV or similar.
- Fasteners: As determined by clause 220A

Number and location:

 - For panels: As determined by clause 197A, but with each panel fixed to each support using not less than one fastener at panel ends and two fasteners at intermediate supports, located through tongue section, as recommended by cladding manufacturer.
 - For panel bearers: Fix each one using two fasteners.
 - For vertical top-hat fix to vertical support at 500mm centres.
- Vertical joints:
 - Type: Option A with recessed top-hat flashing and insert with 4mm diameter butyl rubber sealant, Class A, ref: NFRC TB36.
 - Finish/colour: Finish as external face of panels.
 - PIR insulation board with any gaps between board and panels, fill with Premier Sealants (01724 864100) Firefoam (class B1 rated) or similar, fire rated gun applied canister urethane insulation.
 - Vertical panel joint to have VJ2 EPDM 95mm x 10mm self adhesive air seal bubble gasket applied to vertical supporting steelwork and lapped over drip flashing
- Accessories: Panel bearers located at panel ends and at maximum 1500mm intervals in-between, located in positions recommended by cladding manufacturer to support the bottom row of horizontally laid panels.
- Thermal Transmittance (U Value) calculated using the method required by the Building Regulations Part L2A (England & Wales) and Building (Scotland) Regulations Section 6: Target value 0.26 W/m²K
- Air leakage rate of 3m³/hr/m² at 50 Pa, based on the assumption that the full building envelope is constructed using Kingspan panels.
 - Other requirements:
 - Single line of non-setting gun-grade, PremSeal CV or similar, site applied across panel side lap in line with internal air seal, located at head and cill locations.
 - Any joints in the secondary steel frame and cleader angles, which are forming part of the building air seal line, must be sealed with a Film backed butyl tape/PremSeal SWRPIO or similar.
 - Factory made pre-formed corners.
- Manufacturers guarantee:-
 - 4 0 year maintenance and inspection free coating guarantee. Manufacturers coating guarantee to be available on project completion and be fully transferrable for future changes of building ownership.
 - 2 5 year thermal performance guarantee.
 - 2 5 year structural performance guarantee.
 - P anels manufactured under the following standards:-
 - ISO 9001, Quality Management Systems.
 - ISO 14001, Environmental Management Systems.
 - ISO 18001, Occupational Health and Safety Management Systems.
 - ISO 50001, Energy Management Certificate.
- Kingspan recommend that the appointed cladding sub-contractor attends the appropriate product installation training course at our offices in Holywell prior to commencing installation on site.

GENERAL REQUIREMENTS

170 DESIGN

- " Cladding: Complete detailed design of the cladding system and submit before commencement of fabrication.
- Standard: To BS 5427-1.
- " Related works: Coordinate in detailed design.

172 THERMAL PERFORMANCE/ BRIDGING

- Requirement: Complete thermal design of the cladding/ covering system to avoid excessive thermal bridging.
- Standard: MCRMA Technical Paper 14, MCRMA Technical Paper 17 with MCRMA Technical Bulletin 14 and BRE Information Paper 1/06.

175 PRODUCT SAMPLES

- General: Before commencing detailed design, submit labelled samples of the following:

Clauses 122&125

176 FASTENER SAMPLES

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

DESIGN/ PERFORMANCE REQUIREMENTS**185A PERFORMANCE COMPLIANCE**

- Verification: The system has an approved environmental profile with a BRE Ecopoints score of 0.497 Cradle to Grave over 60 year study period.
 - Panels can achieve an A+ rating in accordance with the Green Guide to Specification.
 - Verifying authority: BRE Certification Ltd. Scheme Document SD 028.
 - CE marked to BS EN 14509: 2013.

192 SOUND TRANSMITTANCE OF CLADDING/ COVERING SYSTEM - WEIGHTED

- Location: Through external wall.
- Requirement: Measure within 100 to 3150 Hz frequency range to BS 5821-3.
 - Minimum weighted sound reduction index (Rw): 32db.

196 INTEGRITY OF CLADDING/ COVERING

" Requirement: Determine profiles, sizes and thicknesses of panels and sheets, the sizes, number and spacing of fixings, and incorporation of other accessories and fittings to ensure cladding/ covering system will resist factored dead, imposed and design live loads, and accommodate deflections and thermal movements without damage, in accordance with BS 5427-1.

" Primary fasteners: Not to be subjected to any bending moment.

" Wind loads: Calculate to Eurocode 1 (EN1991.4) Standard Method and BS 5427-1 appropriate to location, exposure, height, building shape and size, taking account of existing and known future adjacent structures.

In order for Eurobond to run span/load calculations for the panels in question we require the specific wind loads acting upon the cladding. Normally, we would expect to see the loads split across 3 zones, these being Zone A (corners of the building), Zone B (just in from the corners) and Zone C (remainder of elevation).

Eurobond specifically require pressure & suction wind loads represented in kN/m². If we are supplied with wind speeds we cannot run calculations based upon this information.

If these loads are not available, the appointed Structural Engineer would normally be actioned to raise these by the nominated Contractor or (if applicable) the Contractor will action the wind load analysis 'in house'.

If site specific wind loads are not available or can be calculated a site specific postcode is to be provided to allow indicative wind load values to be calculated through wind load modeler. All calculations must be reviewed by a Structural Engineer to ensure that the calculations conform to the site specific requirements.

197A ATTACHMENT

- Determine the number and location of cladding fasteners recommended by the cladding manufacturer to resist wind loads calculated in accordance with BS EN 1991-1-4:2005 Eurocode 1 – Actions on structures Part 1-4.
- Calculate wind loads on roof and wall cladding appropriate to location, exposure, roof height, building shape and size in accordance with NA of BS EN 1991-1-4:2005 the UK National Annex to Eurocode 1 – Actions on structures Part 1-4.

198 WATER PENETRATION

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

202 AVOIDANCE OF SURFACE CONDENSATION

- Requirement: Determine surface condensation risk of cladding system using the method described in BS EN ISO 13788. If necessary, revise thermal insulation to provide satisfactory temperature factor (f_{min}). Ensure that damage and nuisance from surface condensation and does not occur.

FIXING CLADDING/ COVERING**215 PAINTING STRUCTURE**

- Sequence: Paint outer surface of supporting structure before fixing cladding/ covering.

219A FASTENERS TO ROOFLIGHTS

- " Recommended for the purpose by the cladding/ covering manufacturer.

220A FASTENERS TO ROOF AND WALL CLADDING

- Recommended manufacturer: to be confirmed by cladding sub-contractor.
- Primary fasteners: High threaded screws with bonded washers.
- Type(s), size(s) and drilling capacity: As recommended by fastener manufacturer to suit type and thickness of supports and thickness of insulated panels.
- Screw material: Stainless steel or Anti-corrosion coated carbon steel, subject to project performance guarantee requirements.
- Washer material: Non-ferrous.
- Washer size: 19 mm diameter.
- Heads: Coloured plastic heads or painted heads
- Secondary fasteners: Stitching screws with bonded washers.
- Screw/washer material: Non-ferrous.
- Washer size: 14 mm diameter.
- Heads: As primary fastener.

221 FITTINGS AND ACCESSORIES

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

223 PREVENTION OF ELECTROLYTIC ACTION

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

275A CONTINUITY THERMAL INSULATION

- At junctions between the roof panel system and walls / penetrations insulated with PIR board insulation, any gaps filled with Premier Sealants (0044 (0)1724 864 100) Firefoam (class B1 rated) or similar, fire rated gun applied canister urethane insulation.
- Placement: Secure and continuous with cladding / covering insulation.
- Psi values of junction details to be calculated by Kingspan Insulated Panels, as per the guidance set out in BRE report BR497 Conventions for Calculating Linear Thermal Transmittance and Temperature Factors.

300 PROFILE FILLERS GENERALLY

- Material: MP Metallocene polyolefin .
- Manufacturer: Premier Sealant Systems Limited. <http://www.premseal.co.uk>.
 - Product references: M25 or similar to suit cladding profile.
- Colour: Black.
- Thickness: 50 mm.
- Fixing method: Seal the top, bottom and sides of each profile filler with a single line of non-setting gun-grade, PremSeal CV or similar. Locate where shown on drawings and wherever necessary to close off corrugation cavities from the inside and outside of the building. Ensure a tight fit and leave no gaps..
 - Requirement: To close cavities within the external envelope. Tight fit with no unintended gaps.

310A PURPOSE MADE COLD FORMED METAL ACCESSORIES EXTERNAL

- Material: Kingspan XL Forté range.
 - Thickness/ gauge: 0.63mm nominal..
 - Finish/ Colour: To match external face of cladding..
- Workmanship as section Z11.
- Fixing: Stitch to external face of panels at max. 450mm centres using secondary fasteners as specified for the cladding system .
- Sealing: Single line of 4mm diameter butyl rubber tape, Class A, ref: NFRC TB36, site applied between flashing and panel .
- Individual lengths to be jointed using 100mm sealed butt straps.

311A PURPOSE MADE COLD FORMED METAL ACCESSORIES INTERNAL

- Material: Kingspan CLEANsafe 15..
 - Thickness/ gauge: 0.4mm nominal..
 - Finish/ Colour: White.
- Workmanship as section Z11.
- Fixing: Stitch to external face of panels at max. 450mm centres using secondary fasteners as specified for the cladding system .
- Sealing: 20mm x 6mm SGV25 single sided PVC foam tape, site applied between flashing and panel. .
- End laps to be air sealed with film backed butyl tape / PremSeal SWRPIO or similar, or gun grade sealant.

410 FIXING PANELS AND SHEETS GENERALLY

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

419 FIXING PLASTICS CLADDING/ COVERING

- Crown fixing: For panels/ sheets with a profile depth greater than 20 mm, support crowns at primary fasteners with profile fillers.
- Fastener holes: Sized in accordance with sheet manufacturer's recommendations.
- End laps between plastics sheets: Use two strips of sealant tape, one along each edge of lap.

470 STRUCTURAL MOVEMENT JOINTS

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

480 FLASHINGS/ TRIMS GENERALLY

- Lap joint treatment:
 - Vertical and sloping flashings/ trims: End laps to be same as for adjacent panels.
 - Horizontal flashings/ trims: End laps to be 150 mm, sealed and where possible arranged with laps away from prevailing wind.
- Method of fixing: To structure in conjunction with adjacent panels. Otherwise to panels.
 - Fasteners: as per manufacturer's recommendations. .

540 ABUTMENTS

- Junctions with flashings: Weathertight and neatly dressed down.

550 SEALING EXTERNAL LAPS

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

580A INSULATED PANEL IDENTIFICATION & LABELLING

- When the roofing and /or the wall cladding to this building is completed, a label identifying the composition of the insulated panels is to be fitted.
- This label illustrates the type of insulated panels fitted, to assist insurers, fire officers, owners and occupiers identify the envelope composition.
- It is a recommendation of the Kingspan Total Guarantee that the insulated panel identification label, which has a specific project registration number, is installed in an agreed location. The project architect, cladding subcontractor or owner should place / affix or communicate the positioning / placing of these labels in an appropriate and accessible location on the building.

H72 Aluminium strip/ sheet coverings/ flashings

To be read with Preliminaries/ General conditions.

TYPES OF ALUMINIUM WORK

480 ALUMINIUM FLASHINGS FEATURE ENTRANCE SURROUNDS & DETAILS

- Drawing Reference:
- Material: Aluminium Coated sheet/strip
 - Alloy designation: EN AW-1050A
 - Temper: H12
 - Finish: PPC, Colour: Kingsbridge Orange Hex #F24F21/Onyx RAL 7016- See 18041-HNW-ZZ-ZZ-DR-A-3310/18041-HNW-B2-ZZ-DR-A-3320 for more details.
 - Thickness: 3mm.
- Dimensions:
 - Refer to details: .
 - Lengths: Not more than 2m.
- Fixing: Secret fixings at 450mm centres.

GENERAL REQUIREMENTS/ PREPARATORY WORK

510 WORKMANSHIP GENERALLY

- Standard: Generally to CP 143-15.
- Fabrication and fixing: To provide a secure, free draining and completely weathertight installation.
- Operatives: Trained in the application of aluminium coverings/ flashings. Submit records of experience on request.
- Measuring, marking, cutting and forming: Prior to assembly wherever possible.
- Marking out: With pencil, chalk or crayon. Do not use scribes or other sharp instruments without approval.
- Folding: With mechanical or manual presses to give straight, regular and tight bends, leaving panels free from ripples, kinks, buckling and cracks. Use hand tools only for folding details that cannot be pressed.
- Surface protection: Fully coat surfaces to be embedded in concrete or mortar with high build bitumen based paint, after folding.
- Sharp metal edges: Fold under or remove as work proceeds.
- Joints: Do not use sealants to attain waterproofing.
- Finished aluminium work: Fully supported, adequately fixed to resist wind uplift and able to accommodate thermal movement without distortion or stress.
 - Protection: Prevent staining, discolouration and damage by subsequent works.

630A PLYWOOD UNDERLAY

- Standard: Manufactured to an approved national standard and to BS EN 636, section 8 (plywood for use in humid conditions).
 - Sheet size: 2400 or 1200 x 1200 mm and 9 mm thick.
- Laying: Parallel to perimeter edges with cross joints staggered and a 0.5 to 1 mm gap between sheets.
- Fixing: With 25 mm annular ringed shank aluminium or galvanized steel nails, at 300 mm grid centres over the area of each sheet and at 150 mm centres along edges, set in 10 mm from perimeter edges and in pairs across joints.
 - Nail heads: Set flush with or just below surface.

650 LAYING UNDERLAY

- Handling: Prevent tears and punctures.
- Laying: Butt jointed onto a dry substrate.
 - Fixing edges: With aluminium or galvanized steel staples or 20 x 3 mm extra large head clout nails.
 - Do not lay over eaves and drip/ step aluminium underlaps.
- Ventilation paths: Do not obstruct.
- Protection: Keep dry and cover with aluminium at the earliest opportunity.

FIXING

JOINTING

810 FORMING DETAILS

- Folds and welts: Form without thinning or splitting the strip/ sheet.
- Thermal movement: Form details with appropriate allowance for movement, without impairment of security at full expansion or contraction.

J40 Flexible sheet waterproofing/ damp proofing

To be read with Preliminaries/ General conditions.

