

14334 Waitrose Banbury

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F
Masonry

F10
Brick/ block walling

F10 Brick/ block walling

To be read with Preliminaries/ General conditions.

TYPES OF WALLING

- 110 CLAY FACING BRICKWORK ABOVE DPC TO OUTER LEAF OF EXTERNAL WALLS
- Bricks: To BS EN 771-1.
 - Manufacturer: IBSTOCK BRICKS c/o Taylor Maxwell tel 0121 3291 440. .
 - Product reference: BIRTLEY OLDE ENGLISH.
 - Recycled content: 10% (minimum) to BS EN ISO 14021.
 - Special shapes: None.
 - Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: 1:1:6 cement:lime:sand.
 - Additional requirements: COLOURED MORTAR TO APPROVED SAMPLE .
 - Bond: Half lap stretcher.
 - Joints: Cut and weathered .
 - Features: none.
- 255 CONCRETE FACING BLOCKWORK TO COMPARTMENT WALL BETWEEN RETAIL AND GOODS STORAGE
- Blocks: To BS EN 771-3.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Configuration: Group 1 .
 - Compressive strength:
Mean value: 7.3 N/mm².
Characteristic value: 7.3 N/mm².
Category: I.
 - Freeze/ Thaw resistance: Suitable for exposed external use below dpc.
 - Recycled content: Contractor's choice.
 - Work sizes (length x width x height): 440 x 100 x 215mm laid to form 215mm thick wall.
Tolerance category: D2.
 - Finish/ Colour: grey.
 - Special shapes: None.
 - Additional requirements: None.
 - Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: 1:1:6 cement:lime:sand.
 - Additional requirements: None.
 - Bond: Half lap stretcher.
 - Joints: Flush.
 - Features: Solid blocks to opening reveals.

355 CONCRETE COMMON BLOCKWORK TO INNER CAVITY WALL LEAF

- Blocks: To BS EN 771-3.
 - Manufacturer: Contractor's choice.
Product reference: Contractor's choice.
 - Configuration: Group 1.
 - Compressive strength:
Mean value: 7.3 N/mm².
Characteristic value: 7.3 N/mm².
Category: I.
 - Freeze/ Thaw resistance: Suitable for exposed external use below dpc.
 - Thermal properties: N/A.
 - Recycled content: Contractor's choice.
 - Work sizes (length x width x height): 440x140x215.
Tolerance category: D2.
 - Special shapes: None.
 - Additional requirements: None.
- Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: 1:1:6 cement:lime:sand.
 - Additional requirements: Joints to be flush pointed ready to receive plasterboard lining.
- Bond: Half lap stretcher.

385 ENGINEERING BRICKWORK TO EXTERNAL WALLS BELOW DPC AND 1 COURSE BELOW GROUND

- Bricks: To BS EN 771-1.
 - Manufacturer: Contractor's choice.
Product reference: CLASS B SEMI ENGINEERING RED BRICK.
 - Type: HD.
 - Mean compressive strength: Greater than or equal to 75 N/mm².
Category: I.
 - Water absorption: Equal to or less than 4.5%.
 - Freeze/ Thaw category: F2.
 - Active soluble salts content category: S2.
 - Additional requirements: None.
- Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: 1:0.25:3 cement:lime:sand.
 - Additional requirements: None.
- Bond: Half lap stretcher.
- Joints: Flush.

TESTING

- 410 COMPRESSIVE STRENGTH OF MORTAR FOR EACH WALLING TYPE
- Testing authority: A UKAS Accredited laboratory.
 - Test method: To BS EN 1015-11.
 - Preliminary tests procedure: As follows:
 - Specimens:
 - Number of specimens: 6.
 - Type: 40 x 40 x 160 mm prism.
 - Preparation: At least six weeks before walling commences.
 - Specimen testing: Half of specimens at 7 days. Remainder at 28 days.
 - Retarded mixes: Extend curing periods to include retardation period.
 - Response to result: If mean compressive strength at 28 days is not within the range given below repeat tests with more suitable sand or next higher designation of mortar.
 - Site tests procedure: As follows.
 - Number of specimens: Six per 150m² of walling or per storey whichever the more frequent.
 - Specimen types: As preliminary test, but prepared during construction.
 - Specimen testing: Half of specimens at 7 days. Remainder at 28 days.
 - Retarded mixes: Extend curing periods to include retardation period.
 - Required test mean compressive strength at 28 days (N/mm²): To be within the following range:
 - Walling type: ALL.
 - Preliminary tests minimum (N/mm²): 4.0.
 - Preliminary tests maximum (N/mm²): 6.0.
 - Site tests minimum (N/mm²): 4.0.
 - Site tests maximum (N/mm²): 6.5.
 - Results: Submit.
- 415 FRESH MORTAR CEMENT CONTENT
- Test method: BREMORTEST .
 - Test specimens: Test mortar for the following wall types: F10/ ALL .
 - Results: Submit.

WORKMANSHIP GENERALLY

- 430 CONDITIONING OF CLAY AND CALCIUM SILICATE BRICKS AND CLAY BLOCKS
- Bricks and blocks delivered warm from manufacturing process: Do not use until cold.
 - Absorbent bricks in warm weather: Wet to reduce suction. Do not soak.
- 440 CONDITIONING OF CONCRETE BRICKS/ BLOCKS
- Autoclaved concrete bricks/ blocks delivered warm from manufacturing process: Do not use.
 - Age of nonautoclaved concrete bricks/ blocks: Do not use until at least four weeks old.
 - Avoidance of suction in concrete bricks/ blocks: Do not wet.
 - Use of water retaining mortar admixture: Submit details.

460 MORTAR GROUPS

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

500 LAYING GENERALLY

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

520A ACCURACY

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

- 535 HEIGHT OF LIFTS IN WALLING USING CEMENT GAUGED OR HYDRAULIC LIME MORTAR
- Quoins and advance work: Rack back.
 - Lift height (maximum): 1.2 m above any other part of work at any time.
 - Daily lift height (maximum): 1.5 m for any one leaf.
- 545 LEVELLING OF SEPARATE LEAVES
- Locations for equal levelling of cavity wall leaves: As follows:
 - Every course containing vertical twist type ties or other rigid ties.
 - Every third tie course for double triangle/ butterfly ties.
 - Courses in which lintels are to be bedded.
- 560 COURSING BRICKWORK
- Gauge: Four brick courses including bed joints to 300 mm.
- 580 LAYING FROGGED BRICKS
- Single frogged bricks: Frog uppermost.
 - Double frogged bricks: Larger frog uppermost.
 - Frog cavity: Fill with mortar.
- 585 LAYING CELLULAR BRICKS
- Orientation: Cavities downward.
- 595 LINTELS
- Bearing: Ensure full length masonry units occur immediately under lintel ends.
- 635 JOINTING
- Profile: Consistent in appearance.
- 645 ACCESSIBLE JOINTS NOT EXPOSED TO VIEW
- Jointing: Struck flush as work proceeds.
- 665 POINTING TO BRICKWORK ABOVE DPC
- Joint preparation: Remove debris. Dampen surface.
 - Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: 1:1:6 cement:lime:sand.
 - Additional requirements: Coloured mortar to approved sample.
 - Profile: Cut and weathered.
- 671 FIRE STOPPING
- Avoidance of fire and smoke penetration: Fit tightly between cavity barriers and masonry. Leave no gaps.
- 690 ADVERSE WEATHER
- General: Do not use frozen materials or lay on frozen surfaces.
 - Air temperature requirements: Do not lay bricks/ blocks:
 - In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.
 - In hydraulic lime:sand mortars when at or below 5°C and falling or below 3°C and rising.
 - In thin joint mortar glue when outside the limits set by the mortar manufacturer.
 - Temperature of walling during curing: Above freezing until hardened.
 - Newly erected walling: Protect at all times from:
 - Rain and snow.
 - Drying out too rapidly in hot conditions and in drying winds.

ADDITIONAL REQUIREMENTS FOR FACEWORK

- 710 THE TERM FACEWORK
- Definition: Applicable in this specification to brick/ block walling finished fair.
 - Painted facework: The only requirement to be waived is that relating to colour.
- 730 BRICK/ CONCRETE BLOCK SAMPLES
- General: Before placing orders with suppliers submit for approval of appearance labelled samples of the following: F10/110 .
 - Selection of samples: Representative of the range in variation of appearance.
- 740 FINISHED MASONRY WORK REFERENCE PANELS
- General: Before proceeding to construct the following walling types, construct panels as specified. Give notice when panels are dry.
 - Selection of masonry units: Reasonably representative of the average quality of the whole order to be delivered .
 - Panel types:
 - Walling type: F10/110 AND 255 .
 - Location: IN NATURAL GOOD LIGHT WITH A CLEAR VIEWING DISTANCE OF 3M .
 - Size: 1.5 x 1.5 m .
 - Other requirements: TO BE RETAINED FOR DURATION OF MASONRY BUILD PACKAGE .
- 750 COLOUR CONSISTENCY OF MASONRY UNITS
- Colour range: Submit proposals of methods taken to ensure that units are of consistent and even appearance within deliveries.
 - Conformity: Check each delivery for consistency of appearance with previous deliveries and with approved reference panels; do not use if variation is excessive.
 - Finished work: Free from patches, horizontal stripes and racking back marks.
- 760 APPEARANCE
- Brick/ block selection: Do not use units with damaged faces or arrises.
 - Cut masonry units: Where cut faces or edges are exposed cut with table masonry saw.
 - Quality control: Lay masonry units to match relevant reference panels.
 - Setting out: To produce satisfactory junctions and joints with built-in elements and components.
 - Coursing: Evenly spaced using gauge rods.
 - Lifts: Complete in one operation.
 - Methods of protecting facework: Submit proposals.
- 780 GROUND LEVEL
- Commencement of facework: Not less than 150 mm below finished level of adjoining ground or external works level.
- 790 PUTLOG SCAFFOLDING
- Use: Not permitted in facework.
- 830 CLEANLINESS
- Facework: Keep clean.
 - Mortar on facework: Allow to dry before removing with stiff bristled brush.
 - Removal of marks and stains: Rubbing not permitted.

F21

Natural stone/ ashlar walling/ dressings

F21 Natural stone/ ashlar walling/ dressings

To be read with Preliminaries/ General conditions.

TYPES OF WALLING/ DRESSINGS

110 ASHLAR HORTON IRON STONE TO EXTERNAL WALLS AND CAR PARK WALLS

- Stone: To BS EN 771-6.
 - Name (traditional): TMS CASTLE STONE 90M .
 - Petrological family: IRONSTONE.
 - Colour: Light brown.
 - Origin: Contact Andrew Thomas, Taylor Maxwell – 07787 295314. .
 - Finish: Rubbed.
 - Supplier: Contact Andrew Thomas, Taylor Maxwell – 07787 295314. .
 - Unit dimension tolerances: Category D1.
 - Compressive strength:
 - Mean value (minimum): 20N/mm sq.
 - Characteristic value (minimum): 25 N/mm².
 - Category: I.
 - Open porosity: Maximum permitted as defined in BS EN 771-6.
 - Additional requirements: Supplier to confirm values required by BS EN 771-6 .
 - Quality: Free from vents, cracks, fissures, discolouration, or other defects deleterious to strength, durability or appearance. Before delivery to site, season thoroughly, dress and work in accordance with shop drawings prepared by supplier.
- Mortar: As section Z21.
 - Standard: To BS EN 998-2.
 - Mix: 1:3:12 cement:lime:sand.
 - Sand: To BS EN 13139; crushed stone with grading to approval .
 - Additional requirements: Coloured mortar to approved sample.
- Bond: Random coursed / Half lap stretcher.
- Joints: Flush.
 - Width: 5 mm.
 - Pointing: As clause 390.
- Other requirements: None.

GENERAL PRODUCTION

240 STONE SAMPLES

- Submit: Labelled samples of dressed stone or arrange for samples which represent the range of variation in appearance to be inspected.
 - Timing: Before placing orders.

250 CUTTING AND DRESSING OF STONE

- Timing: After seasoning but before delivery to site.
- Accuracy:
 - Exposed and joint surfaces: Square, true planes free from hollow or rough areas.
 - Dimensions: Maintain specified joint widths.
- Orientation for natural bed of stones: Appropriate to properties of stones and positions in walling/ dressings.

260 IDENTIFICATION OF STONE UNITS

- Marking: Clearly and indelibly on concealed faces to indicate the natural bed and position in the finished work.

270 INSPECTION OF STONE UNITS

- Give notice: Before despatch to site, at appropriate stages of production.

280 SAND SAMPLES

- Submit: Representative samples for approval of colour and grading.
 - Timing: Before placing orders.

LAYING AND JOINTING

300 REFERENCE PANELS

- General: Complete areas of specified walling types and obtain approval of appearance before proceeding further.
- Walling type:
 - Location: TO SUIT CONTRACTOR .
 - Size: 1500 x 1500mm .
 - Features: NONE .

315 ADVERSE WEATHER

- General: Do not use frozen materials or lay on frozen surfaces.
- Air temperature: Do not lay stones:
 - In cement gauged mortars: At or below 3°C and falling or below 1°C and rising.
 - In hydraulic lime:sand mortars: At or below 5°C and falling or below 3°C and rising.
- Temperature of walling during curing: Above freezing until mortar hardened.
- Newly erected walling: Protect at all times from:
 - Rain and snow.
 - Drying out too rapidly in hot conditions and in drying winds.

325 LAYING GENERALLY

- Stone selection: Do not use units with damaged faces or arrises.
- Accuracy:
 - Courses: Level and true to line.
 - Faces, angles and features: Plumb.
 - Setting out: Achieve satisfactory junctions and joints with adjoining or built-in elements and components.
- Absorbent stones: Dampen in warm weather to reduce suction. Do not soak.
- Mortar joints:
 - Laying: Full bed of mortar with all joints and voids filled.
 - Temporary distance pieces: Lead or stainless steel. Remove when mortar is sufficiently strong.
 - Appearance: Neat and consistent.
- Cleanliness: Keep facework clean. Rubbing and other abrasive or chemical cleaning methods to remove marks and stains not permitted.

330 WALLING BELOW GROUND LEVEL

- Extent of facework below finished level of adjoining ground or external works (minimum): 150 mm.

340 PUTLOG SCAFFOLDING

- Use: Not permitted.

360 OPENINGS

- Method of forming: Rigid templates, accurately fabricated to the required size.

370 JOGGLE JOINTS

- General: Fill with bedding mortar. Tamp to expel air.

390 POINTING

- Joint preparation: Rake out to depth of 7-10 mm as work proceeds. Remove debris. Dampen surface.
- Mortar application: Neat and consistent.

F22

Cast stone ashlar walling/dressings

F22 Cast stone ashlar walling/dressings

To be read with Preliminaries/General conditions.

STRUCTURAL REQUIREMENTS

NOTE

THIS SPECIFICATION IS FOR WET CAST UNITS, DRY OR SEMI DRY CASTING PROCESS WILL NOT BE PERMITTED

TYPES OF WALLING

110 CAST STONE TWICE WEATHERED COPING UNITS TO IRONSTONE WALLS

- Cast stone units:
 - Manufacturer: Member of United Kingdom Cast Stone Association (UKCSA)..
 - Product reference: PORTLAND STONE TO APPROVAL BY ARCHITECT.
 - Absorption: To BS 1217 capillary absorption test (CAT).
 - Compressive strength:
 - Average cube strength (minimum): 35MPa (35 N/mm²).
 - Single cube strength (minimum): 28MPa (28 N/mm²).
 - Finish: Plain.
 - Colour: Portland stone.
- Mortar: As section Z21.
- Mix: 1:2:8-9 white cement:lime:sand.
 - Sand: To BS EN 13139; crushed stone with grading to approval. .
- Bond: Not applicable.
- Joints: Flush.
 - Width: 5 mm.
 - Pointing: As clause 535.
- Other requirements: None.

GENERAL REQUIREMENTS

220 CONTROL SAMPLES

- Required samples: After finalization of design, one each of the following components: F22/110.
- Approval of appearance: Obtain before manufacture of remaining units.
- Identification and storage location: Clearly label and retain at factory for comparison with production units.

230 QUALITY ASSURANCE

- Records: Maintain for each type of component, including:
 - Correlation with records of mixes, including batch numbers and test samples.
 - Type of reinforcement.
 - Test reports (including cube identification numbers) and testing authority (cast stone manufacturer and/ or laboratory accredited by United Kingdom Accreditation Service (UKAS) for the tests specified).
 - Dates for casting and delivery to site.
 - Any other pertinent data, e.g. identification of approved control samples.
- Submit copies of records: On request.

255 COMPRESSIVE STRENGTH

- Cube strength: Sampling to BS 1217. Testing to BS EN 12390-1, 2 and 3 as appropriate, with compaction and curing representative of the methods used in production of the cast stone components.

335 MANUFACTURING ACCURACY

- Standard: To BS 1217, section 8.
- Additional tolerances: +0, - 2 mm.

340 MIXES GENERALLY

- Constituent materials and mix design: Achieve constant colour and texture for each finish type.
- Aggregates for facing mixes: Free from particles which may cause 'popouts', or unsightly marking or staining.
- Total chloride ion content (maximum): Cl 0.40.
- Admixtures containing calcium chloride: Do not use.

350 SEPARATE FACING AND BACKING MIXES

- Thickness of facing mix at any point (minimum): 20 mm.
- Distance of reinforcement from the junction of the two mixes (minimum): 10 mm.
- Joining facing and backing mixes: Bond so that they are effectively monolithic.

360 CASTING AND CURING

- Compaction: Thorough.
- Protection: Prevent premature drying out during curing period.
- Immature components: Prevent distortion from movement, vibration, overloading, physical shock, rapid cooling and thermal shock.
- Delivery to site: Not until at least 14 days after casting.

370 QUALITY OF FINISHES

- Appearance standard: As established by samples.

380 INSPECTION

- Completed components: Make available for inspection before delivery to site. Give notice when ready for inspection.

LAYING AND JOINTING

430 ADVERSE WEATHER

- General: Do not use frozen materials and do not lay on frozen surfaces.
- Temperature: Do not lay blocks/ dressings:
 - In cement gauged mortars when the air temperature is at or below 3°C and falling or below 1°C and rising (unless mortar has a temperature of not less than 4°C when laid and walling is thoroughly protected).
 - In hydraulic lime:sand mortars when the air temperature is at or below 5°C and falling or below 3°C and rising.
- Freezing conditions: Maintain temperature of the work above freezing until mortar has fully set.
- Precipitation: Protect newly erected walling against rain and snow by covering when precipitation occurs and at all times when work is not proceeding.
- Hot and dry conditions: Prevent newly erected masonry from drying out too rapidly.
- Remedial work: Rake out and replace mortar damaged by frost and where instructed, rebuild damaged work.

440 LAYING GENERALLY

- Selection: Do not use units with damaged faces or arrises.
- Accuracy:
 - Courses: Level and true to line.
 - Faces, angles and features: Plumb.
 - Setting out: Achieve satisfactory junctions and joints with adjoining or built-in elements and components.
- Absorbent units: Dampen in warm weather to reduce suction.
- Mortar joints:
 - Laying: Full bed of mortar with all joints and voids filled.
 - Temporary distance pieces: Lead or stainless steel. Remove when mortar is sufficiently strong.
 - Appearance: Neat and consistent.
- Cleanliness: Keep facework clean. Rubbing and other abrasive or chemical cleaning methods to remove marks and stains, not permitted.
- Cutting of reinforced units: Not permitted.

450 WALLING/ DRESSINGS BELOW GROUND LEVEL

- Extent of facework below finished level of adjoining ground or external works level (minimum): 150 mm.

490 PUTLOG SCAFFOLDING

- Use: Not permitted.

510 OPENINGS

- Method of forming: Rigid templates, accurately fabricated to the required size.

520 JOGGLE JOINTS

- General: Fill with bedding mortar. Tamp to expel air.

535 POINTING

- Joint preparation: Rake out to depth of 7–10 mm as work proceeds. Remove debris. Dampen surface.
- Mortar application: Neat and consistent.

F30

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

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

To be read with Preliminaries/ General conditions.

CAVITIES

- 110 CONCRETE FILL TO BASE OF CAVITY
- Concrete generally: To BS EN 206 and BS 8500-2.
 - Designated concrete: FND3 .
 - Workability: High.
 - Extent: Maintain 75 mm between top of fill and external ground level and a minimum of 225 mm between top of fill and ground level dpc.
 - Placement: Compact to eliminate voids.
- 120 CLEANLINESS
- Cavity base and faces, ties, insulation and exposed dpcs: Free from mortar and debris.
- 131 BED JOINT WEEP HOLES
- Form: Open 10 mm diameter hole.
 - Locations: Through outer leaf immediately above base of cavity at cavity trays, stepped dpcs and external openings. 75 mm above top of cavity fill at base of cavity.
 - Provision: At not greater than 1000 mm centres and not less than two over each opening.
- 155 PARTIAL FILL CAVITY INSULATION
- Insulation: RIGID THERMOSET INSULATION.
 - Product certification: British Board of Agreement (BBA) Certificate number 94/3047 .
 - Manufacturer: Kingspan Insulation Ltd
www.kingspaninsulation.co.uk
technical@kingspaninsulation.co.uk
T: +44 (0)1544 387384
F: +44 (0)1544 387484
Pembridge, Leominster, Herefordshire. HR6 9LA.
 - Product reference: Kooltherm® K8 Cavity Board .
 - Recycled content: Not applicable.
 - Face size (length x width): 1200 x 450 mm.
 - Thickness (nominal): 75 mm.
 - Thermal conductivity: 0.020 W/(m.K).
 - Reaction to fire class: A1.
 - Additional requirements: NONE.
 - Placement: Secure against face of inner leaf.
 - Residual cavity: Clear and unobstructed.
 - Joints between boards, at closures and penetrations: No gaps and free from mortar and debris.
- 180 CAVITY CLOSERS TO DOOR AND WINDOW REVEALS
- Manufacturer: Kingspan Insulation Ltd
www.kingspaninsulation.co.uk
technical@kingspaninsulation.co.uk
T: +44 (0)1544 387384
F: +44 (0)1544 387484
Pembridge, Leominster, Herefordshire. HR6 9LA.
 - Product reference: Kingspan Thermabate® PLUS.
 - Accessories: To include integral dpc .

REINFORCING/ FIXING ACCESSORIES

- 211 CAVITY WALL TIES USED WITH PARTIAL FILL INSULATION FOR ALL CAVITY WALLS USING PARTIAL FILL INSULATION
- Standard: To BS 1243.
 - Type: Vertical twist .
 - Manufacturer: Ancon Building Products
www.ancon.co.uk
info@ancon.co.uk
T: +44 (0)114 275 5224
F: +44 (0)114 276 8543
President Way, President Park, Sheffield, South Yorkshire. S4 7UR.
 - Product reference: ancon ST1.
 - Material/ finish: Stainless steel .
 - Sizes: 305 mm .
 - Tie mounted insulation retaining clips: As recommended by the manufacturer.
- 228 FIXING TIES IN MASONRY CAVITY WALLS WITH FULL FILL CAVITY INSULATION
- Embedment in mortar beds (minimum): 50 mm.
 - Placement: Sloping slightly downwards towards outer leaf, without bending. Drip centred in the cavity and pointing downwards.
 - Spacing: Staggered in alternate courses.
 - Horizontal centres: 900 mm.
 - Vertical centres: 450 mm.
 - Provision of additional ties:
 - One row to support lowest row of insulation batts.
 - Within 225 mm of reveals of unbonded openings and at the vertical reveals of unsupported masonry.
 - Spacing: At not more than 300 mm centres vertically.
- 255 WIND POSTS
- Manufacturer: Ancon Building Products
www.ancon.co.uk
info@ancon.co.uk
T: +44 (0)114 275 5224
F: +44 (0)114 276 8543
President Way, President Park, Sheffield, South Yorkshire. S4 7UR.
 - Product reference: TO STRUCTURAL ENGINEERS DETAILS.
 - Material: Austenitic stainless steel - material/ coating reference 3 to BS EN 845-1 .
 - Sizes: TO STRUCTURAL ENGINEERS DETAILS.
 - Fixings (complete with washers and shims): TO STRUCTURAL ENGINEERS DETAILS.

FLEXIBLE DAMP PROOF COURSES/ CAVITY TRAYS

- 310 DAMP PROOF COURSE - BITUMEN BASED
- Standard: To BS 6398.
 - Class: A.
 - Manufacturer: IKO PLC Specification Division
www.ikogroup.co.uk
technical.uk@iko.com
T: +44 (0)1257 255 771
F: +44 (0)1257 252 514
Appley Lane North, Appley Bridge, Wigan, Lancashire. WN6 9AB .
 - Product reference: HYLOAD PLUVEX No1 DPC.

340 SITE FORMED FLEXIBLE SHEET CAVITY TRAYS - BITUMEN BASED

- Standard: To BS 6398.
 - Class: A.
- Manufacturer: IKO PLC Specification Division
www.ikogroup.co.uk
technical.uk@iko.com
T: +44 (0)1257 255 771
F: +44 (0)1257 252 514
Appley Lane North, Appley Bridge, Wigan, Lancashire. WN6 9AB .
 - Product reference: Hyload Pluvex No.1 DPC.

INSTALLATION OF DPCS/ CAVITY TRAYS

415 HORIZONTAL DPCS

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

425 GROUND LEVEL DPCS

- Joint with damp proof membrane: Continuous and effectively sealed.

435 STEPPED DPCS IN EXTERNAL WALLS

- External walls on sloping ground: Install dpcs not less than 150 mm above adjoining finished ground level.

445 SILL DPCS

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

455 COPING/ CAPPING DPCS

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

465 SEALING DPCS GENERALLY

- Overlaps and junctions: Seal with Adhesive recommended by dpc manufacturer .

475 SITE FORMED CAVITY TRAYS

- Requirements to prevent downward ingress of water:
 - Profiles: To match those shown on drawings. Firmly secured.
 - Joint treatment: Use unjointed wherever possible, otherwise lap at least 100 mm and seal to produce a free draining and watertight installation.
 - Horizontal cavity trays: Support using cavity closer.
 - Sloping cavity trays: Prevent sagging.
 - Cleanliness: Free from debris and mortar droppings.