110 SOFT BLINDING TO HARDCORE BEDS

- Material: Soft sand.
 - Thickness (minimum): 25 mm.
- Finish on completion: Smooth, consolidated bed free of sharp projections.

TYPES OF TANKING/ DAMP PROOFING

128 LOOSE LAID POLYETHYLENE DAMP PROOFING

- Manufacturer: IKO PLC, Appley Lane North, Appley Bridge, Wigan, Lancashire WN6 9AB.
 - Product reference: Hyload Universal DPM system.
 - Thickness/ Gauge: 500 micrometres (2000 gauge).
 - Preparation/Installation: Ensure Hyload Universal DPM is installed following good practice set out in Building Regulations Approved Document C.
 - Application: Loose lay the membrane. Overlap side and end joints by minimum 150mm. Joints must be dry and bonded using Hyload Jointing Tape No2 and sealed with Hyload Jointing Tape No3.
 - Ensure the membrane is not stretched or displaced at internal angles or angle junctions prior to casting concrete.
- Other requirements: Installation to be carried out in strict accordance with manufacturers recommendations.

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.

350 ANGLES IN BONDED DAMP PROOFING/ TANKING

- Preformed rot proof fillet to internal angles:
 - Size (minimum): 50 x 50 mm, splay faced.
 - Bedding: Bitumen mastic or bonding compound.
- 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): 150 mm.
 - Bonding/ Sealing: Double-side 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: Mastic tape.

370 PREFORMED COLLARS FOR PIPES, DUCTS, CABLES, ETC.

- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Sealing: Fully bond to penetrations and sheeting using double-sided jointing tape.
- Completed junctions: Impervious.

K10

Plasterboard dry linings/ partitions/ ceilings

K10 Plasterboard dry linings/ partitions/ ceilings

To be read with Preliminaries/ General conditions.

TYPES OF DRY LINING

PROCUREMENT

All plasterboard and metal stud components must be obtained from a supplier with BES:6001 responsible sourcing certification.

125 METAL STUD PARTITION SYSTEM STANDARD INTERNAL PARTITION

- Manufacturer: British Gypsum or similar.
 - Product reference: Gypwall Classic: A206015.
- Studs:
 - Type: 70mm metal 'C' studs.
 - Centres: 600 mm.
- Head condition: Ceiling as clause 220A, metal studs installed horizontally to form support for ceiling and stability of partitions.
 - Deflection allowance: 15mm or as otherwise confirmed by Structural Engineer.
- Insulation: Not required.
 - Recycled content: Not applicable.
 - Thickness: N/A.
- Resilient layer: N/A.
- Linings: Two layers 12.5 mm plasterboard either side.
- Finishing: Seamless taped and jointed.
 - Primer/ Sealer: 2 coats of Gyproc Drywall Primer to painted areas.
 - Accessories: Metal beads/ stops recommended by board manufacturer .
- Other requirements: Plywood pattressing behind all wall mounted fixtures, grab rails etc..

140A METAL STUD PARTITION SYSTEM COMPARTMENT DIVIDING WALLS

- Manufacturer: Eurobond, Euroclad Group Limited, Wentloog Corporate Park, Cardiff, CF3 2ER.
 - Product reference: Firemaster Wall Extra 125mm. ..
- Head condition:
 - Type: Typical vertical head deflection detail in accordance with manufacturer's recommendations.
 - Deflection allowance: 50mm unless confirmed otherwise by Structural Engineer.
- Insulation: N/A - composite panel.
- Linings: N/A.
- Finishing: Steel face finish - Flat.
 - Primer/ Sealer: Not required.
- Other requirements:
 - Typical wall/floor junctions with floor channel FMV 05A.
 - Vertical joint details - FMV 01A.
 - Module thickness: 125mm nom.
 - Module width: 1200mm nom.
 - All panel lengths subject to technical verification.
 - Fire resistance: 120 mins Insulation & Integrity.
 - Sound insulation: 33Rw(dB)
 - Max. height: 10500mm max. to BS476 Pt22.
 - Installation to be carried out in strict accordance with the manufacturer's recommendations.

157A WALL LINING SYSTEM (METAL STUDS)

- Manufacturer: British Gypsum or similar.
 - Product reference: Gypliner IWL.
- Studs:
 - Type: 60 i 70 studs.
 - Centres: 600 mm.
- Cavity between wall & studs: varies, refer to drawings (minimum 10mm).
- Height (maximum): 3.6m (1no. 12.5mm wallboard. 4.2m (2no. 12.5mm wallboard).
- Head condition:
 - Type: Deflection head detail as per manufacturer's recommendations.
 - Deflection allowance: 25mm unless confirmed otherwise by Structural Engineer.
- Insulation: None.
- Linings: 1 or 2no.layers (height dependant) of Gyproc WallBoard.
- Finishing: Seamless taped & jointed.
- Primer/ Sealer:
 - Type: 2 coats of Gyproc Drywall Primer to painted areas.
- Accessories: All necessary metal beads, stops, angles, braces, channels, clips, straps, fixings, sealants, socket pads, access panels etc. required to complete the installation in accordance with the recommendations of the system manufacturer.
- Other requirements: Plywood pattressing behind all wall mounted fixtures, grab rails etc.

220A PROPRIETARY SUSPENDED CEILING SYSTEM TO TOILETS

- Standard: To BS EN 13964.
- Evidence of compliance: All ceilings kits to be CE marked. Submit Declaration of Performance (DoP).
- Manufacturer: British Gypsum.
 - Product reference: Casoline MF suspended ceiling system.
- Lining board: 12.5mm Wallboard.
 - Finishing: Seamless taped and jointed.
 - Accessories: Metal beads/stops recommended by lining board manufacturer..
- Suspension system:
 - Grid centres: 600 mm.
 - Hangers: Type recommended by board manufacturer.
 - Length: To give ceiling soffit height above finished floor level of 2400 mm.
 - Centres: 900 mm.
 - Top fixing: To suit structural soffit of metal studs laid horizontally to form soffit support.
- Insulation: Not required.
 - Thickness: Not applicable.
- Access units: Required - To be proprietary hatches self-finished white.
- Integrated services fittings: None.
- Electrical continuity and earth bonding: Not required.
- Accessories/ Other requirements: None.

GENERAL/ PREPARATION**335 ADDITIONAL SUPPORTS**

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

COMPONENTS**430 ACCESS PANELS Generally**

- Type: Gyproc Profilex Standard of Fire Rated Wall or Ceiling panels .
 - Sizes: To suit M&E access requirement .
- Frame: Bead for taping and jointing .
- Panel: Metal; primed for site painting .
- Lock: Tamper proof and operated by castellated key .

INSTALLATION**435 DRY LININGS GENERALLY**

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

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.

510 SEALING GAPS AND AIR PATHS

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

555 FIRE STOPPING AT PERIMETERS OF DRY LINING SYSTEMS

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

560 JOINTS BETWEEN BOARDS

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

565 VERTICAL JOINTS

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

570 HORIZONTAL JOINTS

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

590 FIXING GYPSUM BOARD TO METAL FRAMING/ FURRINGS

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

595 DEFLECTION HEADS

- Fixing boards: Do not fix to head channels.

FINISHING

650 LEVEL OF DRY LINING ACROSS JOINTS

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

670 SEAMLESS JOINTING TO GYPSUM BOARDS

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

K32 Panel cubicles/ duct and wall linings/ screens

To be read with Preliminaries/ General conditions.

- 160 DUCT LININGS – PREPLUMBED PANELS AND PROPRIETARY FRAMES IPS to WCs
- Manufacturer: TBS Amwell, www.tbs-amwell.co.uk.
 - Product reference: PDQ Panel & Frame.
 - Preplumbed/ prefixed sanitary appliances/ fittings: As section N13.
 - Panels:
 - Type: Manufacturer's standard and As drawing ???.
 - Width (coordinating): As drawing ???.
 - Core material: Manufacturer's standard.
 - Thickness: 18 mm.
 - Facings: High Pressure Laminate (HPL).
 - Colour/ Pattern/ Species: Colour to be confirmed from standard range..
 - Edge treatment: Vertical edges postformed, all other edges are lipped with matching or complementary 1mm durable ABS..
 - Reaction to fire (minimum classification, finished panel): Manufacturer's standard.
 - Fasteners: Hinges, manufacturer's standard.
 - Framing: Manufacturer's standard coated steel frames with pre-hung panels, complete with panel alignment brackets.
 - Flashgap panels: With vertical flash gaps in moisture resistant 18mm MR MFC and close butted horizontally (flashgap laminate can either match or contrast panel colour.
 - Skirting: None.
- 210 SAMPLES
- General: Before placing orders submit representative samples of the following: Panel material colours for approval.
 - 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: IPS panel system.
 - Locations: 1no. WC.
- 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

To be read with Preliminaries/General conditions.

TYPES OF CEILING SYSTEM**117 UNIT SUSPENDED CEILING SYSTEM To Offices & Staircases**

- Manufacturer: Armstrong Ceilings Ltd.
 - Address: Building Products Division, Armstrong House, 38 Market Square, Uxbridge, Middlesex. UB8 1NG.
 - Product reference: Ultima+ in MicroLook 90
- Modular size: 600 x 600 x 19mm.
- Edge profile: MicroLook 90.
- Grid: Ultima+ 7674M
 - Suspension system: Grid and hanger fixings and spacings as recommended by the suspended ceiling system manufacturer. To include all hangers, fixings, main runners, cross members, primary channels, perimeter trims, splines, noggings, clips, bracing, bridging, etc., which are necessary to complete the installation.
 - Perimeter trim: Shadowline edge trim.
 - Other requirements:
 - Plywood patresses where necessary to support recessed light fittings or other fixtures.
 - Square edge profile to cut perimeter tiles to suit shadowline trim.
 - Installation to be carried out in strict accordance with ceiling system manufacturers recommendations.

GENERAL/ PERFORMANCE**COMPONENTS****EXECUTION****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.

326 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.

336 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.

341 EXPOSED GRIDS

- 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.
- 402 CEILING MOUNTED LUMINAIRES
- - Independently supported luminaires: Suspension adjusted to line and level of ceiling.
 - - Ceiling supported luminaires: Modifications and/ or extra support required to each luminaire as recommended by ceiling system manufacturer.
 - 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.
- 412 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.
 - Flexible connections: Required.
 - Sprinkler heads: Carefully set out and level.
- Generally: Modifications and/ or extra support required as recommended by ceiling system manufacturer.
- 415 INSTALLING INSULATION
- Fitting: Fit accurately and firmly with butted joints and no gaps.
 - Insulation within individual infill units: Fit closely. Secure to prevent displacement when infill units are installed or subsequently lifted.
 - Dustproof sleeving: Reseal, if cut.
 - Width: Lay insulation in the widest practical widths to suit grid member spacings.
 - Services: Do not cover electrical cables that have not been sized accordingly. Cut insulation carefully around electrical fittings, etc. Do not lay insulation over luminaires.
 - Sloping and vertical areas of ceiling system: Fasten insulation, to prevent displacement.
- 425 INSTALLING CAVITY FIRE BARRIERS
- Maximum ceiling void dimension in any direction: 20m.
 - Fixing: Secure barrier at head and base using proprietary angle support system.
 - 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.
- 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 every lay-in grid ceiling system incorporated.

K41 Raised access floors

To be read with Preliminaries/ General conditions.

TYPES OF RAISED ACCESS FLOOR

131 RAISED ACCESS FLOOR

- Manufacturer: Kingspan Access Floors Ltd.
 - Product reference: RMG600 - Medium Grade - PSA MOB PF2 PS/SPU.
- Preparation: Apply sealer as clause 431
- Pedestals:
 - Type: Alpha V - PSA MOB PF2 PS/SPU.
 - Fixing: Adhesive.
- Height:
 - Finished raised access floor height above sub-floor:
Upper Floor 200mm .
 - Under-floor void height: min. 150mm
- Accessories: As recommended to complete the installation in accordance with the manufacturers design & details
- Other requirements: Access floor to be earth bonded in accordance with IEE & manufacturers recommendations.

GENERAL/ PERFORMANCE

219 INSTALLATION

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

COMPONENTS

322 PEDESTAL ADHESIVE

- Adhesive: As recommended by flooring manufacturer & compatible with subfloor surface finish..

345 CAVITY BARRIERS

- Type: Foil faced rockwool slabs.
Manufacturer: AIM Raised Access Floor Barrier or similar approved
 - Thickness: 50mm
 - 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.
- Location:
 - To sub-divide void so that maximum dimension in any direction is no greater than 20m.
 - Below fire rated partitions.
 - Below partitions to offices to maintain acoustic performance.
- Fixing: Friction fit as manufacturers recommendations so that performance is unlikely to be affected by:
 - Movement of the building due to subsidence, shrinkage or temperature change.
 - Failure 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.

INSTALLATION

422 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.

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.

434 PEDESTAL ADHESIVE TESTING

- Test method: To MOB PF2 PS/SPU.
- Rate of testing:
 - Pre-installation: 2% of total in each area, selected at random .
 - During installation: Submit.
- 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.

441 RAISED ACCESS FLOOR LEVELS

- Permissible deviations in level:
 - Over set length: ± 1.5 mm over 5m .
 - Overall: ± 6 mm .

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.

455 LEVEL CHANGES

- Performance:
 - Ramps and steps: Comparable with performance of associated raised access floor.
 - Balustrades: Structural and safety requirements in accordance with BS 6180.

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.

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

To be read with Preliminaries/ General conditions.

GENERAL**110 EVIDENCE OF PERFORMANCE**

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

120 SITE DIMENSIONS

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

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: L10/331.

PRODUCTS**205 WINDOW MATERIALS SPECIFICATION**

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

331 ALUMINIUM WINDOWS

- Manufacturer: Schueco.uk Ltd.
 - Web: www.schueco.co.uk
 - Email: mkinfobox@schueco.com
 - Tel: +44 (0)1908 282111
 - Address: Whitehall Avenue, Kingston, Milton Keynes, Buckinghamshire, MK10 0AL
 - Product reference: AWS 65 BS Window System.
- Size: Refer to drawings
- Configuration: Outwards opening top hung window with dual position keyed locks.
- Natural ventilation: Opening lights to open min. 15 degrees.
- Trickle Vents: Adjustable trickle vents.
- Finish: Extruded aluminium, Interpon D525 powder coated, colour - Onyx RAL 7016).
- Minimum film thickness: Consult with Schuco/Interpon
- Thermal performance (U-value maximum): minimum 1.6W/m²k.
- Glazing details: Sealed units comprising:
 - Outer Pane: Grey anti-sun, laminated to ground floor vision areas
 - Cavity: 16mm
 - Inner pane: 6mm minimum Low E glass, toughened.
- Obscured glazing: Insulated sealed units comprising:
 - Outer pane: Laminated ceramic coated glass, coloured to look-alike panel - Colour TBC
 - Insulation: Pentane blown PIR/PUR insulation.
 - Internal Finish: Mill finish aluminium.
- All glazing to incorporate toughened glass and manifestatoin where necessary to comply with Building Regulations.
- Beading: Internal Square .
- Ironmongery/ Accessories: Schueco AvanTec fittings .
- Operation: Manual
- Accessories: All necessary cappings, flashing, trims, cills, fillers, spacers, fixings, fasteners, gaskets, EPDM's, sealants etc, as required to complete the installation in accordance with the system manufacturers recommendations .
 - Insulated Sandwich Panel:
 - 24mm thk. insulated panel with PPC aluminium plate facing each side.
 - External Colour: Polyester powder coated - Onyx RAL 7016.
 - Inside Colour: Polyester powder coated to a standard RAL colour/finish, TBC.

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.

750 BUILDING IN

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

765 WINDOW INSTALLATION GENERALLY

- Installation: Into prepared openings.
- Gap between frame edge and surrounding construction:
 - Minimum: 3mm.
 - Maximum: 10mm.
- Distortion: Install windows without twist or diagonal racking.

766 LOCATION OF OPENABLE WINDOWS IN NATURALLY VENTILATED BUILDINGS

- Location: Over 10 m from sources of external pollution.

770 DAMP PROOF COURSES IN PREPARED OPENINGS

- Location: Ensure correct positioning in relation to window frames. Do not displace during fixing operations.

782 FIXING OF ALUMINIUM FRAMES

- Standard: As section Z20.
- Fasteners: As advised by Manufacturer to suit attachment to SFS.
 - 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: Contractor's choice.
Product reference: Contractor's choice.
 - Colour: To match window frames.
 - Application: As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.

820 IRONMONGERY

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

L20 Doors/ shutters/ hatches

To be read with Preliminaries/ General conditions.

GENERAL

110 EVIDENCE OF PERFORMANCE

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

112 TIMBER PROCUREMENT

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

115 FIRE RESISTING DOORS/ DOOR ASSEMBLIES/ DOORSETS

- Door products: As defined in BS EN 12519.
- 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/ door assembly/ doorset supplied will comply with the specified requirements for fire or smoke 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.
- Components, assemblies or sets will be marked to the relevant product standard and/ or third party certification rating.

120 NON FIRE RESISTING DOORS/ DOOR ASSEMBLIES/ DOORSETS

- 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.
- Components and assemblies will be marked to the relevant product standard and/ or third party certification rating.

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: All door units.

PRODUCTS

407A WOOD DOORSETS INTERNAL - VENEER FACED

- Manufacturer: Ahmarra Door Solutions, Unit 20 Fitzherbert Road, Farlington, Portsmouth PO6 1SD.
 - Product reference: Veneer Faced Solid Core Doorsets.
- Door leaf:
 - Facings: American white Oak.
 - Crown cut veneer, random slip matched.
 - Veneer species to be selected from manufacturers standard range .
 - Lippings:
 - min. 8mm hardwood lipping to all edges. Chamfered corner to long edges.
 - timber to have a minimum density of 530kg/m³.
 - timber species to match door veneer .
 - Finish as delivered: Full factory finish .
- Frame and architraves:
 - Wood species: American white oak .
 - Finish: As section M60 .
- Glazing/ Infill details: N/A .
- Ironmongery:
 - As Ironmongery Schedule/ NBS P21.
 - Premium solid satin stainless steel.
 - Thread locking compound to be applied to all bolt through fixings. - Alumini finger protection where indicated on the schedule .
- Perimeter seals: as required to achieve specified acoustic/ fire performance .
- Other requirements:
 - Door cores to be severe duty rated.
 - Fire Doors to be FD30 rated.
 - Doors to have:
 - 'Safehinge' anti finger trap pivot mechanism or
 - 100mm fixed pin BS EN 1935 Class 13 stainless steel ball bearing hinges or
 - 100mm BS EN 1935 Class 13 stainless steel journal hinges.
 (refer to schedule for details)
 - Lock/ Latch cases to be factory fitted with intumescent protection where required.
 - Smoke & acoustic seals to be mounted on the door stop.
 - Intumescant strips (where required) are to be recessed into the frame and bottom edge of the door.
 - Threshold smoke/brush seal to be mounted on the bottom edge of the door where required.
 - Any expanding PU foam used to fill gaps between the door lining & partition/wall on fire rated door assemblies must be a type tested for this application to BS 476: Pt 22: 1987 or BS EN 1634-1.
 - Door assembly & installation to be in strict accordance with manufacturers certified performance details - WC's Doors to have indicator bolt .
 - Glazed Vision Panel to circulation doors to manufacturer design
- Fixing: As recommended by doorset manufacturer to suit structure .

485A ALUMINIUM EXTERNAL DOORSETS REAR FIRE ESCAPE DOOR

- Manufacturer: Nassau/Stertil or acceptable equivalent.
 - Product reference: VELFAC 500.
- Size/ Configuration: As indicated on the drawings.
- Product Reference: Fire Resisting Door.
- Finish as delivered: PPC Onyx RAL 7016.
- Ironmongery: Emergency escape panic bar ironmongery to EN 179 with key operated external access.
- Threshold: Standard rebated DDA compliant.
- Other Requirements:
 - Doorset to achieve a minimum fire rating of 60 minutes integrity & 15mins Insulation from inside the building.
- Fixing: In accordance with manufacturers instructions.

485B ALUMINIUM EXTERNAL DOORSETS GLAZED FRONT ENTRANCE DOORS

- Manufacturer: Schueco.uk Ltd.
 - Web: www.schueco.co.uk
 - Email: mkinfobox@schueco.com
 - Tel: +44 (0)1908 282111
 - Address: Whitehall Avenue, Kingston, Milton Keynes, Buckinghamshire, MK10 0AL
 - Product reference: ADS 75 HD.HI Doors.
- Size/ Configuration: As indicated on the drawings.
- Performance requirements:
 - Site specific wind loadings calculated in accordance with BS 6399-2: 1997 to be confirmed by manufacturer.
 - The door design shall resist the specified wind loads, dead loads and design live loads, and accommodate deflections and movements without damage.
 - Single-leaf door with 2no. fixed light.- Maximum 'U' values:
 - Average (glass & frame combined): 1.6 W/m²K
- Colour/ Finish:
 - Internal frame: Polyester powder coated - Onyx RAL 7016.
 - External frame: Polyester powder coated - Onyx RAL 7016.
- Glazing/ Infill panels:
 - Glazing
 - As per glazing to clause L10/331
 - Glazing specification to be confirmed by manufacturer to achieve stated performance requirement.
- Ironmongery/ Accessories:
 - Anti-finger trap hinges.
 - Stainless steel lever handles with europrofile cylinder keyed external/ thumbturn internal and deadlock.
 - Emergency escape lever handle/ external key access where indicated on the drawings/ schedules.
 - All necessary couplings, aluminium pressings, thresholds, cills, flashings, brackets, clips, fixings, packers, compressible fillers, sealants, cover caps etc. as required to complete the installation in accordance with the manufacturers recommendations.
- Other requirements:
 - All toughened glass to be heat soak tested to BS EN 14179
 - Project specific installation drawings to be provided prior to installation.
 - Installation to be carried out in strict accordance with the system manufacturers recommendations.
 - Commercially sized PPC letter Plate.

615A SECTIONAL OVERHEAD DOORS LEVEL LOADING BAY DOORS GENERALLY

- Manufacturer: Stertil or acceptable equivalent .
 - Product reference: Sectional Overhead Door .
- Performance: Acoustic control: 26dB and Thermal insulation of panel: 0.59W.m²K .
- Size: To give a clear opening of 4.0m wide and 4.5m high (Note structural opening 4140w x 5070h assuming 70mm insulated reveal linings)
- Arrangement: Vertical lift .
 - Track system: Heavy gauge cold rolled galvanized steel .
- Door panels: Galvanised steel horizontally ribbed inner and outer face infilled with high density polyurethane foam .
 - Finish as delivered: External colour to be Onyx RAL 7016. Internal colour to be standard White RAL 9010 .
- Operation: Electric with manual over-ride & automatic stop facility. .
- Ironmongery: Spring loaded internal sliding shoot-bolt to be provided and interlocked to motor .
- Other requirements: None .

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.

810 FIRE RESISTING/ SMOKE CONTROL DOORS/ DOORSETS/ ROLLER SHUTTERS/ CURTAINS

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

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 ≥ 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

To be read with Preliminaries/ General conditions.

PRELIMINARY INFORMATION/ REQUIREMENTS

- 105 CONTRACTOR'S DESIGN EXTERNAL FIRE ESCAPE STAIRS & BALUSTRADING
- Design responsibility: Determine section sizes and strengths and type, sizes and numbers of fixings.
 - 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: To Building Regulations (Eng) Approved Documents K and M.
 - Additional requirements: Galvanised steel stairs & balustrades .
 - Design and production information: As Preliminaries section A31 .
 - Timing of submissions: As Preliminaries section A31 .
- 108 COMPLETION OF DESIGN OF BALUSTRADE & GUARDING
- Requirement: Complete the detailed design to satisfy specified performance criteria and coordinate with the detailed design of related and adjacent work.
 - Standard: To Building Regulations (Eng) Approved Documents K and M.
 -
- 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: Handrails & Balustrading.

COMPONENTS

- 562 STAINLESS STEEL BALUSTRADES TO INTERNAL STAIRCASES
- Manufacturer: Delta Balustrades Ltd.
 - Product reference: Orbis Balustrade System
 - Loading requirements (minimum): To be designed for horizontal loads to the appr
 - Stairs & Landings

- Horizontal Uniformly Distributed Load	-	0.74 kN/m
- Uniformly distributed load applied to the infill	-	1.00 kN/m ²
- Point load applied to part of the infill	-	0.50 kN
 - Areas susceptible to overcrowding

- Horizontal Uniformly Distributed Load	-	3.00 kN/m
- Uniformly distributed load applied to the infill	-	1.50 kN/m ²
- Point load applied to part of the infill	-	1.50 kN
 - Size: 50 series .
 - Finish: Satin finish stainless steel.
 - Infill:
 - Type: Min.10mm thk. toughened (heat soak tested) & laminated clear glass.
 - Fixing: Sleeved bolt through 'D' Lug glass clamp .
 - Handrail:
 - Type: Sigma .
 - Fixing: Inline stem connection .
 - Other requirements: Refer to drawings .
- 590 APPLIED STAIR NOSINGS TO INTERNAL STAIRS
- Standard: In accordance with BS 8300.
 - Manufacturer: Gradus.
 - Product reference: TEXN 51 Heavy Duty Aluminium Stair Nosing.
 - Material: Mill finish aluminium with pre-bonded PVC bonded mineral aggregate insert with wearing course. Insert to be durable/slip-resistant material surface mounted onto substrate.
 - Size – outer dimensions (rise x going): 55mm x 75mm.
 - Profile: Ramp back edge.
 - Slip resistance value – water wet (minimum): PTV of 45 to BS 7976 to tread.
 - Colour:
 - Channel/ Frame: Mill finish aluminium.
 - Inserts: LRV to BS 8493 contrast of 30 (minimum) with tread/ riser - Colour TBC.
 - Accessories: N/A.

INSTALLATION

- 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

L40 General glazing

To be read with Preliminaries/ General conditions.

GENERAL REQUIREMENTS

- 111 PREGLAZING
 - Preglazing of components: Permitted.
 - Prevention of displacement: Submit details of precautions to be taken to protect glazing and compound/ seals during delivery and installation.
 - Defective/ displaced glazing/ compound/ seals: Reglaze components in situ.
- 150 WORKMANSHIP AND POSITIONING GENERALLY
 - Glazing generally: In accordance with BS 6262 series.
 - Integrity: Glazing must be wind and watertight under all conditions with full allowance made for deflections and other movements.
 - Dimensional tolerances: Panes/ sheets to be within ± 2 mm of specified dimensions.
 - Materials:
 - Compatibility: Glass/ plastics, surround materials, sealers, primers and paints/ clear finishes to be used together to be compatible. Avoid contact between glazing panes/ units and alkaline materials such as cement and lime.
 - Protection: Keep materials dry until fixed. Protect insulating glass units and plastics glazing sheets from the sun and other heat sources.
- 151 PREPARATION
 - Surrounds, rebates, grooves and beads: Cleaned and prepared by others.
- 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

- 630A MANIFESTATION TO ENTRANCE GLAZING
 - Manufacturer: The Window Film Company UK Ltd. or similar.
 - Web: www.windowfilm.co.uk.
 - Email: chesham@windowfilm.co.uk.
 - Product reference: 3M Frosted Crystal Window Film.
 - Type: 50mm dia Dots.
 - Colour: Opaque
 - Size: 50mm.

M

Surface finishes

M40

Stone/ concrete/ quarry/ ceramic tiling/ mosaic

M40 Stone/ concrete/ quarry/ ceramic tiling/ mosaic

To be read with Preliminaries/ General conditions.