485 CAVITY TRAYS OVER OPENINGS AND OTHER CAVITY BRIDGINGS

- Length: To extend not less than 150 mm beyond ends of lintels/ bridgings.

- 535 DPC/ CAVITY TRAY LEADING EDGE IN FACEWORK - PROJECTING
- Treatment at face of masonry: Projecting 5 mm from face of wall at the following locations: (Generally .
- 560 VERTICAL DPCS GENERALLY
- Form: In one piece wherever possible.
 - Joints: Upper part overlapping lower not less than 100 mm.
- 570 JAMB DPCS AT OPENINGS
- Joint with cavity tray/ lintel at head: Full underlap.
 - Joint with sill/ horizontal dpc at base: Full overlap.
 - Projection into cavity: Not less than 25 mm.
 - Relationship with frame: In full contact.

JOINTS

- 610 MOVEMENT JOINTS WITH SEALANT TO EXTERNAL FACING BRICKWORK
- Joint preparation and sealant application: As section Z22.
 - Filler: Closed cell polyethylene foam .
 - Thickness: To match design width of joint.
 - Manufacturer: Fosroc Ltd
www.fosroc.com
enquiryuk@fosroc.com
T: +44 (0)1827 262222
F: +44 (0)1827 262444
Drayton Manor Business Park, Coleshill Road, Tamworth, Staffordshire. B78 3XN .
Product reference: HYDROCELL XL.
 - Placement: Build in as work proceeds with no projections into cavities and to correct depth to receive sealant system.
 - Sealant:
 - Designation: ISO 11600-F-20LM.
 - Manufacturer: Fosroc Ltd
www.fosroc.com
enquiryuk@fosroc.com
T: +44 (0)1827 262222
F: +44 (0)1827 262444
Drayton Manor Business Park, Coleshill Road, Tamworth, Staffordshire. B78 3XN .
Product reference: NITOSEAL MS60.
 - Colour: BROWN.

PROPRIETARY SILLS/ LINTELS/ COPINGS/ DRESSINGS

- 735 PRECAST CONCRETE LINTELS
- Standard: To BS EN 845-2.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Types: As S Eng schedule.
 - Sizes: As S Eng schedule
 - Additional requirements: As S Eng schedule.
 - Placement: Bed on mortar used for adjacent work.
 - Bearing length (minimum): As S Eng schedule.

755 PREFABRICATED STEEL LINTELS

- Standard: To BS EN 845-2.
- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Types: As S Eng schedule.
- Material/ finish: As S Eng schedule.
- Sizes: As S Eng schedule.
- Additional requirements: As S Eng schedule.
- Placement: Bed on mortar used for adjacent work.
 - Bearing length (minimum): As S Eng schedule.

MISCELLANEOUS ITEMS

840 OPENINGS FOR FRAMES

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

850 WALL PLATES

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

H Cladding/Covering

H11

Curtain walling

H11 Curtain walling

To be read with Preliminaries/ General conditions.

TENDERING

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

TYPES OF CURTAIN WALLING

110 CURTAIN WALLING TO MAIN ELEVATIONS

- Supporting structure: STEEL FRAME TO STRUCTURAL ENGINEERS DETAILS .
- Curtain walling system:
 - Manufacturer: Kawneer UK Ltd
www.kawneer.co.uk
kuk.kawneer@alcoa.com
T: +44 (0)1928 502500
F: +44 (0)1928 502501
Astmoor Industrial Estate, Astmoor Road, Runcorn, Cheshire. WA7 1QQ .
Product reference: AA100 SSG CURTAIN WALL SYSTEM .
 - Type: Structural sealant glazing system .
- Internal framing member:
 - Material: Aluminium .
 - Finish: Powder coating .
Colour/ texture: Silver RAL 9006 .
Minimum film thickness: 40 micrometres .
- External cover cap:
 - Material: NOT REQUIRED .
 - Finish: Not required .
Colour/ texture: NOT REQUIRED .
Minimum film thickness: Not applicable .
- Glazing: Insulating glass units .
 - Inner pane: 8.8mm heat soaked toughened laminated inner .
 - Outer pane: 6mm security planilux heat soaked toughened outer pane .
- Glazing system: Gaskets, cover plate fixed .
- Panel/ facing type: Not applicable .
 - External material: NOT APPLICABLE .
 - External finish: NOT APPLICABLE .
 - Internal material: NOT APPLICABLE .
 - Internal finish: NOT APPLICABLE .
 - Core insulation: NOT APPLICABLE .
- Accessories: Perimeter flashings .
- Incorporated components: Doors as indicated on drawings .
- Other requirements: Automatic sliding doors, automatic opening doors. EPDM seals to all junctions,
Allowance to be made for temporary manifestation to windows to ensure compliance with Approved Document K and M - SHELL PACKAGE .

135 DOORS TO MAIN ENTRANCE AND MEANS OF ESCAPE

- Manufacturer: As clause 110 .
 - Product reference: As clause 110 .
- Material: Aluminium .
- Finish: Powder coating .
 - Colour/ texture: Silver RAL 9006 .
 - Minimum film thickness: 40 micrometres .
- Fixing: in accordance with specialist details .
- Other requirements: automatic doors with BESAM door gear to main entrance .

150 MATERIALS SPECIFICATION

- Minimum 'BRE Green Guide to Specification' online rating: A+.
- Specification of glazing materials to be in accordance with guidance in CIRIA document 'Glazing at height'.

GENERAL REQUIREMENTS/ PREPARATORY WORK

- 210 DESIGN
- Curtain walling and associated features: Complete the detailed design. Submit before commencement of fabrication.
 - Related works: Coordinate in the detailed design.
- 215 DESIGN PROPOSALS
- Submission of alternative proposals: Preliminary design drawings indicate intent. Other reasonable proposals will be considered.
- 220 SPECIFICATION
- Compliance standard: The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
 - Reference information: For the duration of the contract, keep available at the design office, workshop and on site copies of:
 - The CWCT 'Standard for systemised building envelopes'.
 - Publications invoked by the CWCT 'Standard for systemised building envelopes'.
- 230 INFORMATION TO BE PROVIDED DURING DETAILED DESIGN STAGE
- Submit the following curtain walling particulars:
 - A schedule of detailed drawings and dates for submission for comment.
 - A schedule of loads that will be transmitted from the curtain walling to the structure.
 - Proposed fixing anchor details relevant to structural design and construction.
 - A detailed testing programme in compliance with the Main Contract master programme.
 - A detailed fabrication and installation programme in compliance with the Main Contract master programme.
 - Proposals to support outstanding applications for Building Regulation consents or relaxations.
- 232 QUALITY PLAN
- Requirement: Submit during detailed design.
 - Content: In accordance with BS 5750, BS EN ISO 9001 and including the following:
 - Name of the quality manager.
 - Quality assessment procedures.
 - Inspection procedures to be adopted in checking the work.
 - Stages at which check lists will be used and samples of the lists.
 - List of work procedures on the correct use of materials or components, both off site and on site.
 - List of product information with latest revisions.
 - Subcontractors involved in the work.
 - Subcontractors' quality plans.
 - Storage, handling, transport and protection procedures.
 - Procedure for registering and reporting non compliances.
 - Maintenance procedures and calibration records.
 - Certification that completed work complies with specification.
 - Check list register to ensure all items have been inspected and non compliances discharged.

- 235 INFORMATION TO BE PROVIDED BEFORE COMMENCEMENT TESTING OR FABRICATION OF CURTAIN WALLING
- Submit the following curtain walling particulars:
 - Detailed drawings to fully describe fabrication and installation.
 - Detailed calculations to prove compliance with design/ performance requirements.
 - Project specific fabrication, handling and installation method statements.
 - Certification for incorporated components manufactured by others confirming their suitability for proposed locations in the curtain walling.
 - Recommendations for spare parts for future repairs or replacements.
 - Recommendations for safe dismantling and recycling or disposal of products.
- 240 INFORMATION TO BE PROVIDED BEFORE COMMENCEMENT OF STRUCTURAL SEALANT GLAZING
- Submit structural bonding sealant manufacturer's project specific approval for:
 - Compatibility and adhesion of products and finishes.
 - Full details of structural sealant glazing design.
 - Structural sealant dimensions.
 - Project specific sealant application method statement.
- 250 PRODUCT SAMPLES
- General: Before commencing detailed design, submit labelled samples of: Mullion and transom with glass .

DESIGN/ PERFORMANCE REQUIREMENTS

- 305 CWCT 'STANDARD FOR SYSTEMISED BUILDING ENVELOPES'
- General: Unless specified or agreed otherwise comply with:
 - Part 2 - Loads, fixings and movement.
 - Part 3 - Air, water and wind resistance.
 - Part 4 - Operable components, additional elements and means of access.
 - Part 5 - Thermal, moisture and acoustic performance.
 - Part 6 - Fire performance
 - Part 7 - Robustness, durability, tolerances and workmanship.
 - Project performance requirements specified in this subsection: Read in conjunction with CWCT performance criteria.
- 313 INTEGRITY
- Requirement: The curtain walling must resist wind loads, dead loads and design live loads, and accommodate deflections and movements without damage.
 - Design wind pressure: Calculate in accordance with: BS 6399-2.
 - Hard body impact loads: In accordance with CWCT TN75:
 - Location and category: category A.
 - Soft body impact loads - curtain walling to BS EN 14019:
 - Location and classification: class E1.
 - Soft body impact loads - glass to BS EN 12600:
 - Location and classification: 1 (A) 1.
 - Permanent imposed loads: none.
 - Temporary imposed loads: squeegees/ ladders.
- 320 DEFLECTION UNDER DEAD LOADS
- Requirement: Framing members parallel to the curtain walling plane must not:
 - Reduce glass bite to less than 75% of design dimension.
 - Reduce edge clearance to less than 3 mm between members and immediately adjacent glazing units, panel/ facing units or other fixed units.
 - Reduce clearance to less than 2 mm between members and movable components such as doors and windows.

- 325 DEFLECTION UNDER WIND LOAD
- Requirement: To CWCT 'Standard for systemised building envelopes' clause 3.5.2 and the following additional requirements: none.
 - Additional stiffness to CWCT 'Standard for systemised building envelopes' clause 3.5.4.2: Allowed.
- 330 GENERAL MOVEMENT
- Requirement: Curtain walling must accommodate anticipated building movements as follows: as detailed by structural engineer .
- 332 APPEARANCE AND FIT
- Requirement: Design curtain walling system:
 - To ensure position and alignment of all parts and features as shown on preliminary design drawings.
 - To accommodate deviations in the primary support structure.
 - Primary support structure: Before commencing installation of curtain walling system, carry out survey sufficient to verify that required accuracy of erection can be achieved.
 - Give notice: If the structure will not allow the required accuracy or security of erection.
 - Design tolerances: + or - 2mm.
 - Curtain wall envelope zone tolerances:
 - Width: + or - 1mm.
 - Critical reference location: n/a.
 - Maximum permitted component and installation tolerances: + or - 2mm.
- 335 THERMAL MOVEMENT - SERVICE TEMPERATURE RANGES
- Requirement: To CWCT 'Standard for systemised building envelopes' clause 2.7.2 amended and/ or with the addition of the following: 20 to 80 deg.
- 340 AIR PERMEABILITY
- Requirement: Permissible air leakage rates of 1.5m³/hr/m² for fixed lights and 2.0 m³/hr/lin.m for opening lights must not be exceeded when the curtain walling is subjected to the peak test pressure.
 - Permeability class to BS EN 12152: A4.
 - Peak test pressure: 600 Pa.
- 345 AIR PERMEABILITY EXFILTRATION
- Requirement: The maximum permissible air exfiltration rate through the curtain walling system must not exceed: 4 m³/(h.m²) at a test pressure of 100 Pa..
- 350 WATER PENETRATION
- Watertightness class to BS EN 12154: R7.
 - Peak test pressure: 600 Pa.
 - Additional requirements: Underside of any transom not to be wetted at peak test pressure..
- 370 THERMAL PROPERTIES
- Method of calculating the thermal transmittance (U-value) of curtain walling/ each zone of curtain walling: Weighted U-value.
 - Average U-value of curtain walling: 1.8.
 - Curtain wall zone interfaces: Co-ordinate to achieve required average U-value.
 - Method for assessing thermal transmittance (U-value) of assemblies: by calculation.