TYPES OF TILING/ MOSAIC**110A TILING TO RECEPTION & TOILET FLOORS**

- Tiles: Porcelain tiles.
 - Manufacturer/ Supplier: Solus Ceramics Ltd.
 - Product reference: Travertine One Range.
 - Colour: To be selected from the specified range.
 - Finish: Natural.
 - Size: 600mm x 600mm.
 - Thickness: 10.5mm. ..
- Background/ Base: Power floated cast in-situ concrete slab..
 - Preparation: As clauses: 210, 211 & 432. ..
- Bedding: Thick Bed Adhesive - Solid floors as Clause 680. .
 - Adhesive to BS EN 12004: Mapei KERAQUICK incorporating Mapei LATEX PLUS..
- Joint width: 3 mm.
- Grout: Mapei ULTRACOLOUR PLUS Rapid setting cement based grout.
 - Type/ classification: CG2WA.
 - Colour: To be selected from the 31no.standard colour range.
- Movement joints: ..
 - Location: In accordance with the recommendations of BS 5385: Part 3 (2014), clause (s): 6.8 and 7.1.6.
 - Movement joints in the following locations:
 - Room Perimeters.
 - Column bases.
 - 4.5m x 4.5m control bays.
 - Where tiles abut other materials or at the junction of varying surfaces.
 - Directly above any joints in the structure of the building.
 - Formation of movement joints:
 - Intermediate joints: Schluter Dilex EKSN stainless steel, insert colour to match grout.
 - Perimeter joints:Mapei MAPESIL AC silicone sealant, colour to match grout.
 - All other joints: Schluter EKSA Stainless Steel, insert colour to match grout.
- Accessories: 600 x 90mm matching bullnosed skirting tiles as clause 125. .
 - Schluter Ditra 25 Mat.

111 CERAMIC TILING TO SPLASHBACKS

- Tiles:
 - Manufacturer/ Supplier: Johnson Tiles.
 - Product reference: Prismatics.
 - Colour & finish: as schedules.
 - Size: 150 x 150mm.
 - Thickness: 6.5.
- Background preparation: as recommended by adhesive manufacturer including primer where necessary.
- Bedding: Adhesive bed - notched trowel method, as clause 650.
 - Adhesive to BS EN 12004: BAL Blue Star or similar.
- Joint width: As spacer lugs.
- Grout: BAL Microflex or similar.
- Colour: White
- Accessories: PVC rounded edge trim to exposed perimeter of tiling. Colour to match tiles.

125 SKIRTING TILING TO TOILETS

- Tiles: Porcelain.
 - Manufacturer/ Supplier: Solus Ceramics Ltd..
 - Product reference: Travertine One Range.
 - Colour & finish: Battiscopa - Natural - Colour to be selected from the specified range.
 - Size: 90 x 600mm.
 - Thickness: 10.5mm.
- Background/Base: Power floated concrete.
 - Preperation: As clauses: 210 & 211.
- Bedding: Thick Bed Adhesive - solid walls as clause 685.
 - Adhesive to BS EN 12004: Mapei KERAFLEX MAXI.
- Joint width: 3 mm.
- Grout: Mapei ULTRACOLOUR PLUS Rapid setting cement based grout.
 - Type/Classification: CG2WA.
 - Colour: To be selected from the 31no. standard colour range.
- Movement joints: Mapei MAPESIL AC silicone sealant, colour to match grout.
 - Location: In accordance with the recommendations of BS 5385: Part 3 (2014), clause(s): 6.8 and 7.1.6 ..

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.

- 211 SUITABILITY OF BASES & CONDITIONS
- Before commencing work the subcontractor must complete a test area and confirm through the Main contractor that bases will, after specified preparation, be suitable to receive the specified materials.
 - Installation of materials will be taken as further acceptance of the suitability of the bases and also of the conditions within any given area.
- 215 FALLS IN THE BASES
- General: Give notice if falls are inadequate.
- 270 HEIGHT RESTRICTIONS
- Plasterboard and other boards: BS 5385 recommend that if tiling to plasterboard and other boards over 2400mm guidance should be sought from the board manufacturer.
- 280 WEIGHT RESTRICTIONS
- Plaster has a weight restriction of 20kg per M².
 - Plasterboard and other boards have a weight restriction of 32kg per m².
 - Please refer to BS 5385 part 1 section 3.

PREPARATION

- 311 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.
 - Check suitability of any intended primer with Mapei Technical Dept.
- 370 NEW IN SITU CONCRETE
- Backgrounds/ bases to be tiled: Remove mould oil, surface retarders and other materials incompatible with bedding.
- 380 NEW PLASTER
- Plaster: Dry, solidly bedded, free from dust and friable matter.
 - Plaster primer: Apply if recommended by adhesive manufacturer.
- 390 PLASTERBOARD BACKGROUNDS
- Boards: Dry, securely fixed and rigid with no protruding fixings and face to receive decorative finish exposed.
- 432 POWER FLOATED CONCRETE BACKGROUNDS
- Power floated concrete floors should be mechanically abraded to exposed coarse aggregate and to remove any curing agents or surface hardeners.
 - The concrete must be a minimum of 6 weeks old, in good condition and free from any dust or laitance. An open surface is essential for good adhesion.
- 445 TANKING SYSTEM
- Manufacturer: Mapei UK Ltd.
 - Product reference: MAPELASTIC AQUADEFENSE
 - Prime surface with PRIMER G or PRIMER 'S'.
 - Other requirements:
 - MAPEBAND tape or gussets to be applied to all internal and external corners of wall partitions and their junctions, base up-stands and columns etc, pipe penetration, drainage channel and outlets, junction of different base/backgrounds, cracks or joints.
 - Tape to be coated with two coats of MAPELASTIC AQUADEFENSE each approx 0.4mm thick, to achieve an overall application to a minimum of 0.8mm thickness.
- 460 SMOOTHING UNDERLAYMENT
- Type: Recommended by adhesive manufacturer.
 - Condition: Allow to dry before tiling.
- 475 RAISED ACCESS FLOORS
- Raised access flooring should be checked for rigidity in accordance with quality requirements ensuring that there is no movement or excessive lipping in the access flooring.
 - The floor panels should be fixed to the floor supports and the supports should be locked into position to avoid movement at a later date, due to vibration.
 - To further strengthen the base and provide maximum rigidity, one layer of 18mm WBP or Exterior Grade plywood should be laid over the access flooring and screw fixed to the access floor.
 - Ground floor areas, where there may be risk of some moisture ingress from the ground floor slab, the reverse side and edges of the plywood sheets should be treated with waterproof primer type Primer S prior to fixing.
 - Each sheet of exterior grade plywood should be laid with a 3mm gap left around each sheet and fixing should be with screws at 200mm centres in each direction.
 - A gap of 6mm should be left at floor perimeters against walls and columns. The perimeter gap should be filled with Mapei MAPESIL AC flexible silicone sealant or equivalent

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.

520 ADVERSE CONDITIONS

- Do not fix tiles if the temperature is below 5°C or in damp conditions.
- Do not use frozen materials or apply finishes to frost covered surfaces.
- Comply with Mapei datasheets recommendations for minimum/maximum temperatures when using proprietary adhesives.
- Take adequate precautions to protect work from inclement weather, frost and premature drying out.
-

535 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. ...

540 LEVEL OF FLOOR TILING

- Permissible deviation in level from datum +/-3mm.

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: Mapei Keraflex Maxi. Ensure joints in skirting match & align with joints in floor tiling.

680 THICK BED ADHESIVE - SOLID (FLOORS)

- Apply floated coat of adhesive to dry base and comb the surface with the recommended solid bed trowel.
- Apply adhesive to back of tile as necessary to fill any depressions or keys.
- Press tiles into position to give finished bed thickness within the range recommended by the manufacturer.

685 THICK BED ADHESIVE - SOLID (WALLS)

- Apply floated coat of adhesive to dry background and comb the surface with the recommended solid bed trowel.
- Apply even coat of adhesive over the entire back of each tile.
- Press tiles into bedding with twisting / sliding action to give finished bed thickness within the range recommended by the manufacturer.

780 CHECKING TILE ADHESION

- As work proceeds and before the bedding has set, carefully remove random tiles as directed and in the presence of the CA to verify that there is specified adhesion.
- Remove the initial adhesive, butter the removed tile with fresh adhesive and refix.

MOVEMENT JOINTS/ GROUTING/ COMPLETION

815 SEALANT MOVEMENT JOINTS GENERALLY

- Joints: Extend through tiles and bedding to base/ background. Centre over joints in base/ background.
 - Width: To be advised.
- Sealant: Mapei MAPESIL AC.
 - Colour: To match adjacent grout.
 - 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.

PERFORMANCE

930 COLOURED GROUT

- Adequately protect and keep clean all completed areas. Clean off any droppings immediately.

940 BUILDERS CLEAN

- A suitable mild acid wash should be used on new floors to clean off cement stains from grouting and other building work, which once hardened, will not be removed during normal cleaning procedure.
- Ensure compatibility of acid wash before use in accordance with the manufacturer's instructions.

M50

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

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

To be read with Preliminaries/ General conditions.

TYPES OF COVERING

131 CARPET TILING

- Location: Refer to Schedule.
- Preparation: as recommended by flooring manufacturer including levelling compound where necessary.
- Carpet tiles:
 - Manufacturer: Heckmondwike FB A Division of National Floorcoverings Ltd.
 - Product reference: Supacord Tile.
 - Type: Fibre bonded carpet tile.
 - Size: 500 x 500 mm.
 - Colour/ pattern: to be selected from standard range - refer to Finishes Schedule.
- Method of laying: Fully adhere all tiles with release adhesive recommended by tile manufacturer.
- Accessories: Threshold strips at abutment between dissimilar floor coverings.
- Other requirements: Carpet tiles to be laid 'chequer board' pattern.

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.

270 EXTRA MATERIAL

- Provision of extra material: At completion, hand to Employer extra material of each type of covering to extent of 20no. tiles per unit..

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.

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: As recommended by covering manufacturer.
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.

560 PLYWOOD UNDERLAY

- Standard: An approved national standard.
- Bonding quality: To BS EN 314-2 class 1.
- Appearance: To BS EN 635 class I.
- Finish: Sanded.
- Thickness: 6 mm.
- Sheet size: 2400 x 1200 mm.
- Substrate: Existing floor boards securely fixed and acceptably level with no gross irregularities or protruding fasteners.
- Laying sheets: Stagger cross joints such that no joint within base and underlay is coincident and with a 0.5-1 mm gap between sheets.
- Fasteners: 25 mm ringed shank or twisted shank nails or divergent staples.
 - Spacing: Commencing at centre of one side of each sheet, at 150 mm grid centres over area of each sheet and at 100 mm centres along perimeter, set in 12 mm from edge.
 - Placement: Driven with heads set flush with surface, and not projecting through underside of base. Not deformed.

LAYING COVERINGS

- 610 SETTING OUT TILES
- Method: Set out from centre of area/ room, so that wherever possible:
 - Tiles along opposite edges are of equal size.
 - Edge tiles are more than 50% of full tile width.
- 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.
- 753 STAIR EDGINGS
- Manufacturer: Gradus.
- Product reference: HT38 PVC-u Stair Edgings with pre-welded corners.
 - Colour: As schedule.
- Fixing: Secure, level and with mitred joints and bedded in in gap-filling adhesive recommended by manufacturer.
- 760 STAIR COVERINGS - SEPARATE RISERS AND TREADS
- Fixing: Accurately cut. Fit risers before treads.
- 770 SKIRTINGS
- Types: PVC.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Fixing: Secure with top edge straight and parallel with floor.
 - Corners: Mitre joints.

COMPLETION

- 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.

COATING SYSTEMS**120 MATT EMULSION PAINT TO NEW INTERNAL WALLS & CEILING SURFACES**

- Manufacturer: AkzoNobel.
 - Product reference: Dulux Trade Vinyl Matt.
- Surfaces: New Plaster/ Plasterboard.
 - Preparation: as clause 400.
- Initial coats: Vinyl Matt thinned with 1 part clean water to 5 parts paint.
 - Number of coats: one.
- Undercoats: Vinyl Matt.
 - Number of coats: two.
- Finishing coats: Vinyl Matt.
 - Number of coats: two.

130 GLOSS PAINT TO INTERNAL MDF SKIRTING SURFACES

- Manufacturer: AkzoNobel.
 - Product reference: Dulux Trade High Gloss.
- Surfaces: Preprimed and sealed MDF.
 - Preparation: as clause 400, 440, 461, 481, 490 & 521.
- Initial coats: Surface should be pre-primed ready for .
 - Number of coats: one.
- Undercoats: Dulux Trade Undercoat.
 - Number of coats: one.
- Finishing coats: Dulux Trade High Gloss.
 - Number of coats: one.

GENERALLY**210 COATING MATERIALS**

- Manufacturers: Obtain materials from any of the following:
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.

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.
- Refer to any pre-existing CDM Health and Safety File.
- Refer to CDM Construction Phase Plan where applicable.
- 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.

420 FIXTURES AND FITTINGS

- Removal: Before commencing work remove: any surface fixed fittings & fixtures.
- Replacement: Refurbish as necessary, refit when coating is dry.

- 425 IRONMONGERY
 - Removal: Before commencing work: Remove ironmongery from surfaces to be coated.
 - Hinges: Do not remove.
 - Replacement: Refurbishment as necessary; refit when coating is dry.
- 471 PREPRIMED WOOD
 - Areas of defective primer: Take back to bare wood and reprime.
- 481 UNCOATED WOOD
 - General: Provide smooth, even finish with arrises and moulding edges lightly rounded or eased.
 - Heads of fasteners: Countersink sufficient to hold stoppers/fillers.
 - Resinous areas and knots: Apply two coats of knotting.
- 490 PREVIOUSLY COATED STEEL
 - Defective paintwork: Remove to leave a firm edge and clean bright metal.
 - Sound paintwork: Provide key for subsequent coats.
 - Corrosion and loose scale: Take back to bare metal.
 - Residual rust: Treat with a proprietary removal solution.
 - Bare metal: Apply primer as soon as possible.
 - Remaining areas: Degrease.
- 500 PREPRIMED STEEL
 - Areas of defective primer, corrosion and loose scale: Take back to bare metal. Reprime as soon as possible.
- 511 GALVANIZED, SHERARDIZED AND ELECTROPLATED STEEL
 - White rust: Remove.
 - Pretreatment: Apply one of the following:
 - Mordant solution to blacken whole surface.
 - Etching primer recommended by coating system manufacturer.
- 560 UNCOATED CONCRETE
 - Release agents: Remove.
- 590 UNCOATED PLASTERBOARD
 - Depressions around fixings: Fill with stoppers/ fillers
- 645 SEALING OF INTERNAL MOVEMENT JOINTS
 - General: To junctions of walls and ceilings with architraves, skirtings and other trims.
 - Sealant: Water-borne acrylic.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - 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.
- 720 PRIMING JOINERY
 - Preservative treated timber: Retreat cut surfaces with two flood coats of a suitable preservative before priming.
 - End grain: Coat liberally allow to soak in, and recoat.
- 780 BEAD GLAZING TO COATED WOOD
 - Before glazing: Apply first two coats to rebates and beads.
- 800 GLAZING
 - Etched, sand blasted and ground glass: Treat or mask edges before coating to protect from contamination by oily constituents of coating materials.
- 810 WATER REPELLENT
 - Application: Liberally flood surface, giving complete and even coverage.