- 380 SOLAR AND LIGHT CONTROL
- Total solar energy transmission:
 - Maximum g-value - glazing only: 0.5.
 - Maximum effective g-value - glazing with shading devices: NOT APPLICABLE.
 - Visible light transmission:
 - Minimum light transmission - glazing only: Not applicable.
 - Minimum effective light transmission - glazing with shading devices: Not applicable.
- 385 THERMAL STRESS IN GLAZING
- Glass panes/ units: Must have adequate resistance to thermal stress generated by orientation, shading, solar control and construction.
- 390 AVOIDANCE OF CONDENSATION
- Requirement: Notional psychrometric conditions under which condensation must not form on building interior surfaces of framing members or any part of infill panels/ facings are:
 - Notional outdoor psychrometric conditions as BS 6229, table A1.
 - Notional indoor psychrometric conditions:
 - Temperature: 20°C.
 - Relative humidity: 40%.
 - Vapour pressure: 0.93 kPa.
- 410 SOUND TRANSMITTANCE
- Minimum weighted sound reduction index (Rw) to BS EN ISO 717-1:
 - Between internal and external surfaces of curtain walling: 38 TO BE CONFIRMED.
 - Minimum weighted standardized level difference (DnTw) to BS EN ISO 717-1:
 - Between adjacent floors abutting curtain walling: N/A.
 - Between adjacent rooms on same floor abutting curtain walling: N/A.
- 420 FIRE RESISTANCE OF CURTAIN WALLING
- Standard: To BS EN 13501-1.
 - Minimum periods and criteria: N/A .
- 425 INTERNAL SURFACE SPREAD OF FLAME OF CURTAIN WALLING
- Standard: To BS 476-7.
 - Class 0.
- 430 FIRE STOPPING
- Locations: At junctions of curtain walling with compartment walls and floors.
 - Materials and methods of fixing: To ensure fire resistance not less than that specified for compartment walls and floors.
- 436 DOORS AND OTHER ACCESS FACILITIES
- Performance criteria: To CWCT 'Standard for systemised building envelopes' Part 3.
 - Access facilities designated for use by disabled persons: Main entrance and personnel doors.
 - Strength and durability: To CWCT 'Standard for systemised building envelopes' clause 4.3.3.
 - Forces and tests: No additional requirements.
 - Security:
 - Applicable doors: As schedule.
 - Security rating: To LPS 1175 security rating classification SR2.

440 DURABILITY

- Relevant agents or degradation mechanisms: DRIVING RAIN.
- Design life of the curtain walling system: Not less than 50 years.
- Secondary components: Submit details together with required maintenance regime, replacement periods and methods of replacement.

450 SAFETY

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

460 STRUCTURAL SEALANT GLAZING REQUIREMENTS

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

TESTING

510 COMPARISON (TYPE) TESTING

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

520 PROJECT TESTING (SITE)

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

530 TESTING AUTHORITY

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

630 SITE SPRAY BAR TEST

- Requirement: To CWCT 'Standard for systemised building envelopes', 'Standard test methods for building envelopes' Section 10.
 - Area to be tested: ALL CURTAIN WALLING.
 - Pressure difference across curtain wall: 600PA.

660 STRUCTURAL SEALANT GLAZING TESTS

- Product samples: Provide the structural bonding sealant manufacturer with framing profiles, glass, gaskets, assembly/ weathering sealants and other curtain walling products that are proposed for contact with structural bonding sealant.
- Testing: By sealant manufacturer to determine compatibility and adhesion of structural bonding sealant under specified design loadings.
- Modification of product to enable compliance with test criteria: Details must be recorded in the sealant manufacturer's project specific approval.

PRODUCTS

710 ALUMINIUM ALLOY FRAMING SECTIONS

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

- 715 CARBON STEEL FRAMING SECTIONS/ REINFORCEMENT
- Standards: To relevant parts of BS 7668, BS EN 10029, and BS EN 10210.
 - Thickness: Suitable for the application, and for galvanizing or other protective coating.
- 730 MECHANICAL FIXINGS
- Stainless steel: To BS EN ISO 3506, grade A2 generally, grade A4 when used in severely corrosive environments.
 - Carbon steel: To BS 4190 and suitable for galvanizing or other protective coating.
 - Aluminium brackets, rivets and shear pins: To relevant parts of BS EN 755.
- 732 ADHESIVES
- General: Not degradable by moisture or water vapour.
- 735 FIXING ANCHORS
- Type and use: Reviewed and approved by fixing manufacturers. Submit confirmatory information on request.
 - Dimensions: Not less than recommended by their manufacturers.
 - Adjustment capability: Sufficient in three dimensions to accommodate building structure and curtain walling fabrication/ installation tolerances.
- 737 GLASS GENERALLY
- Standards: To BS 952 and relevant parts of:
 - BS EN 572 for basic soda lime silicate glass.
 - BS EN 1096 for coated glass.
 - BS EN 1748 for borosilicate glass.
 - BS EN 1863-1 for heat strengthened soda lime silicate glass.
 - BS EN 12150 for thermally toughened soda lime silicate glass.
 - BS EN 13024 for thermally toughened borosilicate glass.
 - BS EN ISO 12543 for laminated glass.
 - Selection of glass type and thickness in accordance with recommendations of CIRIA publication 'Glazing at height'.
 - Glass quality: Clean and free from obvious scratches, bubbles, cracks, rippings, dimples and other defects.
 - Glass edges: Generally undamaged. Shells and chips not more than 2 mm deep and extending not more than 5 mm across the surface are acceptable if ground out.
- 739 DIMENSIONAL TOLERANCES ON GLASS GENERALLY
- Measurement of tolerances: Before any thermal toughening/ heat strengthening.
 - Pane dimensions less than 1500 mm:
 - For 3 to 6 mm thick glass: ± 1.0 mm.
 - For 8 to 12 mm thick glass: ± 1.5 mm.
 - For 15 mm thick glass: ± 2.0 mm.
 - For 19 mm and 25 mm thick glass: ± 2.5 mm.
 - Pane dimensions more than 1500 mm:
 - For 3 to 6 mm thick glass: ± 1.5 mm.
 - For 8 to 12 mm thick glass: ± 2.0 mm.
 - For 15 mm thick glass: ± 2.5 mm.
 - For 19 mm and 25 mm thick glass: ± 3.0 mm.
 - Pane squareness: Not more than 4 mm difference in diagonal measurements.

- 741 DISTORTIONAL TOLERANCES ON GLASS GENERALLY
- Measurement of tolerances: After any thermal toughening/ heat strengthening.
 - Maximum bow: 0.2% of pane dimension.
 - Maximum roller wave:
 - For 3 to 5 mm thick glass: 0.5 mm.
 - For 6 to 10 mm thick glass: 0.3 mm.
 - For 12 mm and thicker glass: 0.15 mm.
 - Maximum edge dip:
 - For 3 to 5 mm thick glass: 0.8 mm.
 - For 6 to 10 mm thick glass: 0.5 mm.
 - For 12 mm and thicker glass: 0.25 mm.
- 742 HEAT SOAKED THERMALLY TOUGHENED GLASS
- Standard: To BS EN 14179.
 - Holding period: 2 hours.
 - Locations of heat soaked glass: MAIN SHOPFRONT.
- 745 INSULATING GLASS UNITS
- Standard and labels for hermetically sealed units: To BS EN 1279.
 - Label: Each pane.
 - Colour of aluminium perimeter spacers: Black.
 - Perimeter taping: Not to be used.
 - Perimeter seals:
 - Resistant to UV light degradation on exposed edges.
 - Compatible with structural, assembly and weather sealants.
- 747 GLASS EDGE CONDITION FOR STRUCTURAL SEALANT GLAZING
- Bonded, unframed outer edges: Flat ground with a small arris suitable for open jointing or for weatherseal jointing.
- 760 GASKETS
- Material:
 - Noncellular rubber to BS 4255-1.
 - Cellular rubber to ASTM-C509.
 - Continuity: Outer gaskets of single front sealed curtain walling systems and inner gaskets of drained and ventilated or pressure equalized curtain walling systems must be formed in a complete frame with sealed joints. Vulcanized rubber gaskets must have factory moulded corner joints.
 - Durability: Resistant to oxidation, ozone and UV degradation.
- 770 GENERAL SEALANTS
- Selection: In accordance with BS 6213 from:
 - Silicone.
 - One part polysulfide.
 - Two part polysulfide.
 - One or two part polyurethane.
 - Classification and requirements: To BS EN ISO 11600.
 - Reaction to contact products and finishes: Stable and compatible.
- 772 CURTAIN WALLING JOINT ASSEMBLY SEALANTS
- Material: One part, low modulus silicone to BS EN ISO 11600, type F or G. Neutral curing where in contact with or close proximity to other products that may be adversely affected by acetoxy curing.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.

- 775 BONDING SEALANTS FOR STRUCTURAL SEALANT GLAZING
- Material: Silicone, neutral curing, designed and manufactured for bonding of structural sealant glazing. Compatible with contact and close proximity products and finishes.
 - Manufacturer: as recommended by specialist .
 - Product reference: as recommended by specialist .

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

FINISHES

- 810 PROTECTIVE COATING OF CARBON STEEL FRAMING SECTIONS/
REINFORCEMENT
- Treatment: One of the following to all surfaces:
 - Hot dip galvanized to BS EN ISO 1461.
 - An appropriate equivalent coating to BS 5493, BS EN ISO 12944 or BS EN ISO 14713.

- 820 PROTECTIVE COATING OF CARBON STEEL MECHANICAL FIXINGS
- Treatment: One of the following to all surfaces:
 - Hot dip galvanized to BS EN ISO 1461.
 - Sherardized to BS 4921, class 1 coating thickness and passivated.
 - Zinc plated to BS EN ISO 2081, coating designation Fe//Zn//C for an iridescent (yellow passivate) chromate conversion coating or Fe//Zn//D for an opaque (olive green) chromate conversion coating.

- 830 POWDER COATING
- Requirement: As section Z31.

FABRICATION AND INSTALLATION

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

- 912 METALWORK
- Requirement: As section Z11, unless specified otherwise in this section.

- 915 GLAZING
- Requirement: As section L40, unless specified otherwise in this section.
 - Directional patterned/ wired glass: Generally fix parallel to surround and align adjacent panes where seen together at close quarters.

- 917 FIXINGS/ ADHESIVES APPLICATION
- Requirement: As section Z20, unless specified otherwise in this section.

- 920 SEALANT APPLICATION
- Requirement: As section Z22, unless specified otherwise in this section.
- 925 STRUCTURAL SEALANT GLAZING
- Working conditions: Prepare for and apply structural bonding sealant in a favourable workshop environment.
 - Curing: Do not transport units until structural bonding sealant has adequately cured for the period stated in the project specific approval.
- 930 ASSEMBLY
- General: Carry out as much assembly as possible in the workshop.
 - Joints (other than movement joints): Rigidly secured, reinforced where necessary and fixed with hairline abutments.
 - Displacement of components in assembled units: Submit proposals for reassembly on site.
- 955 FIXING ANCHOR INSTALLATION
- Site drilling or cutting into structure: Submit proposals for positions other than shown on detailed drawings.
 - Concrete supporting structure:
 - Cast-in inserts: Provide detailed locational information. Protect cavities in inserts from entry of concrete.
 - Edge fixing distances: Not less than recommended by fixing anchor manufacturers.
 - Corrective fabrication: Minimize. Where necessary, submit proposals.
- 970 CURTAIN WALLING INSTALLATION
- Securing to fixing anchors: Through holes formed during fabrication only.
 - Tightening mechanical fasteners: To manufacturer's recommended torque figures. Do not overtighten fasteners intended to permit differential movement.
 - Protective coverings: Remove only where necessary to facilitate installation and from surfaces that will be inaccessible on completion.
- 975 WELDING
- In situ welding: Not permitted. .
- 980 INTERFACES
- Flashings, closers, etc: Locate and form correctly to provide weathertight junctions with the curtain walling.
- 982 IRONMONGERY
- Assembly and fixing: Accurately, using fasteners with matching finish supplied by ironmongery manufacturer.
 - Completion: Check, adjust and lubricate as necessary to ensure correct functioning.
- 985 MAINTENANCE
- Maintenance manual: Incorporate details within the Building Manual in accordance with CWCT 'Standard for systemised building envelopes' clause 7.6.1.
 - Materials certification and test reports to be included: ALL.

H31

Metal profiled/ flat sheet cladding/ covering

H31 Metal profiled/ flat sheet cladding/ covering

To be read with Preliminaries/ General conditions.

TYPES OF CLADDING/ COVERING SYSTEM

- 110 METAL CLADDING TO UNLOADING BAY, HOME DELIVERY ,BALE STORAGE AND WET WASTE AREA
- Humidity load: To BS EN ISO 13788: Class 1.
 - Support structure: GALVANISED CLADDING RAILS.
 - Bearing width (minimum): 50 mm.
 - Pitch: 3 DEGREES.
 - Cladding/ covering system type: Single skin.
 - External sheets: Steel to BS EN 508-1.
 - Material: ALUMINIUM.
 - Thickness (nominal): 0.8 mm.
 - Profile: EUROCLAD 32/1000F.
 - Cover width: 1000mm.
 - Finish side 1 (outer): COLOURCOAT PRISMA .
Colour: RAL 9006 SILVER.
 - Finish side 2 (inner): COLOURCOAT PRISMA.
Colour: RAL 9010 WHITE.
 - Additional requirements: NONE.
 - Accessories: As required to complete installation - GUTTERS, DRIPS FLASHINGS ETC .
 - Primary cladding/ covering sheet fasteners: EPDM elastomer faced sealing washer and plastics cap colour TO MATCH SHEET .
 - Fastener profile location: Crown.
 - Number and location of fasteners: As clause 165.
 - End laps size (minimum): 150mm.
 - Sealing laps:
 - End laps: Two rows of partially cross linked butyl rubber sealant tape .
 - Side laps: One row of partially cross linked butyl rubber sealant tape .
 - Stitching laps:
 - End laps: As recommended by manufacturer.
 - Side laps: As recommended by manufacturer.
 - Spacers: NOT REQUIRED.
 - Depth of spacer: To be such that insulation is not compressed between external and lining sheets.
 - Fasteners: As recommended by manufacturer.
 - Breather membrane: Not required.
 - U-value (plane): N/A.
 - Thermal insulation: N/A.
 - Vapour control layer: N/A.
 - Sound transmittance: N/A.
 - Sound absorption: N/A.
 - Acoustic insulation: N/A.
 - Lining sheets: N/A.
 - Additional requirements: None.