M61 Intumescent coatings for fire protection of steelwork

To be read with Preliminaries/General conditions

PROTECTIVE COATING SYSTEMS

110 ON SITE COATING TO PRIMED STEEL AS REQUIRED TO SUIT FIRE STRATEGY

- Use/ location: Internal Structural Steelwork.
- Fire resistance to BS 476-21: 60 minutes.
- Preparation and priming: By steelwork contractor, as section G10.
- Intumescent coating system:
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Intumescent coat:
 - Type: Contractor's choice.
 - Finish: Non-visible areas: Basic and Visible areas: High decorative.
 - Top sealer coat:
 - Type: As recommended by intumescent coating manufacturer.
 - Colour: To be selected from standard range.
- Bolt head/ Nut protection: As main steelwork.

GENERAL REQUIREMENTS

205 VALIDATION OF MATERIALS

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

210 WORKING PROCEDURES

- Standard: In accordance with 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 manufacturer's recommended temperature, humidity and air quality conditions during application and drying.
- Surface condition: Clean and dry at time of application.

220 APPLICATOR'S PERSONNEL

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

250A SPRAYED COATING APPLICATION ON SITE

- Standard: In accordance with BS 8202-2.
- Spray drift: Minimize.
- Masking: Protect adjacent surfaces.

260 CONTROL SAMPLES

- General: Carry out sample areas of finished work as follows:
One column and two adjoining beams.
- Approval of appearance: Obtain before commencement of general application.

270 INSPECTION

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

280 OFF SITE COATED STEEL

- Handling and erection: Use methods and devices designed to minimise damage to intumescent coatings.
- Damaged areas of coating: Reinstate in accordance with coating manufacturer's recommendations.

PREPARATION OF SURFACES

315 NEW STEEL - BLAST CLEANING

- Preparation: Remove oil, grease and contaminants.
- 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 CASTINGS

402 INTUMESCENT CASTING THICKNESS

- Required thickness: Determine for every steel member to give specified period of fire resistance. Use intumescent casting manufacturer's current published loading tables.
 - Special sections and partial fire exposure conditions: Obtain required thickness 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 casting thickness.
 - Drawing content: Steelwork drawings marked in colour to show required thickness for each member.

404 INTUMESCENT CASTING INSTALLATION

- Assembly: Adhesive fix casting sections tight to steel substrate.
- Filling: Apply intumescent filler to all joints and deformations to produce a smooth and uniform finish.

APPLICATION OF COATINGS

410A INTUMESCENT COATING 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.

450 NORMAL DECORATIVE FINISH

- Definition: Good standard of cosmetic finish generally, when viewed from a distance of 5 m or more. Minor orange peel or other texture is 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.

520 COMPLETION OF OFF SITE COATED STEEL

- Uncovered areas, including fixings: Following erection of steelwork, apply intumescent coating locally.
- Unscheduled additional connections to erected steelwork: Remove and reinstate intumescent coating locally.

COMPLETION

530 RECORDS OF INTUMESCENT APPLICATION

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

N10

General fixtures/ furnishings/ equipment

N10 General fixtures/ furnishings/ equipment

To be read with Preliminaries/General conditions.

PRODUCTS

150A VANITY UNITS

- Manufacturer: Venesta. www.venesta.co.uk
 - Product reference: HPL Vanity, Profile K1.
- Countertop: 350mm overall width bed with post-formed and radiused 300mm front apron (downstand).
 - Material: 680kg/m³ grade moisture resistant Chipboard faced each side with High Pressure Laminate (HPL).
 - Colour: To be selected from manufacturers standard range.
 - Overall bed height: See drawings.
- Underpanel:
 - Material: HPL faced and balanced MR chipboard.
 - Colour: To be selected from manufacturers standard range.
 - Edge treatment: Manufacturer's standard.
- Framing/ Support: Softwood frame, site fabricated.
- Support frame facings/ Flashgaps:
 - Material: HPL faced and balanced MR chipboard.
 - Colour/ Pattern: To be selected from manufacturers standard range.
- Other requirements:
 - Access panels to be removable & lockable.
 - All necessary fittings to complete installation in accordance with manufacturers recommendations.

300A ENTRANCE MATTING TO FRONT ENTRANCE

- Manufacturer: Heckmondwike. www.heckmondwike-fb.co.uk.
 - Product reference: Vanquisher.
- Colour: Charcoal.
- Size: See drawings for layout.

437 MIRRORS TO WC's

- Dimensions:
 - Length: 1150mm (or 750mm above vanity unit).
 - Width: 450mm (or 400mm above vanity unit).
- Material: Silvered float glass to BS EN 1036-1.
- Quality: Free from tarnishing, discoloration, scratches and other defects visible in the designed viewing conditions. Reflection undistorted.
- Backing: Polypropylene safety film.
- Edges:
 - Treatment: Polished.
 - Profile: Square.
- Fixing: Holes, 4 mm diameter, inset 50 x 50 mm from corners, for fixing screws.
- Installation: Accurately with sides vertical.

460 SEALANT TO VANITY FURNITURE

- Standard: To BS EN ISO 11600, class F20 HM.
- Type: One part silicone.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Cure: Neutral.
- Colour: White
- Other requirements: None.

EXECUTION

710A 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: Sinks to top of worktops.
- Pointing: Joints between units and floor finish.

770 TRIMS

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

COMPLETION

910 GENERAL

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

920 APPLIANCES

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

N11

Domestic kitchen fittings, furnishings and equipment

N11 Domestic kitchen fittings, furnishings and equipment

To be read with Preliminaries/ General conditions.

PRODUCTS

- 315 KITCHEN UNITS TO TEA POINT
- Manufacturer: Howdens Joinery Co.
 - Product reference:
 - Base & Wall units: Greenwich white gloss
 - Worktops: 38mm thick post formed 'Charcoal' matt worktop
 - Handles: Stainless Steel Effect T Bar Handle - HKB1131
 - Refer to drawings for details.
- 350A SINKS, TAPS, TRAPS AND WASTES TO TEA POINT
- Sinks:
 - Standard: To BS EN 13310.
 - Manufacturer: Howdens Joinery Co..
 - Product reference: Stainless Steel Compact Single Bowl Sink and Bolsena Tap -SNT6950.
 - Configuration: See drawing W411.
 - Overall size: 1000 x 600.
 - Material: Stainless steel .

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.
- 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: Sink to top of worktop.
 - Pointing: Between units and splash backs.
- 670 INSTALLING TRIMS AND MOULDINGS
- Lengths: Un-jointed between angles or ends of runs.
 - Angle joints: Mitred.

COMPLETION

- 910 GENERAL
- Doors and drawers: Accurately aligned, not binding. Adjusted to ensure smooth operation.
 - Ironmongery: Checked, adjusted and lubricated to ensure correct functioning.
- 920 APPLIANCE COMMISSIONING
- Appliance operation, functions and controls: Verify.
 - Documentation: Submit guarantees, instruction manuals, etc.

N13 Sanitary appliances and fittings

To be read with Preliminaries/ General conditions.

PRODUCTS

- 311 UNISEX ACCESSIBLE CORNER WC EQUIPMENT PACKAGES (DOCUMENT M) WC COMPARTMENT
- Manufacturer: Armitage Shanks.
 - Product reference: Doc M Contour 21+ Close Coupled left or right hand packs (dependent on layout - see plans).
 - Type approval certificate: Submit.
 - Finish/ Colour:
 - Pan: Vitreous china, white.
 - Cistern: Close coupled, Manufacturer's standard.
 - Seat: Manufacturer's standard - Colour TBC.
 - Basin: Vitreous china, white.
 - Handrails and grab bars: Manufacturer's standard - Colour TBC.
 - Transfer handing: Various, Refer to drawings.
 - Water supply fittings (basin): Lever operated basin mixer tap. Thermostatic requirements TBC..
 - Water supply temperature (maximum): 43°C.
 - Accessories: All necessary fixtures, fittings, connectors, brackets, etc. to complete installation in accordance with manufacturer's recommendations. Splashback tiles to sink.
- 338 SEMI-RECESSED WASH BASIN
- Manufacturer: Armitage Shanks. www.idealspec.co.uk.
 - Product reference: Concept Air Arc 50cm Semi-Countertop Washbasin, E1389(01).
 - Tap/ Chainstay/ Overflow holes: Central tap hole with overflow.
 - Water supply fittings for single tap hole basin:
Wastes: Manufacturer's standard.
 - Traps: Manufacturer's standard.
 - Accessories:
 - Tap - Tesi single lever basin mixer with pop-up waste and 5lpm eco flow regulator A6592 (AA)
 Other requirements: Brackets, fixtures & fittings etc. to complete the installation in accordance with the manufacturers recommendations.
- 375 SHOWER UNITS TO WC'S
- Tray: Acrylic Capped ABS and Polymer Resin.
 - Standard: BS EN 14527.
 - Class: Not applicable.
 - Manufacturer: Ideal Standard - www.idealspec.co.uk.
 - Product reference: Idealite Low Profile Square Flat Top Shower Tray.
 - Size: 1200 x 800 mm.
 - Material: Acrylic resin, white.
 - Shower fittings: ..
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Finish: Chrome plated.
 - Operating control: Lever and temperature ring .
 - Water supply temperature (maximum): 43°C.
 - Flow rate: 9 L/ min. at 37°C at 3 bar.
 - Wastes: . .
 - Standards: To BS EN 274-1, -2 and -3.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Size: To suit.
 - Material: chrome plated.
 - Tail: Unslotted.
 - Traps: ..
 - Standards: To BS EN 274-1, -2 and -3.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Size: To Suit.
 - Material: Plastics, self colour.
 - Depth of seal (minimum): 50 mm.
 - Enclosure: Aluminium framed safety glazed screen, two sides and Pivoted door.
 - Standard: BS EN 14428.
 - Manufacturer: Ideal Standard - www.idealspec.co.uk.
 - Product reference: Kubo Pivot Corner door enclosure.
 - Accessories: ..
- 429A CLOTHES HOOKS TO WC'S
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Material: Stainless Steel.
 - Finish/ Colour: Brushed.
 - See drawing W410 for location.
- 462 TOILET PAPER HOLDERS ONE PER WC
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Material/ finish: Stainless Steel.
 - Finish/ Colour: To coordinate with ironmongery.

- 472 HAND DRIERS TO WC'S
- Standard: To BS EN 60335-2-23.
 - Type: High velocity air.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Operation: Automatic.
 - Heater power rating: Not applicable.
 - Enclosure: Stainless steel.
 - Colour: A/N.
 - Fixing arrangement: Surface.
 - Ingress protection to BS EN 60529: Contractor's choice.
 - Noise level at 1 m (maximum): 70 dB(A).
 - Features: Hands only.
 - Electrical supply: Fused switched 13 A connection.

- 585 SILICONE SEALANT
- Manufacturer: Dow Corning.
 - Product reference: 785 Sanitary Silicone Sealant
 - Colour: White.

EXECUTION

- 610 INSTALLATION GENERALLY
- Assembly and fixing: Surfaces designed to falls to drain as intended.
 - Fasteners: Nonferrous or stainless steel.
 - Supply and discharge pipework: Fix before appliances.
 - Fixing: Fix appliances securely to structure. Do not support on pipework.
 - Jointing and bedding compounds: Recommended by manufacturers of appliances, accessories and pipes being jointed or bedded.
 - Appliances: Do not use. Do not stand on appliances.
 - On completion: Components and accessories working correctly with no leaks.
 - Labels and stickers: Remove.
- 613 COMPATIBILITY OF COMPONENTS
- General: Each sanitary assembly must consist of functionally compatible components, preferably obtained from a single manufacturer.
 - Exceptions: Water supply fittings, wastes and traps.
- 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.
- 670 INSTALLING CISTERNS
- Cistern operating components: Obtain from cistern manufacturer.
 - Inlet and flushing valves: Match to pressure of water supply.
 - Internal overflows: Into pan, to give visible warning of discharge.
 - External overflows: Fix pipes to falls and locate to give visible warning of discharge. Agree location 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.
- 725 INSTALLING HAND DRIERS
- Fused connection units:
 - Type: Switched.
 - Engraving: With 'HAND DRIER'.
 - Location: Next to hand drier.
 - Final connection: Concealed.
 - Containment: 25 mm PVC-U rigid conduit.
- 750 SEALANT POINTING
- Pointing: Joints between appliances and adjacent wall/ floor surfaces .

N15 Internal fire and safety signage systems

To be read with Preliminaries/ General Conditions.

GENERAL

110 FIRE AND SAFETY SIGNAGE SYSTEMS FOR ESCAPE ROUTE

- System manufacturer: Contractor's choice.
 - System reference: Contractor's choice.
- Locations and layout: Submit proposals.
 - Language: English.
- Material: Contractor's choice.
 - Other properties: Submit proposals.

SYSTEM PERFORMANCE

205 DESIGN OF INTERNAL SIGNAGE SYSTEMS ESCAPE ROUTES

- Design: Complete detailed design and submit before commencing work.
- Content: Signs including facing information, components, inserts, accessories and fixings necessary to complete the system.
- Proposals: Submit drawings, schedules, technical information, calculations and manufacturer's literature before commencing work.

210 GENERAL REQUIREMENTS

- Signage and way guiding system design: Internal Fire Escape.
 - For fire escape and evacuation signage: In accordance with: BS 5499-4 or BS ISO 16069.
 - For way guiding systems: In accordance with BS ISO 16069.
 - For safety signs other than escape route signage: In accordance with: BS 5499-10.
- Comply with the requirements of: Fire Strategy Report.

280 DESIGN LIFE OF FIRE ESCAPE SIGNAGE SYSTEM

- Duration: 15 years.
 - Subject to reasonable wear and tear.
- Condition of use: Subject to regular maintenance.

290 SIGNAGE SAMPLES

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

PRODUCTS

310 ADHESIVE VINYL FOR ESCAPE ROUTE SIGNS

- Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Component thickness: 1 mm.
- Finish: Gloss.

EXECUTION

610 FIXING SIGNS GENERALLY

- Installation: Secure, plumb and level.
- Fasteners and adhesives: As section Z20.
- Strength of fasteners: Sufficient to support live and dead loads.
- 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.

Unframed isolated trims/ skirtings/ sundry items

P20 Unframed isolated trims/ skirtings/ sundry items

To be read with Preliminaries/ General conditions

210 MEDIUM DENSITY FIBREBOARD SKIRTINGS

- Standard: To BS EN 622-5.
 - Type: MDF.
 - Size: 15 x 75mm.
 - Profile: Pencil round.
- Finish: Primed.
- Support/ Fixing: At max. 450mm c/c with fixings suitable for background.

215 MEDIUM DENSITY FIBREBOARD ARCHITRAVES

- Standard: To BS EN 622-5.
 - Type: MDF.
 - Size: 18 x 50mm.
 - Profile: Pencil round.
- Finish: Primed.
- Support/ Fixing: At max. 450mm c/c with fixings suitable for background.

220 MEDIUM DENSITY FIBREBOARD WINDOWBOARDS

- Standard: To BS EN 622-5.
 - Type: MDF.
 - Size: 25mm thk. x depth to provide 25mm projection beyond internal wall surface..
 - Profile: Bullnosed.
- Finish: Primed.
- Support/ Fixing: At max. 600mm c/c with fixings suitable for background.

EXECUTION

510 INSTALLATION GENERALLY

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

P21 Door/ window ironmongery

To be read with Preliminaries/ General conditions.

PRE-TENDER

10 QUANTITIES AND LOCATIONS

- Quantities and locations of ironmongery are in the schedules .
- Fixing: As sections L10 and L20.

GENERAL

123 IRONMONGERY FROM SINGLE PROPRIETARY RANGE

- Manufacturer: Datim Architectural Ironmongery or acceptable equivalent .
- Principal material/ finish: Polished stainless steel (316) .
- 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 handle, Pull Handle, Lock/Latchcase, Cylinder & escutcheon .
 - Conformity: Retain board on site in an approved location for the duration of the contract. Ensure conformity of ironmongery as delivered with labelled samples.

180A CATEGORY OF DUTY FOR DOOR IRONMONGERY

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

DOOR HANGING DEVICES

316 PERFORMANCE SPECIFICATION FOR SINGLE AXIS DOOR HINGES FOR INTERNAL DOORS

- Standard: To BS EN 1935.
 - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
 - Hinge grade: 13 .
- Type: Fixed pin ball bearing hinge .
- Size: 100mm.
- Material/ finish: Satin stainless steel .

DOOR OPERATING DEVICES

413 PERFORMANCE SPECIFICATION FOR OVERHEAD DOOR CLOSERS FOR INTERNAL DOORS

- Standard: To BS EN 1154.
 - Door closing devices to fire/ smoke control doors: CE marked.
- Minimum classification grades:
 - Category of use: 4 .
 - Durability: 8.
 - Door closer power size: Adjustable 3-5 .
 - Suitability for use on fire/ smoke doors: 1 .
 - Type: Face fixed to pull side of door leaf .
- Other functions: Delayed action and backcheck facility .
- Casing finish: Polished stainless steel .
- Operational adjustment:
 - Variable power: Matched to the sizes and weights 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.
 - The opening force at the leading edge of the door is no more than 30N from 0° to 30° and not more than 22.5N from 30° to 60° of the opening cycle.
- Other requirements:
 - Guide rail fixings to ensure minimum 30mm embedment into door frame.
 - Closer to be provided with electromagnetic hold open slide channel or electromagnetic hold open magnet where indicated on the schedule.
 - Electromagnetic hold open devices to be interfaced with automatic fire detection system to ensure the door closes upon power failure or activation of the fire detection system.
 - Hold open door closers should creep no more than 2° in 48 hours.
 - Electromagnetic hold open door closers should also comply with BS EN 1155.
 - Where hold open facility provided, a separate manual release switch is to be provided.
 - Where fitted, hold open magnets and door closers to be located at the same height to prevent twisting of the door leaf.

453 PERFORMANCE SPECIFICATION FOR FLOOR SPRINGS FOR INTERNAL DOORS

Standard: To BS EN 1154.

- Door closing devices to fire/ smoke control doors: CE marked.
- Minimum classification grades:
 - Category of use: 4 .
 - Durability: 8.
 - Door closer power size: Adjustable 3-6 .
 - Suitability for use on fire/ smoke doors: 1 .
 - Safety: 1.
- Other functions: As schedule .
- Material/ finish: Satin 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.

473 PERFORMANCE SPECIFICATION FOR ELECTROMAGNETIC HOLD OPEN/ SWING-FREE DEVICES (24V)

Standard: To BS EN 1155.

- Electromagnetic devices to fire/ smoke control doors: CE marked.
- Type: Swing free, integral with closer - TBC .
- Minimum classification grades:
 - Category of use: 3.
 - Durability: 8 .
 - Hold open power size: 6 .
 - Suitability for use on fire/ smoke doors: 1.
- Material/ finish: Polished stainless steel .
- Means of release: Alarm system and/ or failure of power supply.
- Test switch: Located in a convenient position adjacent to door.
- Operational adjustment of integral closer:
 - 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.
- Other requirements (where indicated on the schedule):
 - Free swing closers should also comply with BS EN 1154.
 - Guide rail fixings to go through architrave and into the frame by a minimum of 30mm.

DOOR SECURING DEVICES

526 PERFORMANCE SPECIFICATION FOR DOOR LOCKS AND LATCHES

FOR INTERNAL DOORS

Standard: To BS EN 12209.

- Minimum classification grades:
 - Category of use: 3.
 - Durability: M.
 - Door mass and closing force: 4.
 - Suitability for use on fire/ smoke doors: 1.
- Material/ finish: Polished stainless steel faceplate.
- Other requirements:
 - Europrofile cylinder to BS EN 1303 grade 5 to lockcases.
 - Suiting, thumbturns, classroom function etc. as scheduled.

573 PERFORMANCE SPECIFICATION FOR EMERGENCY EXIT DEVICES

Standard: To BS EN 179.

- Emergency exit devices for locked doors on escape routes: CE marked.
- Minimum classification grades:
 - Category of use: 3.
 - Type of operation: B: Push pad operation .
- Material/ finish: Satin stainless steel .
- Additional requirements: External locking attachment to be suited with other locks .

580 PERFORMANCE SPECIFICATION FOR PANIC EXIT DEVICES

Standard: To BS EN 1125.

- Panic exit devices for locked doors on escape routes: CE marked.
- Minimum classification grades:
 - Category of use: 3.
 - Type of bar operation: A: Push bar operation .
- Material/ finish: Polished stainless steel .
- Additional requirements: External locking attachment to be suited with other locks .

588 PRIVACY INDICATOR BOLTS

Type: Rotary, internal disabled thumbturn with indicator .

- Material/ finish: Polished stainless steel .
- Emergency release facility: Required.

DOOR FURNITURE

- 623 PERFORMANCE SPECIFICATION FOR LEVER HANDLE SETS FOR INTERNAL DOORS
- Standard: To BS EN 1906.
 - Minimum classification grades:
 - Category of use: 3 .
 - Type of operation: U .
 - Style: Round pattern with return to door .
 - Size: 19 mm diameter .
 - Material/ finish: Satin stainless steel, grade T316 .
 - Mounting:
 - Unsprung circular rose with bolt through fixings
 - Metal fixing roses (not plastic) .
 - Additional requirements: Thread locking compound to be applied to bolt through fixings .
- 652 PERFORMANCE SPECIFICATION FOR PULL HANDLES FOR INTERNAL DOORS
- Standard: To BS 8424.
 - Minimum classification grades:
 - Category of use: 3.
 - Shape: D handle.
 - Diameter: 19 mm.
 - Distance between centres: 300 mm.
 - Material/ finish: Satin stainless steel, grade T316.
 - Mounting: circular metal rose with bolt through fixings.
 - Additional requirements Thread locking compound to be applied to bolt through fixings.
- 675 PUSH PLATES TO INTERNAL DOORS
- Size: 330 x 90 x 2mm thk .
 - Material/ finish: Satin stainless steel .
 - Mounting: Face fix .
 - Additional requirements: Radiused corners .
- 695 KICK PLATES TO INTERNAL DOORS
- Size: 2mm thk. x 200mm high x width between stops .
 - Material/ finish: Satin stainless steel .
 - Mounting: Face fix .
 - Additional requirements: Radiused corners .
- 715 ESCUTCHEONS TO INTERNAL DOORS
- Size: Circular, 50mm dia. to match lever handle rose.
 - Material/ finish: Satin stainless steel .
 - Keyhole type: Euro profile cylinder .
 - Usage: To cylinder locks where no handle backplate is specified to be fitted .
- 725 DOOR STOPS TO INTERNAL DOORS
- Type: Floor mounted black rubber centre fixing .
 - Usage: To doors opening against walls other than those fitted with closers with a back check facility .
- 730 LETTER PLATES TO ENTRANCE DOORS
- Standard: To BS EN 13724.
 - Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .
 - Operation: Outward opening gravity flap .
 - Size: 305 x 76 mm .
 - Material/ finish: Polished Stainless Steel .
 - Features: None .
- 735 INTERNAL LETTER FLAPS TO ENTRANCE DOORS
- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .
 - Type: Inward opening gravity flap .
 - Size: 305 x 76 mm .
 - Material/ finish: Polished Stainless Steel .
- 850 THRESHOLD WEATHERSTRIP TO ALL DOORS
- Manufacturer: Contractor's choice .
 - Product reference: Submit proposals .
 - Type: Grooved High Flat Threshold .
 - Size: To suit door .
 - Material/ finish: Stainless Steel .

Q10 Kerbs/ edgings/ channels/ paving accessories

TO BE READ WITH PRELIMINARIES/ GENERAL CONDITIONS.

TYPES OF KERBS/EDGINGS AND CHANNELS

- 110A PROPRIETARY PRECAST CONCRETE KERBS
- Standard: To BS EN 1340.
 - Manufacturer: Marshalls.
 - - Product reference: Bullnosed Kerb.
 - Designations: BN Kerb, bullnosed.
 - Size (width x height x length): 125 x 150 x 915mm.
 - Special shapes: Internal & External Angles.
 - Finish: As cast.
 - Colour: British Standard Grey.
 - Bedding: Cement mortar.
 - Joints generally: Dry, 2-3 mm gap.
 - Sealant movement joints: Not required.
 - Accessories: None.
- 150 CONCRETE BLOCK AROUND SERVICE ROAD
- Standard: To BS EN 1338.
 - Manufacturer: MARSHALLS.
 - - Product reference: CS3 CHANNEL.
 - Recycled content: Contractor's choice.
 - Size: 150mm wide x 125mm high.
 - Special shapes: Square Top.
 - Finish: As cast.
 - Colour: Natural.
 - Bedding: Cement mortar.
 - Joints generally: Dry, 2 mm gap.
 - Sealant movement joints: Not required.

ROADS/PAVING ACCESSORIES/ MARKING/ DEMARCATION

- 396 ROAD MARKING (THERMOPLASTIC)
- Standard: Road Safety Markings Association standard specification document for road marking and road studs (StanSpec).
 - Manufacturer: Contractor's choice.
 - - Product reference: Contractor's choice.
 - Colour: White.
 - Retroreflectivity to BS EN 1436: Not required (Class R0).
 - Surfaces to receive markings: Clean and dry, loose material removed. Surfaces to receive coat of suitable primer if recommended by paint manufacturer.
 - Application: Uniform, with no streaks or ragged edges.
 - Other requirements: Paint/Tape/Preformed Symbols etc. to be applied in strict accordance with manufacturers instructions and recommendations.

LAYING

- 510 LAYING KERBS, EDGINGS AND CHANNELS
- Cutting: Neat, accurate and without spalling. Form neat junctions.
 - Long units (450 mm and over) minimum length after cutting: 300 mm.
 - Short units minimum length after cutting: The lower of one third of their original length or 50 mm.
 - Bedding of units: Positioned true to line and levelled along top and front faces, in a mortar bed on accurately cast foundations or on a race of fresh concrete.
 - Securing of units: After bedding has set, secured with a continuous haunching of concrete or on a race of fresh concrete with backing concrete cast monolithically.
- 520 ADVERSE WEATHER
- Conditions: Do not construct if the temperature is below 3°C on a falling thermometer or 1°C on a rising thermometer. Adequately protect foundations, bedding and haunching against frost and rapid drying by sun and wind.
- 530 CONCRETE FOR FOUNDATIONS, RACES AND HAUNCHING
- Standard: To BS 8500-2.
 - Designated mix: Not less than GEN0 or Standard mix ST1.
 - Workability: Very low.
- 540 CEMENT MORTAR BEDDING
- General: To section Z21.
 - Mix (Portland cement:sand): 1:3.
 - Portland cement: Class CEM I 42.5 to BS EN 197-1.
 - Sand: to BS EN 12620, grade 0/4 or 0/2 (MP).
 - Bed thickness: 12-40 mm.
- 610 ANGLE KERBS
- Usage: Internal and external 90° changes of direction.
 - Cutting of mitres: Not permitted.
- 620 ACCURACY
- Deviations (maximum):
 - Level: ± 6 mm.
 - Horizontal and vertical alignment: 3 mm in 3 m.

Q22 Asphalt roads/ pavings

To be read with Preliminaries/ General conditions.

TYPES OF PAVING**110A ASPHALT CONCRETE PAVING TO CAR PARK & ROAD**

- Standard: To BS EN 13108-1.
- Subgrade improvement layer: Submit proposals.
 - Compacted thickness: Submit proposals.
- Geotextile: Sheet.
 - Manufacturer: Contractor's choice.
 - Product reference: Submit proposals.
- Granular sub-base: Contractor's choice.
 - Compacted thickness: Submit proposals.
- Base: Contractor's choice.
 - Paving grade: Submit proposals.
 - Compacted thickness: Submit proposals.
- Binder course: Contractor's choice.
 - Paving grade: Submit proposals.
 - Compacted thickness: Submit proposals.
- Surface course: Not required.
 - Paving grade: Submit proposals.
 - Slip/ Skid resistance: Submit proposals.
 - Compacted thickness: Submit proposals.
- Reclaimed content:
 - Standard: To BS EN 13108-8.
 - Value (maximum): Submit proposals.
- Surface treatment: Uncoated chippings.
- Other requirements: none..