120A METAL PARAPET INTERNAL FACE TO ROOF LEVEL PARAPET

- " Support structure: structural steel frame and cold rolled galvanised cladding rails .
- Bearing width (minimum): 60mm.
- Pitch: N/A.
- " External sheets: Steel to BS EN 508-1.
- Manufacturer: Euroclad Ltd
www.euroclad.com
sales@euroclad.com
T: +44 (0)29 2079 0722
F: +44 (0)29 2079 3149
Wentloog Corporate Park, Wentloog Road, Cardiff, South Glamorgan. CF3 2ER.
Product reference: 19/1000 Reverse profile (laid vertically .
- Material: Steel to BS EN 10346, grade S220GD+Z275.
- Thickness (nominal): 0.7 mm.
- Finish side 1 (outer): Colorcoat Prisma® high performance pre-finished steel with nominal organic coating thickness 200Sm with Scintilla® emboss with a nominal depth of 40Sm and maintenance and inspection free Confidex® Guarantee. .
Colour: GREY RAL 7000.
- Finish side 2 (inner): High Performance Polyester Standard Backing Coat .
Colour: Grey.
- Additional requirements: None.
- " Accessories: As required to complete installation.
- " Primary cladding/ covering sheet fasteners: Stainless steel Self driller Hex head 5.5mm dia
x min. Minimum 25mm long with moulded colour cap with washer .
- Fastener profile location: Valley.
- Number of fasteners per sheet width:
Eaves and end laps: every corrugation.
Intermediate supports: every corrugation.
- " End laps size (minimum): 150mm.
- " Sealing laps:
- End laps: Lay away from the prevailing wind where possible. Continuous bead of 6 x 5mm Class A low modulus mastic to outside of fixings position..
- Side laps: Lay sheets from bottom up where possible and arrange overlaps to bottom of sheet. .
" Stitching laps:
- End laps: Position over spacer. Fixing references as above. .
- Side laps: At maximum 600mm centres. Stainless steel Stitcher Moulded head washer 6.3mm dia x 25mm long..
" Additional requirements: System must be fitted by a Euroclad Elite Systems Recommended Installer.
All specified components are supplied through Euroclad working to ISO 14001: 2004 Environmental Management System.
Flashings, Rainwater Goods, Fabricated details and trims by Euroclad. .

GENERAL REQUIREMENTS

- 165 CONTRACTOR'S DESIGN OF ROOF COVERING TO BALE STORAGE
- Design responsibility: Determine depth and thickness of profile and type, sizes and number of fixings and Determine types sizes and locations of fixings .
 - Design standard: In accordance with BS 5427-1.
 - Structural and fire requirements:
 - Generally: As section B50.
 - Modifications: NONE.
 - Design: Complete the design in accordance with the designated code of practice to satisfy specified performance criteria.
 - Functional requirements: As specified in this section.
 - Additional requirements: NONE.
 - Design and production information: As preliminaries A31 .
 - Timing of submissions: As preliminaries A31 .
- 176 FASTENER SAMPLES
- General: During detailed design, submit labelled samples of each type of fastener.

DESIGN/ PERFORMANCE REQUIREMENTS

- 185 PERFORMANCE COMPLIANCE
- Verification: Before commencing fabrication, submit evidence based on laboratory testing or computer modelling.
 - Verifying authority: ukas.
- 187 DEFLECTION OF METAL CLADDING/ COVERING
- Roof covering: Maximum permitted deflection under distributed loads as a multiple of span and due to:
 - Dead load: L/500.
 - Dead and imposed loads: L/200.
 - Dead and wind loads: L/90.
 - Wall cladding: Maximum permitted deflection under distributed loads as a multiple of span and due to:
 - Dead and wind loads: N/A.
- 198 WATER PENETRATION
- Requirement: Under site exposure conditions, moisture must not penetrate onto internal surfaces, or into cavities not designed to be wetted.

FIXING CLADDING/ COVERING

- 215 PAINTING STRUCTURE
- Sequence: Paint outer surface of supporting structure before fixing cladding/ covering.
- 219 FASTENERS
- Unspecified fasteners: Recommended for the purpose by the cladding/ covering manufacturer.
- 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.

234 GUTTERS TO EAVES

- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Sizes: TO BE SIZED BY CLADDING SUB-CONTRACTOR.
- Material: Galvanized mild steel to BS EN 10346 lined with single ply membrane .
 - Gauge/ Thickness: 3mm.
 - External finish: Untreated.
- Insulation: n/a.
- Internal liner sheet: n/a.
- Jointing method: Joggle jointed, sealed with 35 x 3 mm sealant tape and secured with galvanized M10 hexagon head bolts .
- Fixing method: 50 x 6 mm galvanized steel support straps at 1 m centres. .
- Accessories: Stop ends, weir overflows, outlets .

410 FIXING SHEETS GENERALLY

- Cut edges: Clean true lines.
- Penetrations: Openings to minimum size necessary.
 - Edge reinforcement: Angles.
- Sheet orientation: Exposed joints of side laps away from prevailing wind unless shown otherwise on drawings.
- 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 sheets.
- Completion: Check fixings to ensure watertightness and that sheets are secure.
- Cut edges: Paint to match face finish.

480 FLASHINGS/ TRIMS GENERALLY

- Lap joint treatment:
 - Vertical and sloping flashings/ trims: End laps to be same as for adjacent sheeting.
 - 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 sheeting. Otherwise to sheeting.
 - Fasteners: at 300mm centres.

550 SEALING LAPS ON EXTERNAL SHEETS

- Sealant tape: Types recommended by sheet manufacturer.
 - Position: Below fixing positions in straight unbroken lines, parallel to and slightly back from edge of 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 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.

H43

Metal composite panel cladding/ covering

H43 Metal composite panel cladding/ covering

To be read with Preliminaries/ General conditions.

120 METAL COMPOSITE PANEL TO EXTERNAL ELEVATIONS

- Support structure: Galvanised steel top hat sections fixed to horizontal cladding rails
CONTRACTOR PLEASE NOTE, FIXING DIRECT TO STEEL FRAME WILL NOT BE PERMITTED.
 - Bearing width (minimum): 60 mm.
 - Pitch: not applicable.
- Panels:
 - Manufacturer: Kingspan Insulated Panels
www.kingspanpanels.co.uk
info@kingspanpanels.com
T: +44 (0)1352 716100
F: +44 (0)1352 710161
Greenfield Business Park No 2, Greenfield, Holywell, Flintshire. CH8 7GJ .
Product reference: KS 900 AND 600 OPTIMO .
 - External facing material: 0.63mm STEEL.
Finish: TATA coating - colourcoat prisma on galvalloy substrate with Confidex guarantee .

Colour: silver RAL 9006.
 - Internal facing material: 0.4mm STEEL.
Finish: TATA coating - colourcoat prisma on galvalloy substrate with Confidex guarantee .

Colour: Brilliant White XL200 .
- Core insulation: Polyisocyanurate (PIR): with zero ozone depletion (Zero ODP) . .
- Panel thickness: 80mm CORE THICKNESS.
- Accessories: PRE-FORMED CORNERS min 600mm IN LENGTH, CAPPINGS, DRIPS, FLASHINGS etc, TO COMPLETE INSTALLATION..
- Primary fasteners: Self drilling and tapping stainless steel stand off screws with assembled stainless steel EPDM elastomer faced sealing washer and plastics cap to manufacturers recommendations.
 - Number and location of fasteners: Minimum of 3No fasteners through the mail horizontal joint at each vertical steel junction..
- End laps size (minimum): Not required.
- Sealing laps:
 - End laps: Not required.
 - Side laps: Not required.
- Stitching laps:
 - End laps: Not required.
 - Side laps: Not required.
- Special features: ENSURE INTERNAL FACE OF PANELS ARE SEALED ALONG FULL LENGTH BY AN UNBROKEN 6mm BEAD OF GUN GRADE SEALANT TO ENSURE AIR TIGHT BARRIER- AIR LEAKAGE RATE OF 3 M3 / HR PER M2 AT 50pA .

120A METAL COMPOSITE PANEL TO MAIN ROOF

- Supports: Kingspan Multibeam cold rolled purlins.
 - Bearing width: 50 mm
 - Finished pitch: minimum 1.5 degree after deflections to avoid ponding.
 - Manufacturer and reference: Kingspan Limited, roof cladding system for standard internal & external non-corrosive environments also Loss Prevention Certification Board certified to LPS 1181 Grade EXT-B.
 - Test results:
 - LPS1181: 2003: Part 1: Issue 1, ceiling lining tests: Passed all requirements
- Panels:
 - Profile reference: KS1000 TD - Topdek Insulated single ply roofdeck.
 - External facings:
 - Material: PVC membrane from Trocal
 - Thickness: 1.5 mm nominal.
 - Finish/Colour: As per membrane manufacturer
 - Internal facings:
 - Material: Hot-dip zinc coated steel to BS EN 10326: 2004.
 - Thickness: 0.63 mm
 - Finish/Colour: Bright White Polyester.
 - Core insulation: EcoSafe LPCB certificated PIR formulation. Receiving BREEAM Credit (Pollution 4: Insulant GWP) 2006 credit.
 - Panel thickness: 138mm overall (100mm core)
 - End laps: 60 mm.
 - Sealing end lap: 150 or 200mm wide (dependant upon membrane manufacturer) welded membrane strip at end lap. Welded as per membrane manufacturers recommendations.
 - Sealing side lap: Overlap of membrane welded to membrane of adjacent panel at side laps. Welded as per membrane manufacturers recommendations.
 - Fasteners: As determined by clause 220A.
 - Number and location:
 - Primary fasteners: As determined by clause 197A, but with a minimum of 1 number per panel generally and 5 number per panel in end laps, at eaves and ridge areas, as recommended by cladding manufacturer. Intermediate fasteners covered with welded membrane patch. Size and welded as per membrane manufacturers recommendations.
 - Secondary fasteners (Side Lap Stitching):
 - From Outside - At the side lap fix sheets together with self coring fasteners evenly spaced at centres not exceeding 500mm.
 - From Inside - At the side lap fix sheets together with stitchers/rivets (delete as appropriate) evenly spaced at centres not exceeding 500mm.
 - 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: 0.18 W/m²K. Manufacturers 25 year thermal guarantee required.
 - Air leakage rate of 2m³/hr/m² at 50 Pa.
 - Other requirements: reinforced walkway membrane as recommended by Trocal to plant access routes and maintenance routes.
 - Panel to be manufactured under Environmental Management System Certification ISO 14001:2004.
 - System installed by cladding manufacturers preferred contractor

120B METAL COMPOSITE PANEL TO MAIN ENTRANCE CANOPY ROOF

- Supports: Kingspan Multibeam cold rolled purlins.
 - Bearing width: 50 mm
 - Finished pitch: minimum 1.5 degree after deflections to avoid ponding.
 - Manufacturer and reference: Kingspan Limited, roof cladding system for standard internal & external non-corrosive environments also Loss Prevention Certification Board certified to LPS 1181 Grade EXT-B.
 - Test results:
 - LPS1181: 2003: Part 1: Issue 1, ceiling lining tests: Passed all requirements
- Panels:
 - Profile reference: KS1000 TD - Topdek Insulated single ply roofdeck.
 - External facings:
 - Material: PVC membrane from Trocal
 - Thickness: 1.5 mm nominal.
 - Finish/Colour: As per membrane manufacturer
 - Internal facings:
 - Material: Hot-dip zinc coated steel to BS EN 10326: 2004.
 - Thickness: 0.63 mm
 - Finish/Colour: Bright White Polyester.
 - Core insulation: EcoSafe LPCB certificated PIR formulation. Receiving BREEAM Credit (Pollution 4: Insulant GWP) 2006 credit.
 - Panel thickness: 78mm overall (34mm core)
 - End laps: 60 mm.
 - Sealing end lap: 150 or 200mm wide (dependant upon membrane manufacturer) welded membrane strip at end lap. Welded as per membrane manufacturers recommendations.
 - Sealing side lap: Overlap of membrane welded to membrane of adjacent panel at side laps. Welded as per membrane manufacturers recommendations.
 - Fasteners: As determined by clause 220A.
 - Number and location:
 - Primary fasteners: As determined by clause 197A, but with a minimum of 1 number per panel generally and 5 number per panel in end laps, at eaves and ridge areas, as recommended by cladding manufacturer. Intermediate fasteners covered with welded membrane patch. Size and welded as per membrane manufacturers recommendations.
 - Secondary fasteners (Side Lap Stitching):
 - From Outside - At the side lap fix sheets together with self coring fasteners evenly spaced at centres not exceeding 500mm.
 - From Inside - At the side lap fix sheets together with stitchers/rivets (delete as appropriate) evenly spaced at centres not exceeding 500mm.
 - Accessories:
 - Profile fillers as clause 300A.
 - Manufacturers 25 year thermal guarantee required.
 - Panel to be manufactured under Environmental Management System Certification ISO 14001:2004.
 - System installed by cladding manufacturers preferred contractor

GENERAL REQUIREMENTS

- 165 CONTRACTOR'S DESIGN WALL AND ROOF CLADDING
- Design responsibility: DETAILED DESIGN SUFFICIENT TO COMPLETE INSTALLATION TO ARCHITECTS APPROVAL.
 - Design standard: In accordance with BS 5427-1.
 - Structural and fire requirements:
 - Generally: As section B50.
 - Modifications: None.
 - Design: Complete the design in accordance with the designated code of practice to satisfy specified performance criteria.
 - Functional requirements: As specified in this section.
 - Additional requirements: None.
 - Design and production information: As preliminaries A31.
 - Timing of submissions: As preliminaries A31.
- 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.
- 176 FASTENER SAMPLES
- General: During detailed design, submit labelled samples of each type of fastener.