127A POROUS GRASS PAVING TO PERIMETER OF BUILDINGS

- Standard: To BS EN 13108-7.
- Geomembrane: Geotextile membranes.
 - Manufacturer: SURE GREEN.
 - Product reference: PP40.
- Granular sub-base: Contractor's choice.
 - Compacted thickness: 75 mm.
- Water collection: Not required .
- Base: Contractor's choice.
 - Compacted thickness: Contractor's choice.
- Binder course: Contractor's choice.
 - Paving grade: 100/150.
 - Compacted thickness: As surfacing manufacturer's recommendations.
- Surface course:
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Type: Contractor's choice.
 - Paving grade: 70/100.
 - Slip/ Skid resistance: No requirement.
 - Compacted thickness: Contractor's choice.
- Reclaimed content:
 - Standard: To BS EN 13108-8.
 - Value (maximum): Contractor's choice.

PREPARATORY WORK/ REQUIREMENTS**220 BITUMINOUS MATERIALS GENERALLY**

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

240 ACCEPTANCE OF SURFACES

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

LAYING**310 LAYING GENERALLY**

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

320 ADVERSE WEATHER

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

330 LEVELS

- Permissible deviation from the required levels, falls and cambers (maximum): In accordance with BS 594987, clause 5.2.

340 FLATNESS/ SURFACE REGULARITY

- Deviation of surface: Where appropriate in relation to the geometry of the surface, the variation in gap under a 3 m straightedge placed anywhere on the surface to be not more than:
 - Base: Hand laid, 25 mm and Machine laid, 25 mm.
 - Binder course: Hand laid, 13 mm and Machine laid, 13 mm.
 - Surface course: Hand laid, 10 mm and Machine laid, 7 mm.
 - Where a straightedge cannot be used the surface must be of a comparable standard of accuracy when judged by eye.

COMPLETION

390 DOCUMENTATION

- Standard: BS EN 13108-1.
 - Declaration of conformity: Submit.
- Number of copies: 3.
- Submission: Two weeks prior to date when Contractor expects work to be complete.

Gravel/ Hogglin/ Woodchip/ Resin bound roads/ pavings/ overlays

Q23 Gravel/ Hoggin/ Woodchip/ Resin bound roads/ pavings/ overlays

To be read with Preliminaries/ General conditions.

TYPES OF SURFACING

150A LOOSE LAID CHIPPINGS LIMESTONE SCALPINGS - SUITABLE FOR MEWP ACCESS

- Subgrade improvement layer: Contractor's choice.
 - Compacted thickness: Contractor's choice.
- Geotextile or geomembrane: Geotextile sheet.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Water collection: Not required .
- Surface course: Loose laid chippings.
 - Type: Limestone chippings.
 - Source: Contractor's choice.
 - Colour: Submit Proposals.
 - Size: Submitt Proposals.
 - Compacted thickness: Submit Proposals.
- Completion: Compact to produce a firm, regular surface, stable in use.

170 LOOSE GRAVEL OVERLAY TO BUILDING PERIMETER MARGINS

- Base: Back filled soil.
 - Preparation: Prepare ground to be flat and even. Lay suitable geotextile membrane.
- Gravel: Loose laid and raked to uniform thickness:
 - Type: Washed gravel.
 - Source: Contractor's choice.
 - Colour: Buff.
 - Size: 6-8mm single size.
 - Thickness: 120mm minimum.

LAYING

340 LAYING GENERALLY

- Channels, gullies, etc: Keep clear.
- Finished surfaces:
 - Lines and levels: To prevent ponding.
 - Overall texture: Even.
 - State at completion: Clean.

Q40 Fencing

To be read with Preliminaries/ General conditions.

FENCING SYSTEMS

- 125 PALISADE STEEL GENERAL PURPOSE FENCING (REPLACED WHERE APPROPRIATE)
- Manufacturer: Contractor's choice.
 - Product reference: V-mex security fencing.
 - Standard: To BS 1722-14, category 1.
 - Height: 2400 mm.
 - Colour: coated green to BS 1722-16.
 - Posts: Galvanized rectangular hollow section, green plastics coated.
 - Maximum centres of posts: Contractor's choice.
 - Method of setting posts: Contractor's choice.
 - Bottom of fencing: Buried 300 mm deep in soft landscaped areas, anchored to 200mm wide concrete cill in hard landscaped areas.
 - Accessories: Single leaf pedestrian gates & double leaf vehicular gates where indicated on the drawings.
 - All gates to be manually operated.
 - Each leaf of double gates to be provided with heavy duty drop bolts.
 - All gates to be provided with bolt locking mechanism suitable for securing with heavy duty padlock to be supplied by others.
 - Conformity: Submit manufacturer's and installer's certificates, to BS 1722-14.

GATES, POSTS AND STILES

- 550 WOOD BATTENS & CLADDING TO RECYCLING & BIN STORE
- Manufacturer: Contractor's choice.
 - Standard: To BS 5709.
 - Wood: Softwood.
 - Treatment: As section Z12 and Wood Protection Association Commodity Specification C3.
 - Type: To provide a 30 year service life.
 - Finish: Varnish, as section M60.
 - Adhesive: Synthetic resin to BS EN 301, type 1.
 - Workmanship: As section Z10.
 - Fittings: Two tee hinges, return spring and a thumb latch.
 - Finish: Hot dip galvanized to BS EN ISO 1461.
 - Method of fixing: Contractor's choice.
 - Accessories: As drawing W490, fixed back to galvanised steel posts..

560A STEEL POSTS TO TO RECYCLING & BIN STORE

- Manufacturer: Contractor's choice.
- Standard:
 - Domestic gates: To BS 4092-1.
 - Steel palisade gates: To BS 1722-12.
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Materials and workmanship: As section Z11.
- Finish: Hot dip galvanized to BS EN ISO 1461.
 - Colour: Self finish.
- Method of fixing: Contractor's choice.
- Accessories: As drawing W490.

EXECUTION

- 710 INSTALLATION GENERALLY
- Set out and erect:
 - Alignment: Straight lines or smoothly flowing curves.
 - Tops of posts: Following profile of the ground.
 - Setting posts: Rigid, plumb and to specified depth, or greater where necessary to ensure adequate support.
 - Fixings: All components securely fixed.
- 720 SETTING POSTS IN CONCRETE
- Standard: To BS 8500-2.
 - Mix: Designated concrete not less than GEN1 or Standard prescribed concrete not less than ST2.
 - Alternative mix for small quantities: 50 kg Portland cement to 150 kg fine aggregate to 250 kg 20 mm nominal maximum size coarse aggregate, medium workability.
 - Admixtures: Do not use.
 - Holes: Excavate neatly and with vertical sides.
 - Filling: Position post/ strut and fill hole with concrete to not less than the specified depth, well rammed as filling proceeds and consolidated.
 - Backfilling of holes not completely filled with concrete: Excavated material, well rammed and consolidated.
- 730 EXPOSED CONCRETE FOUNDATIONS
- Filling: Compact until air bubbles cease to appear on the upper surface.
 - Finishing: Weathered to shed water and trowelled smooth.
- 780 MAKING GOOD GALVANIZED SURFACES
- Treatment of minor damage (including on fasteners and fittings): Low melting point zinc alloy repair rods or powders made for this purpose, or at least two coats of zinc-rich paint to BS 4652.
 - Thickness: Apply sufficient material to provide a zinc coating at least equal in thickness to the original layer.

COMPLETION

- 910 CLEANING
- General: Leave the works in a clean, tidy condition.
 - Surfaces: Clean immediately before handover.
- 920 FIXINGS
- All components: Tighten.
 - Timing: Before handover.
- 930 GATES
- Hinges, latches and closers: Adjust to provide smooth operation. Lubricate where necessary.
 - Timing: Before handover.

Q50 Site/ street furniture/ equipment

To be read with Preliminaries/ General conditions.

GATES, BARRIERS AND PARKING CONTROLS

- 190 BOLLARDS TO INCOMING SERVICES
- Manufacturer: Broxap Ltd. www.broxap.com.
 - Product reference: Tunstall Steel Bollard BX14 6521-RT.
 - Material: Steel.
 - Finish as delivered: Hot dip galvanized to BS EN ISO 1461.
 - Colour: None.
 - Height above ground: 750 mm.
 - Sectional size: 76 mm diameter.
 - Top: Flat.
 - Special features: None.
 - Method of fixing: Root, 300 mm below ground, set in concrete base.
- 191 BOLLARDS TO LEVEL LOADING DOORS
- Manufacturer: Marshalls Street Furniture.
 - Product reference: Rhino Service Yard Bollard.
 - Material: Steel.
 - Finish as delivered: Hot dip galvanized to BS EN ISO 1461 and Polyester powder coated, as section Z31.
 - Colour: Black (RAL 9005).
 - Height above ground: 1200mm.
 - Sectional size: 194mm.
 - Top: Flat.
 - Special features: Class 2 yellow reflective tapes.
 - Method of fixing: Root, 300 mm below ground, set in concrete base.

SITE AND STREET FURNITURE

- 210 CYCLE STANDS
- Manufacturer: Broxap Ltd. www.broxap.com.
 - Product reference: Sheffield Cycle Stand BXMW/GS/.
 - Type: Single stands.
 - Material: Steel.
 - Finish: Hot dip galvanized to BS EN ISO 1461.
 - Colour: None.
 - Accessories: None.
 - Method of fixing: Root, 300 mm below ground, set in concrete base.

INSTALLATION

- 510 CONCRETE FOUNDATIONS GENERALLY
- Standard: To BS 8500-2.
 - Concrete: Designated, not less than GEN 1.
 - Admixtures: Do not use.
 - Foundation holes: Neat vertical sides.
 - Depth of foundations, bedding, haunching: Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.
- 515 SETTING COMPONENTS IN CONCRETE
- Holes: 250 x 250 x minimum 300 mm deep.
 - Components: Accurately positioned and securely supported.
 - Concrete fill: Fully compacted as filling proceeds.
 - Concrete foundations exposed to view: Compacted until air bubbles cease to appear on the upper surface, then weathered to shed water and trowelled smooth.
 - Temporary component support: Maintain undisturbed for minimum 48 hours.
- 530 PRESERVATIVE TREATED TIMBER
- Surfaces exposed by minor cutting and drilling: Treated by immersion or with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.
 - Heavily worked sections: Re-treat.
- 545 ERECTION OF TIMBER AND PREFABRICATED STRUCTURES
- Checking: 5 days (minimum) before proposed erection date, check foundations, holding down bolts, etc.
 - Inaccuracies or defects in prepared bases or supplied structures: Report immediately. Obtain instructions before proceeding.
- 550 DAMAGE TO GALVANIZED SURFACES
- Minor damage in areas up to 40 mm² (including on fixings and fittings): Make good.
 - Material: Low melting point zinc alloy repair rods or powders made for this purpose or at least two coats of zinc-rich paint to BS 4652.
 - Thickness: Sufficient to provide a zinc coating at least equal to the original layer.
- 560 SITE PAINTING
- Timing: Prepare surfaces and apply finishes as soon as possible after fixing.

R

Disposal systems

R10 Rainwater drainage systems

To be read with Preliminaries/ General conditions.

GENERAL

- 110 GRAVITY RAINWATER DRAINAGE SYSTEM
- Rainwater outlets: Proprietary.
 - Gutters: Galvanized steel, Combined fascia, soffit and gutter.
 - Pipework: PPC Galvanised steel.
 - Below ground drainage: Submit proposals.
 - Disposal: To surface water drainage.
 - Controls: Not applicable.
 - Accessories: N/A.

SYSTEM PERFORMANCE

- 210 DESIGN
- Design: Complete the design of the rainwater drainage system.
 - Standard:
 - To BS EN 12056-3, clauses 3–7, Annex A and National Annexes.
 - To BS EN 12056-5, clauses 3, 4, 6 and 11.
 - Proposals: Submit drawings, technical information, calculations and manufacturers' literature.
- 221 COLLECTION AND DISTRIBUTION OF RAINWATER
- General: Complete, and without leakage or noise nuisance.

PRODUCTS

- 321 COMBINED FASCIA, SOFFIT AND GUTTER
- Manufacturer: Guttercrest or acceptable equivalent.
 - Product reference: Submit proposals.
 - Material: Galvanized steel.
 - Profile: Rectangular, as drawing W400.
 - Size:
 - Fascia: As drawing approx 305mm.
 - Soffit: As drawing approx 386mm.
 - Gutter: 150 x 225mm.
 - Gauge:
 - Fascia: To manufacturers details.
 - Soffit: To manufacturers details.
 - Gutter: To manufacturers details.
 - Finish: Polyester powder coated.
 - Colour: Goosewing Grey (RAL 7038).
 - Fixings: Expanding bolts.
 - Ventilation: Preformed slots equivalent to a continuous strip 10 mm wide.
 - Accessories: All necessary fittings to complete installation in accordance with manufacturers recommendations. including stop ends, brackets, framing, fixings etc. Verge flashings as Architect's details.
- 432 GALVANISED STEEL PIPEWORK
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Shape: Round.
 - Thickness: 1.0 mm.
 - Nominal size: 110 mm diameter.
 - Sealing rings: EPDM to BS EN 681-1.
 - Brackets: Galvanised Steel.
 - Fixings: Stainless steel screws.
 - Size: To Suit.
 - Accessories: Powder Coated to Goosewing Grey (RAL 7038) .

CUSTOM MADE PRODUCTS

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: To suit specialist details.
 - Fixing centres: To manufacturers recommendations.
 - Additional brackets: Where necessary to maintain support and stability, provide at joints in gutters and near angles and outlets.
 - Roofing underlay: Dressed into gutter.

- 616 **SETTING OUT EAVES GUTTERS - LEVEL**
 - Setting out: Level and as close as practical to the roof.
 - Outlets: Aligned with connections to below ground drainage.

- 620 **INSTALLING COMBINED FASCIA, SOFFIT AND GUTTER SYSTEM**
 - Fixing: To manufacturers details.
 - Jointing: To manufacturers details.