DESIGN/ PERFORMANCE REQUIREMENTS

- 185 PERFORMANCE COMPLIANCE
- Verification: Before commencing fabrication, submit evidence based on laboratory testing or computer modelling.
 - Verifying authority: UKAS .
- 187 DEFLECTION OF METAL CLADDING/ COVERING
- Roof covering: Maximum permitted deflection under distributed loads as a multiple of span and due to:
 - Dead load: $L/500$.
 - Dead and imposed loads: $L/200$.
 - Dead and wind loads: $L/90$.
 - Wall cladding: Maximum permitted deflection under distributed loads as a multiple of span and due to:
 - Dead and wind loads: $L/120$.
- 198 WATER PENETRATION
- Requirement: Under site exposure conditions, moisture must not penetrate onto internal surfaces, or into cavities not designed to be wetted.

200 AVOIDANCE OF INTERSTITIAL CONDENSATION

- Requirement: Determine interstitial condensation risk of cladding system using the method described in BS 5250, Annex D. If necessary, provide a vapour control layer to ensure that damage and nuisance from interstitial condensation does not occur.
- Outdoor psychrometric conditions (notional): To BS 6229, table A.1 as follows:
 - Temperature: Winter -5°C, summer 18°C.
 - Relative humidity: Winter 90%, summer 65%.
 - Vapour pressure: Winter 0.36 kPa, summer 1.34 kPa.
- Indoor psychrometric conditions (notional): As follows:
 - Temperature: 20°C.
 - Relative humidity: 55%.
 - Vapour pressure: 0.935 kPa.
- Calculated amount of winter interstitial condensate (maximum):
- Winter interstitial condensate:
 - Calculated amount (maximum): 0.35 kg/m².
 - Calculated annual net retention: Nil.

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 does not occur.

FIXING CLADDING/ COVERING

215 PAINTING STRUCTURE

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

219 FASTENERS

- Unspecified fasteners: Recommended for the purpose by the cladding/ covering manufacturer.

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

- Junctions between the roof panel system and walls / penetrations insulated with PIR board insulation any gaps filled with fire rated gun applied canister urethane insulation.
 - Placement: Secure and continuous with cladding/ covering insulation.

300 PROFILE FILLERS GENERALLY

- Material: EPDM OR METALLOCENE POLYOFOLIN.
- Manufacturer: Contractor's choice.
 - Product references: Contractor's choice.
- Colour: Black.
- Thickness: 50 mm.
- Fixing method: For outer sheet applications: Set into low-modulus silicone mastic.
For inner/liner sheet applications: Set into low-modulus silicone mastic. .
 - Requirement: To close cavities within the external envelope. Tight fit with no unintended gaps.

310A PURPOSE MADE COLD FORMED METAL ACCESSORIES

- Material: Austenitic stainless steel designation X5CrNi18-10 number 1.4301 (304).
 - Thickness/ gauge: 0.7 mm.
 - Finish/ Colour: INTERNALLY TO MATCH CLADDING COLOUR..
- " Fasteners:
 - Type: ..
 - Location: ..
 - Fixing centres: AS RECOMMENDED BY MANUFACTURER.

410 FIXING PANELS AND SHEETS GENERALLY

- Cut edges: Clean true.
- Penetrations: Openings to minimum size necessary.
 - Edge reinforcement: Sections to details .
- 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.

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: BLIND HEAD RIVETS .

482 BUTT JOINTED FLASHINGS/ TRIMS

- Locations: All horizontal .
- Butt straps: 300 mm wide and made from sheet of same material and finish.
- Butt joints: Seal.

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.

H72

Aluminium strip/ sheet coverings/ flashings

H72 Aluminium strip/ sheet coverings/ flashings

To be read with Preliminaries/ General conditions.

TYPES OF ALUMINIUM WORK

- 250 WEATHERING TO PARAPETS AND FRONT EDGES OF FASCIAS TO CANOPIES
- Substrate: EUROBOND PANEL AND WBP PLY .
 - Underlay: Needle punched nonwoven polyester geotextile .
 - Aluminium: Coated sheet/ strip.
 - Alloy designation: EN AW-1050A.
 - Temper: H12.
 - Finish: TO MATCH CLADDING PANELS - TATA CONFIDEX.
 - Thickness: 1.0 mm.
 - Joints: BUTT STRAPPED SECRET FIX.
 - Spacing: 2 m maximum.
 - Edge details: BEADED DRIP AT FRONT, UPSTAND AT REAR WITH TUCK IN.
 - Fixing: Fixed clips at 450 mm centres.
 - Accessories: Fixing of lightning conductor strips .

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.
- 515 WELDING
- In situ welding: Not permitted.
- 520 ALUMINIUM STRIP/ SHEET
- Standard: To BS EN 485, BS EN 507, BS EN 515 and BS EN 573.
 - Stamped or labelled with alloy designation, temper, finish and thickness.
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.

530 INTEGRITY OF ALUMINIUM

- Requirement: Design coverings/ flashings and methods of attachment to prevent loss of weathertightness and permanent deformation due to wind pressure or suction.
- Structural requirements:
 - Wind loads: AS DETERMINED BY CLADDING SUB-CONTRACTOR.

555 LAYOUT

- Setting out of longitudinal and cross joints: Submit proposals.

610 SUITABILITY OF SUBSTRATES

- Condition: Dry and free of dust, debris, grease and other deleterious matter.

630 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 6 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.

640 TIMBER FOR USE WITH ALUMINIUM WORK

- Quality: Planed, free from wane, splits, pitch pockets, decay and insect attack (ambrosia beetle excepted).
- Moisture content: Not more than 22% at time of fixing and covering.
- Preservative treatment: Organic solvent as section Z12, and Wood Protection Association Commodity Specification C8.

645 NEEDLE PUNCHED NONWOVEN POLYESTER GEOTEXTILE UNDERLAY

- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Weight: 200 g/m².
- Recycled content: Contractor's choice.

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

710 FIXINGS FOR CLIPS

- Nails to timber substrates: Aluminium to BS 1202-3 for aluminium clips. Stainless steel (austenitic) for stainless steel clips.
 - Shank type: Annular ringed or helical threaded.
 - Shank diameter: Not less than 2.65 mm.
 - Head: Flat.
 - Length: Not less than 25 mm or equal to substrate thickness.
- Screws to concrete/ masonry substrates: Sherardized or zinc plated steel or aluminium, for aluminium clips, to BS EN 14592. Stainless steel (austenitic) to BS EN 14592 for stainless steel clips.
 - Diameter: Not less than 3.35 mm.
 - Length: Not less than 25 mm.
 - Washers and plastic plugs: Compatible with screws.
- Screws to composite metal decks: Self tapping, as recommended by the deck and aluminium manufacturer/ supplier for aluminium or stainless steel clips.

JOINTING

H92

Rainscreen cladding

H92 Rainscreen cladding

To be read with Preliminaries/General conditions.

TENDERING

TYPE(S) OF RAINSCREEN CLADDING

- 130 MAJOR NONSTANDARD COMPONENTS TO SOFFIT OF MAIN CANOPY TO SHOPFRONT
- Manufacturer: TRESPA UK LTD
35 Calthorpe Road,
Edgbaston
B15 1TS
Birmingham.
 - Product reference: Trespa METEON look-a-like wood panels 125mm wide. colour TBC.
 - Material: Trespa.
 - Finish: matt.
 - Fixing: secret fix as recommended by manufacturer.
 - Other requirements: 'V' profiled joint fillers and insect mesh to be provided to inner face.

GENERAL REQUIREMENTS/PREPARATORY WORK

- 210 DESIGN
- Rainscreen cladding system and associated features: Complete detailed design in accordance with this specification and the preliminary design drawings and submit before commencement of fabrication.
 - Related works: Coordinate in detailed design.
- 215 DESIGN PROPOSALS
- Submission of alternative proposals: Preliminary design drawings indicate intent. Other reasonable proposals will be considered.
- 220 SPECIFICATION
- Compliance standards: The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
 - Reference information: For the duration of the contract, keep available at the design office, workshop and on site copies of:
 - The Centre for Window and Cladding Technology (CWCT) 'Standard for systemised building envelopes'.
 - Publications invoked by the CWCT 'Standard for systemised building envelopes'.

230 INFORMATION TO BE PROVIDED DURING DETAILED DESIGN

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

232 QUALITY PLAN

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

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

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

240 PRODUCT SAMPLES

- General: Before commencing detailed design, submit labelled samples of: panel in correct colour .

250 SAMPLES OF FIXINGS

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

DESIGN/PERFORMANCE REQUIREMENTS

- 310 CWCT 'STANDARD FOR SYSTEMISED BUILDING ENVELOPES'
- General: Unless specified or agreed otherwise comply with:
 - Part 2 - Loads, fixings and movement.
 - Part 3 - Air, water and wind resistance.
 - Part 4 - Operable components, additional elements and means of access.
 - Part 5 - Thermal, moisture and acoustic performance.
 - Part 6 - Fire performance.
 - Part 7 - Robustness, durability, tolerances and workmanship.
 - Project performance requirements specified in this subsection: Read in conjunction with CWCT performance requirements.
- 340A INTEGRITY
- Requirement: The rainscreen cladding must resist wind loads, dead loads and design live loads, and accommodate deflections and movements without damage.
 - Design wind pressure: Calculate in accordance with BS EN 1991-1-4 and National Annex.
 - Hard body impact loads: In accordance with CWCT TN75.
 - Location and category: category E.
 - Soft body impact loads: To BS EN 14019.
 - Location and classification: soffit of canopy.
 - Permanent imposed loads: light fittings.
 - Temporary imposed loads: none.
 - Other design parameters: none.
- 350 DEFLECTION UNDER WIND LOAD
- Requirement: For listed components, at positive and negative applications of the design wind pressure, normal deflections are not to exceed: individual rainscreen panels, as recommended by manufacturer.
 - Additional stiffness to CWCT 'Standard for systemised building envelopes' clause 3.5.4.2: Not allowed.
- 370 APPEARANCE AND FIT
- Requirement: Design rainscreen wall:
 - To ensure position and alignment of all parts and features as shown on preliminary design drawings.
 - To accommodate deviations in the primary support structure.
 - Primary support structure: Before commencing installation of rainscreen cladding system, carry out survey sufficient to verify that required accuracy of erection can be achieved.
 - Give notice: If the structure will not allow the required accuracy or security of erection.
 - Design tolerances: as detailed in section G10.
 - Rainscreen envelope zone tolerances:
 - Width: +/- 2mm.
 - Critical reference location: + /- 2mm.
 - Maximum permitted component and installation tolerances: + / - 2mm.
- 380 GENERAL MOVEMENT
- Requirement: Rainscreen cladding must accommodate anticipated building movements as follows: As detailed by structural engineer .
- 410 AIR PERMEABILITY
- Permeability class to BS EN 12152: A4.
 - Peak test pressure: 600 Pa.

- 420 WATER PENETRATION
- Watertightness class to BS EN 12154: R7.
 - Peak test pressure: 600 Pa.
 - Additional requirements: There shall be no leakage onto the internal face of the building envelope system at any time during the test' .

PRODUCTS

- 710 ALUMINIUM ALLOY FRAMING SECTIONS
- Standards: To BS EN 755 alloy EN AW-6063 and suitable for the specified finish.
 - Structural members: To comply with BS EN 1999-1-1, -3 and -4.
- 712 ALUMINIUM ALLOY SHEET
- Standards: To BS EN 485, BS EN 515 and BS EN 573.
 - Alloy, temper and thickness: Suitable for the application and specified finish.
- 715 CARBON STEEL FRAMING SECTIONS/ REINFORCEMENT
- Standards: To the relevant parts of BS 7668, BS EN 10029, BS EN 10025, and BS EN 10210.
 - Thickness: Suitable for the application, and for galvanizing or other protective coating.
- 730 MECHANICAL FIXINGS - MATERIAL REQUIREMENTS
- Stainless steel: To BS EN ISO 3506 grade A2 generally, grade A4 when used in severely corrosive environments.
 - Carbon steel: To BS 4190 and suitable for galvanizing or other protective coating.
 - Aluminium: To BS EN 755.
- 732 ADHESIVES
- General: Not degradable by moisture or water vapour.
- 735 FIXINGS AND FASTENERS
- Type and use: Reviewed and approved by manufacturers. Submit confirmatory information on request.
 - Dimensions: Not less than recommended by their manufacturers.
 - Adjustment capability: Sufficient in three dimensions to accommodate primary support structure and rainscreen cladding fabrication/ installation tolerances.

FINISHES

- 810 PROTECTIVE COATING OF CARBON STEEL FRAMING SECTIONS/ REINFORCEMENT
- Treatment: All surfaces to one of the following:
 - Hot dip galvanized to BS EN ISO 1461.
 - An appropriate equivalent coating to BS EN ISO 12944 and BS EN ISO 14713-1 and -2.
- 820 PROTECTIVE COATING OF CARBON STEEL MECHANICAL FIXINGS
- Treatment: All surfaces to one of the following:
 - Hot dip galvanized to BS EN ISO 1461.
 - Sherardized to BS 4921, class 1 coating thickness and passivated.
 - Zinc plated to BS EN ISO 2081, coating designation of FE//Zn//C for an iridescent (yellow passivate) chromate conversion coating or FE//Zn//D for an opaque (olive green) chromate conversion coating.

FABRICATION AND INSTALLATION

910 GENERALLY

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

912 METALWORK

- Requirement: As section Z11, unless specified otherwise in this section.

922 FIXINGS/ ADHESIVES APPLICATION

- Requirement: As section Z20, unless specified otherwise in this section.

925 SEALANT APPLICATION

- Requirement: As section Z22, unless specified otherwise in this section.

930 ASSEMBLY

- Location: Carry out as much assembly as possible in the workshop.
- Joints: Other than movement joints and designed open joints, must be rigidly secured, reinforced where necessary and fixed with hairline abutments.
- Displacement of components in assembled units: Submit proposals for reassembly on site.

970 RAINSCREEN CLADDING INSTALLATION

- Tightening mechanical fasteners: To manufacturer's recommended torque figures. Do not overtighten fasteners intended to permit differential movement.
- Protective coverings: Remove only where necessary to facilitate installation and from surfaces which will be inaccessible on completion.

975 WELDING

- In situ welding: Not permitted.

980 INTERFACES

- Installation: Locate flashings, closers etc. correctly and neatly overlap cladding to form a weathertight junction.

985 DAMAGE

- Repairs: Do not repair cladding without approval.
 - Approval: Will not be given where the proposed repair will impair performance or appearance.
- Record of repairs: Prepare schedule or record on drawings for inclusion in the maintenance manual.

995 MAINTENANCE

- Maintenance manual: Incorporate details within the Building Manual in accordance with CWCT 'Standard for systemised building envelopes', clause 7.6.1.
 - Materials certification and test reports to be included: All.

J Waterproofing

J40

Flexible sheet waterproofing/ damp proofing

J40 Flexible sheet waterproofing/ damp proofing

To be read with Preliminaries/ General conditions.

- 110 SOFT BLINDING TO HARDCORE BEDS
- Material: Soft sand.
 - Thickness (minimum): 50 mm.
 - Finish on completion: Smooth, consolidated bed free of sharp projections.

TYPES OF TANKING/ DAMP PROOFING

- 120 LOOSE LAID POLYETHYLENE DAMP PROOFING
- Substrate: Soft blinded hardcore.
 - Manufacturer: Visqueen Building Products
www.visqueenbuilding.co.uk
riba@visqueenbuilding.co.uk
T: +44 (0)845 302 4758
F: +44 (0)845 017 8663
Heanor Gate, Heanor, Derbyshire. DE75 7RG .
 - Product reference: GX Geomembrane.
 - Thickness/ Gauge: 1.5mm.
 - Recycled content: Contractor's choice.
 - Joints:
 - Surfaces to be joined: Clean and dry beyond full width of joint.
 - Laps (minimum): End and side, 150 mm.
 - Sealing: Continuous mastic strip between overlaps; edge of top sheet sealed with jointing tape, to 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.
- 345 COLD APPLIED BONDING COMPOUNDS
- Type and application: As recommended for the purpose by the membrane manufacturer.

- 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): 100 mm.
 - Bonding/ Sealing: Double-side tape.
- 370 PREFORMED COLLARS FOR PIPES, DUCTS, CABLES, ETC.
- Manufacturer: Contractor's choice.
 - Product reference: contractors choice.
 - Sealing: Fully bond to penetrations and sheeting.
 - Completed junctions: Impervious.
- 380 PROTECTION BOARDS FOR DAMP PROOFING/ TANKING
- Manufacturer: RIW
www.riw.co.uk
technical@riw.co.uk
T: +44 (0)1344 397777
F: +44 (0)1344 862010
Arc House, Terrace Road South, Binfield, Bracknell, Berkshire. RG42 4PZ
 - .
 - Product reference: Protection board.
 - Thickness: 3mm.
 - Application: Membrane surface clean and free from contaminants.
 - Bonding: Taped.
 - Board joints: Primed and taped, roll to fully adhere.
 - Board contact with membrane: Secure and continuous.
 - Backfilling: as recommended by manufacturer.

K

Linings/Sheathing/Dry partitioning

K10

Plasterboard dry linings/ partitions/ ceilings

K10 Plasterboard dry linings/ partitions/ ceilings

To be read with Preliminaries/ General conditions.

TYPES OF DRY LINING

185A WALL LINING SYSTEM TO INNER FACE OF EXTERNAL CAVITY WALL AND ABOVE SHOPFRONT GLAZING 3600MM ABOVE FFL

- Manufacturer: British Gypsum.
 - Web: www.british-gypsum.com.
 - Email: bgtechnical.enquiries@bpb.com.
 - Product reference: DriLyner BASIC
 - Parge coat: [Not required].
 - Adhesive method: [dabs].
 - Linings: [1 x 12.5 mm Gyproc WallBoard].
 - Finishing: [Taped seamless finish].
 - Primer/ Sealer: [1 coat of Gyproc Drywall Primer].
 - Accessories: [Rigid beads/ stops].

GENERAL/ PREPARATION

325 PREPARATION OF MASONRY TO RECEIVE WALL LININGS

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

335 ADDITIONAL SUPPORTS

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

COMPONENTS

401 GYPSUM PLASTERBOARD

- Type: TO BSEN 520.
- Core density (minimum): 650 kg/m³.
- Recycled content: Contractor's choice.
- Exposed surface and edge profiles: Clean and undamaged.

INSTALLATION

435 DRY LININGS GENERALLY

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

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.

475 METAL FURRINGS FOR WALL LININGS

- Setting out: Accurately aligned and plumb.
 - Vertical furring positions: Equal vertical centres to suit specified linings, maintaining sequence across openings. Position adjacent to angles and openings.
 - Additional vertical furrings: To support vertical edges of boards and at junctions with partitions.
 - Horizontal furring positions: To provide continuous support to edges of boards.
- Adhesive bedding to furrings:
 - Dabs: Length 200 mm (minimum). Located at ends of furrings and thereafter at 450 mm (maximum) centres.
 - Junctions with partitions: Continuous bed with no gaps across cavity.

510 SEALING GAPS AND AIR PATHS

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

560 JOINTS BETWEEN BOARDS

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

565 VERTICAL JOINTS

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

570 HORIZONTAL JOINTS

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

590 FIXING PLASTERBOARD TO METAL FRAMING/ FURRINGS

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

620 FIXING PLASTERBOARD WITH ADHESIVE DABS

- Setting out boards: Accurately aligned and plumb.
 - Fixing to substrates: Securely using adhesive dabs.
 - Adhesive dab spacings for each board:
 - Horizontally: One row along top edge and one continuous dab along bottom edge.
 - Vertically: One row along each edge and thereafter at intermediate spacings to suit size of board:
- | Thickness (mm) | Width (mm) | Dab centres (mm) | |
|----------------|------------|------------------|--|
| 9.5 | 1200 | 400 | |
| 9.5/12.5 | 900 | 450 | |
| 12.5 | 1200 | 600 | |
- Adhesive dab dimensions (width x length): At least 50-75 mm x 250 mm.
 - Position of dabs from edges/ ends of boards (minimum): 25 mm.

FINISHING

650 LEVEL OF DRY LINING ACROSS JOINTS

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

670 SEAMLESS JOINTING TO PLASTERBOARDS

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

680 SKIM COAT PLASTER FINISH

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

692 RIGID BEADS/STOPS

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

695 INSTALLING BEADS/ STOPS

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

L

Windows/Doors/Stairs

L10

Windows/ Rooflights/ Screens/ Louvres

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.

PRODUCTS

- 330 ALUMINIUM WINDOWS
- Manufacturer: Kawneer UK Ltd
www.kawneer.co.uk
kuk.kawneer@alcoa.com
T: +44 (0)1928 502500
F: +44 (0)1928 502501
Astmoor Road, Astmoor Industrial Estate, Runcorn, Cheshire. WA7 1QQ.
- Product reference: GT70 FIXED AND OPENING TOP HUNG LIGHTS.
 - Finish as delivered: Polyester powder coating COLOUR RAL 9006 .
 - Thermal performance (U-value maximum): 1.8.
 - Glazing details: insulating glass units.
- Beading: Internal.
 - Ironmongery/ Accessories: Locking handle and Trickle ventilator .
 - Fixing: in strict accordance with manufacturers instructions.
- 650A METAL LOUVRES TO EXTERNAL WALL - EXACT SIZE AND LOCATION TO BE CONFIRMED BY WAITROSE- ASSUME 5No 600 x600mm
- Manufacturer: Contractor's choice.
- Product reference: Contractor's choice.
 - Material: Aluminium.
- Finish as delivered: Powder coated.
 - Fire resistance rating: 30 minutes - DEPENDANT UPON LOCATION.
 - Number of louvre banks: One.
 - Louvre blade pitch and angle: Pitch: 75 mm.
 - Blanking panels: SUBJECT TO TENANT CONFIRMATION.
 - Accessories/ Other requirements: FULLY INSULATED BACKING PANELS AND STAINLESS STEEL BIRD MESH REQUIRED .
 - Fixing: TO CLADDING SUB-CONTRACTORS DETAILS.

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: 7mm.
 - 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 DETAILED BY WINDOW MANUFACTURER.
 - 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: Adshead Ratcliffe & Co Ltd
www.arbo.co.uk
arbo@arbo.co.uk
T: +44 (0)1773 826661
F: +44 (0)1773 821215
Derby Road, Belper, Derby, Derbyshire. DE56 1WJ.
Product reference: ARBOKOL 1000.
 - Colour: BLACK GREY.
 - 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

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.

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 DOORS.

PRODUCTS

480 DOORSETS STEEL EXTERNAL DOORS

- Manufacturer: ASSA ABLOY UK
www.assaabloy.co.uk
sales@assaabloy.co.uk
T: +44 (0)845 0710882
F: +44 (0)1902 364000
School Street, Willenhall, West Midlands. WV13 3PW.
 - Product reference: FIRE DOORSET.
- Door leaf: AS PER DOOR SCHEDULE.
 - Finish as delivered: Polyester powder coated.
- Frame and architraves: STEEL PROVIDED AS PART OF DOORSET.
 - Finish as delivered: Polyester powder coated.
- Glazing/ Infill details: Not applicable.
 - Manifestation: Not applicable.
 - Beading: Not required.
- Ironmongery: HEAVY DUTY AS DEFINED IN DD171- MAGLOCKS ARE ALSO TO BE PROVIDED.
- Perimeter seals: EPDM weatherseal.
- Thermal performance (U-value maximum): 1.5 W/m²K .
- Other requirements: 60 MINUTES FIRE RESISTANCE, NOTE-IRONMONGERY CYLINDERS TO BE REPLACED AT HANDOVER.
- Fixing: AS RECOMMENDED BY DOOR MANUFACTURER .

520 SLIDING DOORS TO MAIN SHOPFRONT ENTRANCE AND LOBBY BI-PARTING

- Manufacturer: TO MATCH MAIN SHOPFRONT MANUFACTURER.
 - Product reference: Submit proposals.
- Performance: In accordance with Waitrose standards.
- Arrangement: Paired leaf top hung .
 - Track system: As standard.
- Door leaf: PAIR TO PROVIDE MIN 2800mm WIDE x 2400mm HIGH CLEAR OPENING.
 - Finish as delivered: POLYESTER POWDER COATED TO MATCH CURTAIN WALLING.
- Glazing/ Infill details: Not applicable.
Manifestation: TEMPORARY SELF ADHESIVE DECALS TO BE PROVIDED, FOR REMOVAL BY FIT OUT TEAM.
- Operation: AUTOMATIC WITH BESAM DOOR GEAR.
- Ironmongery: TP BE CONFIRMED.
- Thermal performance (U-value maximum): 1.5 W/m²K .
- Other requirements: DOORS TO SLIDE INTO WALL OR POST MOUNTED HINGED SAFETY SCREENS TO AVOID FINGER TRAPS.
DOORS TO DEFAULT INTO OPEN POSITION IN EVENT OF A FIRE ALARM OR POWER FAILURE.