- 630 **INSTALLING RAINWATER OUTLETS**
 - Fixing: Secure. Fix before connecting pipework.
 - Method: Support plate and clamp.
 - Junctions between outlets and pipework: Accommodate movement in structure and pipework.

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

- 640 **FIXING VERTICAL PIPEWORK**
 - Bracket fixings: To manufacturers details.
 - Distance between bracket fixing centres (maximum): 1500 mm.

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

- 660 **JOINTING EXTERNAL PIPEWORK**
 - Jointing: Low modulus silicone sealant over a polyethylene foam backing insert.

- 665 **INSTALLING PREFABRICATED GALVANIZED STEEL PIPEWORK**
 - Installation: Do not cut pipes to length or otherwise damage coatings.

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

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

COMPLETION

- 900 **TESTING GENERALLY**
 - Dates for testing: Give notice.
 - Period of notice (minimum): 1 week.
 - Preparation:
 - Pipework: Complete, securely fixed, free from defects, obstruction and debris before testing.
 - Testing:
 - Supply clean water, assistance and apparatus.
 - Do not use smoke to trace leaks.
 - Records: Submit a record of tests.

- 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.

Z10 Purpose made joinery

To be read with Preliminaries/ General conditions.

- 110 FABRICATION
 - Standard: To BS 1186-2.
 - Sections: Accurate in profile and length, and free from twist and bowing. Formed out of solid unless shown otherwise.
 - Machined surfaces: Smooth and free from tearing, wooliness, chip bruising and other machining defects.
 - Joints: Tight and close fitting.
 - Assembled components: Rigid. Free from distortion.
 - Screws: Provide pilot holes.
 - Screws of 8 gauge (4 mm diameter) or more and screws into hardwood: Provide clearance holes.
 - Countersink screws: Heads sunk at least 2 mm below surfaces visible in completed work.
 - Adhesives: Compatible with wood preservatives applied and end uses of timber.
- 120 CROSS SECTION DIMENSIONS OF TIMBER
 - General: Dimensions on drawings are finished sizes.
 - Maximum permitted deviations from finished sizes:
 - Softwood sections: To BS EN 1313-1:-
Clause 6 for sawn sections.
 - 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.

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.

420 COPPER ALLOY PRODUCTS

- Sheet, strip, plate and circles for general purposes: To BS EN 1652.
- Sheet and strip for building purposes: To BS EN 1172.
- Rods: To BS EN 12163.
- Profiles and rectangular bars: To BS EN 12167.
- Wire: To BS EN 12166.
- Tubes: To BS EN 12449.

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.

528 WELDING METAL COMPONENTS.

- Welding procedures:
 - Method and standard:
 - Metal arc welding to BS EN 1011-1 and -2. (steel)
 - TIG welding to BS EN 1011-3 (stainless steel)
 - TIG or MIG welding to BS EN 1011-4 (aluminium alloys).
 - 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: Obtain approval.
 - Complex assemblies: Agree priority for welding members to minimize distortion caused by subsequent welds.
 - Tack welds: Use only for temporary attachment.
 - Jigs: Provide to support and restrain members during welding.
 - Filler plates: Obtain approval.
 - Lap joints: Minimum 5 x metal thickness or 25 mm, 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

715 FINISHING WELDED AND BRAZED JOINTS VISIBLE IN COMPLETE WORK

- Standard: To BS EN ISO 8501-3.
- Butt joints: Smooth, and flush with adjacent surfaces.
- Fillet joints: Neat.
- Grinding: Grind smooth where indicated on drawings.

745 PREPARATION FOR APPLICATION OF COATINGS

- General: Complete fabrication, and drill fixing holes before applying coatings.
- Paint, grease, flux, rust, burrs and sharp arrises: Remove.

750 LIQUID ORGANIC COATING FOR ALUMINIUM ALLOY COMPONENTS

- Standard: To BS 4842.

760 ZINC AND CADMIUM PLATING OF IRON AND STEEL SURFACES

- Zinc plating: To BS EN ISO 2081.
- Cadmium plating: To BS EN ISO 2082.

770 CHROMIUM PLATING

- Standard: To BS EN ISO 1456.

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.

790 VITREOUS ENAMELLING

- Standard: To BS EN ISO 28722.
- Substrate metal: Steel to BS EN 10209.

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.

Z20 Fixings and adhesives

To be read with Preliminaries/ General conditions.

PRODUCTS

- 310 FASTENERS GENERALLY
- Materials: To have:
 - Bimetallic corrosion resistance appropriate to items being fixed.
 - Atmospheric corrosion resistance appropriate to fixing location.
 - Appearance: Submit samples on request.
- 320 PACKINGS
- Materials: Noncompressible, corrosion proof.
 - Area of packings: Sufficient to transfer loads.
- 330 NAILED TIMBER FASTENERS
- Nails:
 - Steel: To BS 1202-1 or BS EN 10230-1.
 - Copper: To BS EN 1202-2.
 - Aluminium: To BS 1202-3.
- 340 MASONRY FIXINGS
- Light duty: Plugs and screws.
 - Heavy duty: Expansion anchors or chemical anchors.
- 350 PLUGS
- Type: Proprietary types to suit substrate, loads to be supported and conditions expected in use.
- 360 ANCHORS
- Types:
 - Expansion: For use in substrate strong enough to resist forces generated by expansion of anchor.
 - Adhesive or chemical:
 - For use in substrate where expansion of anchor would fracture substrate.
 - For use in irregular substrate where expansion anchors cannot transfer load on anchor.
 - Cavity: For use where the anchor is retained by toggles of the plug locking onto the inside face of the cavity.
- 370 WOOD SCREWS
- Type:
 - Wood screws (traditional pattern).
 - Standard: To BS 1210.
 - Wood screws.
 - Pattern: Parallel, fully threaded shank or twin thread types.
 - Washers and screw cups: Where required are to be of same material as screw.
- 380 MISCELLANEOUS SCREWS
- Type: To suit the fixing requirement of the components and substrate.
 - Pattern: Self-tapping, metallic drive screws, or power driven screws.
 - Washers and screw cups: Where required to be of same material as screw.
- 390 ADHESIVES GENERALLY
- Standards:
 - Hot-setting phenolic and aminoplastic: To BS 1203.
 - Thermosetting wood adhesives: To BS EN 12765.
 - Thermoplastic adhesives: To BS EN 204.
- 400 ADHESIVES GENERALLY
- Any adhesive used to bond floor coverings (or rigid wall coverings) must not contain carcinogenic or sensitising volatile substances when tested in accordance with:
 - BS EN 13999-1:2013 Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 1: General procedure
 - BS EN 13999-2:2013 Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 2: Determination of volatile organic compounds
 - BS EN 13999-3:2007+A1:2009 Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 3: Determination of volatile aldehydes
 - BS EN 13999-4:2007+A1:2009 Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 4: Determination of volatile diisocyanates
- 410 POWDER ACTUATED FIXING SYSTEMS
- Types of fastener, accessories and consumables: As recommended by tool manufacturer.

EXECUTION

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

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

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

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

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

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

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

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

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

Z21 Mortars

To be read with Preliminaries/ General conditions.

CEMENT GAUGED MORTARS

- 110 CEMENT GAUGED MORTAR MIXES
- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.
- 120 SAND FOR SITE MADE CEMENT GAUGED MASONRY MORTARS
- Standard: To BS EN 13139.
 - Grading: 0/2 (FP or MP).
 - Fines content where the proportion of sand in a mortar mix is specified as a range (e.g. 1:1: 5-6):
Lower proportion of sand: Use category 3 fines.
Higher proportion of sand: Use category 2 fines.
 - Sand for facework mortar: Maintain consistent colour and texture. Obtain from one source.
- 131 READY-MIXED LIME:SAND FOR CEMENT GAUGED MASONRY MORTARS
- Standard: To BS EN 998-2.
 - Lime: Nonhydraulic to BS EN 459-1.
 - Type: CL 90S.
 - Pigments for coloured mortars: To BS EN 12878.
- 135 SITE MADE LIME:SAND FOR CEMENT GAUGED MASONRY MORTARS
- Permitted use: Where a special colour is not required and in lieu of factory made ready-mixed material.
 - Lime: Nonhydraulic to BS EN 459-1.
 - Type: CL 90S.
 - Mixing: Thoroughly mix lime with sand, in the dry state. Add water and mix again. Allow to stand, without drying out, for at least 16 hours before using.
- 160 CEMENTS FOR MORTARS
- Cement: To BS EN 197-1 and CE marked.
 - Types: Portland cement, CEM I.
Portland limestone cement, CEM II/A-L or CEM II/A-LL.
Portland slag cement, CEM II/B-S.
Portland fly ash cement, CEM II/B-V.
 - Strength class: 32.5, 42.5 or 52.5.
 - White cement: To BS EN 197-1 and CE marked.
 - Type: Portland cement, CEM I.
 - Strength class: 52.5.
 - Sulfate resisting Portland cement:
 - Type: To BS EN 197-1 Sulfate resisting Portland cement, CEM I/SR and CE marked.
To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.
 - Strength class: 32.5, 42.5 or 52.5.
 - Masonry cement: To BS EN 413-1 and CE marked.
 - Class: MC 12.5.
- 180 ADMIXTURES FOR SITE MADE CEMENT GAUGED MORTARS
- Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
 - Other admixtures: Submit proposals.
 - Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.
- 190 RETARDED READY TO USE CEMENT GAUGED MORTAR
- Standard: To BS EN 998-2.
 - Lime for cement:lime:sand mortars: Nonhydraulic to BS EN 459-1.
 - Type: CL 90S.
 - Pigments for coloured mortars: To BS EN 12878.
 - Time and temperature limitations: Use within limits prescribed by mortar manufacturer.
 - Retempering: Restore workability with water only within prescribed time limits.
- 200 STORAGE OF CEMENT GAUGED MORTAR MATERIALS
- Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases.
 - Factory made ready-mixed lime:sand/ ready to use retarded mortars: Keep in covered containers to prevent drying out or wetting.
 - Bagged cement/ hydrated lime: Store off the ground in dry conditions.
- 210 MAKING CEMENT GAUGED MORTARS
- Batching: By volume. Use clean and accurate gauge boxes or buckets.
 - Mix proportions: Based on dry sand. Allow for bulking of damp sand.
 - Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
 - Mortars containing air entraining admixtures: Mix mechanically. Do not overmix.
 - Working time (maximum): Two hours at normal temperatures.
 - Contamination: Prevent intermixing with other materials.

Z22 Sealants

To be read with Preliminaries/General conditions.

610 SUITABILITY OF JOINTS

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

620 PREPARING JOINTS

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

630 APPLYING SEALANTS

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

Z31 Powder coatings

To be read with Preliminaries/ General conditions.

120 POWDER COATING MATERIALS

- Manufacturer: Obtain from one only of the following: Contractor/ Fabricators 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.

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.

540 COMPLETION

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

Z33 Anodizing**To be read with Preliminaries/ General conditions.**

- 210 WORKING PROCEDURES
 - Standard: To BS 3987 for anodic coatings on wrought aluminium.
- 220 ANODIZER REQUIREMENTS
 - Processing:
 - Approved: By the Aluminium Finishing Association.
 - Certified: To BS EN ISO 9001.
 - Anodizing plant: Each anodizer to use only one plant.
- 230 GUARANTEES
 - Anodizer guarantees: Submit sample copies before commencement of anodizing.
 - Project specific guarantees: Submit signed copies on completion of work.
 - Guarantees to cover:
 - Life expectancy.
 - Colour: Opacity and consistency.
 - Texture: Gloss, satin or matt.
 - Quality of coating.
- 240 CONTROL SAMPLES
 - Sequence: Prior to ordering materials for the works, obtain approval of appearance for:
 - Anodic coated samples: Showing colour and texture variation.
 - Fabrication samples: Showing joint assembly, how anodic coating is affected and how cut metal edges are finished and protected.
- 270 COMPONENT DESIGN
 - Condition of components to be anodized:
 - To comply with relevant recommendations of BS 4479-1, and -5.
 - Of suitable size to fit plant capacity.
- 310 PRETREATMENT
 - Condition of components to be anodized:
 - Free from corrosion and damage.
 - Suitable for and compatible with the pretreatment and anodizing process.
 - Process: In accordance with the specification requirements for the finish.
- 410 EXTENT OF ANODIC COATINGS
 - Application: To visible component surfaces, and concealed surfaces requiring protection. Coated surfaces will be deemed 'significant surfaces' for relevant BS 3987 performance requirements.
- 420 APPLICATION OF ANODIC COATINGS
 - Surfaces to receive anodic coatings: Clean.
 - Commencement of anodic coating: To be continuous from pretreatment.
 - Jig points: To be agreed. Not on visible areas of anodic coated components.
 - Use of touch-up paint: Not acceptable.
- 430 PERFORMANCE AND APPEARANCE OF ANODIC COATINGS
 - Standard: To BS 3987.
 - Visual inspection after anodizing: Significant surfaces to be free from visible coating/ defects when viewed from a distance of not less than 5 m for external and 3 m for internal applications.
- 440 FABRICATION
 - Units may be assembled:
 - Before anodizing, providing sufficient drainage holes are included in components to fully drain components.
 - From components anodized after cutting to size.
 - Where approved, from components anodized before cutting to size.
 - Exposure of uncoated background metal: Not acceptable.
 - Assembly sealants: Compatible with anodic coatings. Obtain approval of colour if sealants are visible after fabrication.
- 450 DAMAGED COMPONENTS - REPAIR/ REPLACEMENT
 - Before delivery to site: Check all components for damage to anodic coatings. Replace damaged components.
 - Site damage: Submit proposals for repair or replacement.
- 510 PROTECTION
 - Anodic 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 anodizing to be:
 - Low tack, self adhesive and light in colour.
 - Applied and removed in accordance with tape and anodizers recommendations.
 - Inspection of protection: Carry out weekly. Promptly repair any deterioration or deficiency.
- 530 DOCUMENTATION
 - Submit the following information for each batch of anodic coated components:
 - Supplier.
 - Trade name.
 - Colour (if required).
 - Batch and reference number.
 - Statutory requirements.

540 COMPLETION

- Protection: Remove.
- Cleaning and maintenance of anodic coatings: Carry out in accordance with procedures detailed in anodizer's guarantees.