610 ROLLER SHUTTERS/ CURTAINS TO UNLOADING BAY

- Manufacturer: ARMOURPOST
Unit 14, Saltmeadows Road
East Gateshead Industrial Estate
Tyne & Wear
NE8 3AH
UK
Telephone +44 (0) 191 478 7878
Fax +44 (0)191 478 2588
Email sales@armourpost.com
Website <http://www.armourpost.com/> .
 - Product reference: ELECTRICALLY OPERATED ROLLER SHUTTER WITH MANUAL OVER RIDE FACILITY .
- Performance: AS DEFINED IN WAITROSE STANDARDS .
- Arrangement: Vertical, face fitted across opening .
- Shutter/ curtain material: Galvanized steel .
 - Finish as delivered: Galvanised steel .
- Frame/ Guides: Galvanised steel .
 - Finish as delivered: Galvanised steel .
- Operation: Electrical, with constant pressure button control .
- Ironmongery: As supplied - standard .
- Other requirements: None .

617A UNLOADING BAY DOCK SHELTER

- Manufacturer: Otis
Chiswick Park, Building 5 Ground Floor
566 Chiswick High Road
London
W4 5YF
United Kingdom

Telephone 020 8495 7750
Fax 020 8495 7751
Email
Website <http://www.otis.com> .

- DOCK SHELTER - 4600mm overall height with reinforced Heavy Duty 3mm thick PVC made up with galvanised steel frame. To include sloping roof (away from building)

EXECUTION

710 PROTECTION OF COMPONENTS

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

730 PRIMING/ SEALING

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

750 FIXING DOORSETS

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

- 760 BUILDING IN
- General: Not permitted unless indicated on drawings.
- 780 DAMP PROOF COURSES IN PREPARED OPENINGS
- Location: Correctly positioned in relation to door frames. Do not displace during fixing operations.
- 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.
- 820 SEALANT JOINTS
- Sealant:
 - Manufacturer: Adshead Ratcliffe & Co Ltd
www.arbo.co.uk
arbo@arbo.co.uk
T: +44 (0)1773 826661
F: +44 (0)1773 821215
Derby Road, Belper, Derby, Derbyshire. DE56 1WJ .
Product reference: ARBOKOL 1000 .
 - Colour: Black .
 - Application: As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.
- 830 FIXING IRONMONGERY GENERALLY
- Fasteners: Supplied by ironmongery manufacturer.
 - Finish/ Corrosion resistance: To match ironmongery.
 - Holes for components: No larger than required for satisfactory fit/ operation.
 - Adjacent surfaces: Undamaged.
 - Moving parts: Adjusted, lubricated and functioning correctly at completion.
- 840 FIXING IRONMONGERY TO FIRE RESISTING DOOR ASSEMBLIES
- General: All items fixed in accordance with door leaf manufacturer's recommendations ensuring that integrity of the assembly, as established by testing, is not compromised.
 - Holes for through fixings and components: Accurately cut.
 - Clearances: Not more than 8 mm unless protected by intumescent paste or similar.
 - Lock/ Latch cases for fire doors requiring \geq 60 minutes integrity performance: Coated with intumescent paint or paste before installation.
- 850 LOCATION OF HINGES
- Primary hinges: Where not specified otherwise, positioned with centre lines 250 mm from top and bottom of door leaf.
 - Third hinge: Where specified, positioned on centre line of door leaf .
 - 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.

L40
General glazing

L40 General glazing

To be read with Preliminaries/ General conditions.

GENERAL REQUIREMENTS

- 110 PREGLAZING
- Preglazing of components: Not permitted.
- 130 REMOVAL OF GLASS/ PLASTICS FOR REUSE
- Existing glass/ plastics and glazing compound, beads, etc: Remove carefully, avoiding damage to frame, to leave clean, smooth rebates free from obstructions and debris.
 - Deterioration of frame/ surround: Submit report on defects revealed by removal of glazing.
 - Affected areas: Do not reglaze until instructed.
 - Reusable materials: Clean glass/ plastics, beads and other components that are to be reused.
- 150 WORKMANSHIP GENERALLY
- Glazing generally: To BS 6262.
 - Integrity: Glazing must be wind and watertight under all conditions with full allowance made for deflections and other movements.
 - Dimensional tolerances: Panes/ sheets to be within ± 2 mm of specified dimensions.
 - Materials:
 - Compatibility: Glass/ plastics, surround materials, sealers, primers and paints/ clear finishes to be used together to be compatible. Avoid contact between glazing panes/ units and alkaline materials such as cement and lime.
 - Protection: Keep materials dry until fixed. Protect insulating glass units and plastics glazing sheets from the sun and other heat sources.
- 152 PREPARATION
- Surrounds, rebates, grooves and beads: Clean and prepare before installing glazing.
- 155 GLASS GENERALLY
- Standards: To BS 952 and relevant parts of:
 - BS EN 572 for basic soda lime silicate glass.
 - BS EN 1096 for coated glass.
 - BS EN 1748-1 for borosilicate glass.
 - BS EN 1748-2 for ceramic glass.
 - BS EN 1863 for heat strengthened soda lime silicate glass.
 - BS EN 12150 for thermally toughened soda lime silicate safety glass.
 - BS EN 12337 for chemically strengthened soda lime silicate glass.
 - BS EN 13024 for thermally toughened borosilicate safety glass.
 - BS EN ISO 12543 for laminated glass and laminated safety glass.
 - Panes/ sheets: Clean and free from obvious scratches, bubbles, cracks, rippling, dimples and other defects.
 - Edges: Generally undamaged. Shells and chips not more than 2 mm deep and extending not more than 5 mm across the surface are acceptable if ground out.

165 HEAT SOAKING OF THERMALLY TOUGHENED GLASS

- Standard: To BS EN 14179.
 - Holding period (minimum): 2 hours.
 - Mean glass temperature: $290^{\circ} \pm 10^{\circ}\text{C}$.
- Certified evidence of treatment: Submit.
- Designated locations: ROOFLIGHT.

190 GLASS TO GLASS JOINTING

- Sealant: Silicone.
 - Standard: To BS EN ISO 11600.
Class: G-25LM.
 - Colour: Clear.
- Fire resistance rating: Not applicable.
- Joints:
 - Width: Consistent and suitable to receive sealant.
 - Gap between panes: Completely filled, leaving no voids or bubbles.
 - Surplus sealant: Removed to leave a clean, neatly finished weathertight joint.

TYPES OF GLAZING

370 BEAD FIXED INSULATING GLASS UNITS TO CURTAIN WALLING

- Pane material: insulating glass units to BS EN 1279 and Kitemark certified .
 - Inner pane: 8.8mm heat soaked toughened laminated inner .
 - Outer pane: 6mm security planilux heat soaked toughened outer pane .
 - Spacer: Dual sealed, thermally broken aluminium, colour black .
 - Perimeter taping: Do not use.
- Surround/ bead: Aluminium .
 - Preparation: Priming/ sealing not required .
 - Bead location: N/A .
 - Bead fixing: N/A .
- Glazing system: Preformed gasket sections supplied by window manufacturer .
- Glazing installation:
 - Insulating unit: Located centrally in surround using setting and location blocks.
 - Gaskets and beads: Installed as recommended by frame manufacturer.
Gasket fit at corners: Tight, without gaps.
 - Drainage and ventilation holes: Unobstructed.

370A BEAD FIXED INSULATING GLASS UNITS TO WINDOWS

- Pane material: insulating glass units to BS EN 1279 and Kitemark certified .
 - Inner pane: 8.8mm heat soaked toughened laminated glass .
 - Outer pane: 6mm security planilux heat soaked toughened outer pane .
 - Spacer: Dual sealed, thermally broken aluminium, colour black .
 - Perimeter taping: Do not use.
- Surround/ bead: Aluminium .
 - Preparation: Priming/ sealing not required .
 - Bead location: Outside .
 - Bead fixing: Proprietary clip fixing .
- Glazing system: Preformed gasket sections supplied by window manufacturer .
- Glazing installation:
 - Insulating unit: Located centrally in surround using setting and location blocks.
 - Gaskets and beads: Installed as recommended by frame manufacturer.
Gasket fit at corners: Tight, without gaps.
 - Drainage and ventilation holes: Unobstructed.

630 MANIFESTATION TEMPORARY FOR PC HANDOVER

- Design: 75mm SQUARE SELF ADHESIVE SQUARES.
 - Art work: To be prepared by contractor and submitted for approval.
 - Media: N/A.
- Technique: Applied film.

M

Surface finishes

M60

Painting/clear finishing

M60 Painting/clear finishing

To be read with Preliminaries/General conditions.

COATING SYSTEMS

160 DECORATIVE WOODSTAIN/ VARNISH/ PRESERVATIVE TO CLOSE BOARDED TIMBER FENCE

- Manufacturer: Sikkens, brand of ICI Paints/AkzoNobel
www.duluxtrade.co.uk
john.ashford@akzonobel.com
T: +44 (0)870 242 1100
F: +44 (0)1753 532827
Wexham Road, Slough, Berkshire. SL2 5DS.
 - Product reference: CETOL HLS PLUS COLOUR LIGHT OAK .
- Surfaces: EXTERNAL TIMBER.
 - Preparation: NONE.
- Initial coats: As recommended by manufacturer.
 - Number of coats: ONE.
- Finishing coats: As recommended by manufacturer.
 - Number of coats: TWO.

180 FLOOR COATING TO NON SALES AREA FLOOR SLAB

- Manufacturer: Watco UK Ltd
www.watco.co.uk
sales@watco.co.uk
T: +44 (0)1483 418418
F: +44 (0)1483 428888
Watco House, Filmer Grove, Godalming, Surrey. GU7 3AL.
 - Product reference: CONCRETE SEALER.
- Surfaces: INTERNAL SLAB.
 - Preparation: ENSURE SLAB IS DRY AND GRIT FREE.
- Initial coats: BASE COAT.
 - Number of coats: ONE.
- Finishing coats: TOP COAT - COLOUR LIGHT GREY.
 - Number of coats: ONE.
 - Slip resistance value - water wet (minimum): PTV to BS 7976 of 45.

GENERALLY

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.

PREPARATION

400 PREPARATION GENERALLY

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

560 UNCOATED CONCRETE

- Release agents: Remove.

APPLICATION

711 COATING GENERALLY

- Application standard: In accordance with BS 6150, clause 9.
- Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
- Surfaces: Clean and dry at time of application.
- Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
- Overpainting: Do not paint over intumescent strips or silicone mastics.
- Priming coats:
 - Thickness: To suit surface porosity.
 - Application: As soon as possible on same day as preparation is completed.
- Finish:
 - Even, smooth and of uniform colour.
 - Free from brush marks, sags, runs and other defects.
 - Cut in neatly.
- Doors, opening windows and other moving parts: Ease before coating and between coats.

M61

Intumescent coatings for fire protection of steelwork

M61 Intumescent coatings for fire protection of steelwork

To be read with Preliminaries/General conditions

PROTECTIVE COATING SYSTEMS

- 110 ON SITE COATING TO PRIMED STEEL TO ALL INTERNAL STRUCTURAL STEEL COLUMNS
- Use/ location: Exposed internal faces of columns, beams but excluding cladding rails and purlins, ..
 - Fire resistance to BS 476-21: 60 minutes.
 - Preparation and priming: By steelwork contractor, as section G10.
 - Primer: As delivered steelwork primer.
 - Intumescent coat:
 - Manufacturer: Nullifire - Part of Tremco illbruck Coatings Ltd
www.nullifire.com
protect@nullifire.com
T: +44 (0)24 7685 5000
F: +44 (0)24 7646 9547
Torrington Avenue, Coventry, West Midlands. CV4 9TJ.
Product reference: Nullifire S605 .
 - Finish: Visible areas: High decorative .
 - Top sealer coat: Type recommended by intumescent coating manufacturer.
 - Dry film thickness: As recommended by manufacturer.
 - Colour: White RAL 9007.
 - Bolt head/ nut protection: As main steelwork.

GENERAL REQUIREMENTS

- 205 VALIDATION OF MATERIALS
- Project specific evaluation of intumescent coating materials:
 - Standard: To BS 8202-2, clause 4.
 - Test results: Submit on request.
- 210 WORKING PROCEDURES
- Standard: To BS 8202-2.
 - Give notice: Before commencing surface preparation and coating application.
 - Quality control: Record project specific procedures for surface preparation and coating application.
- 215 WORKING CONDITIONS
- General: Maintain suitable temperature, humidity and air quality during coating application and drying.
 - Surfaces to be coated: Clean and dry at time of coating application.
- 220 APPLICATOR'S PERSONNEL
- Operatives: Trained/ experienced in anticorrosive and intumescent coatings.
 - Evidence of training/ experience: Submit on request.
- 250 SPRAYED COATING APPLICATION
- Spray drift: Minimize.
 - Masking: Protect designated adjacent surfaces.
 - Designated surfaces: Fair faced brickwork and windows .

- 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 coating application.

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

- 280 OFF SITE COATED STEEL
- Handling and erection: Use methods and devices designed to minimise damage to intumescent coatings.

PREPARATION OF SURFACES

APPLICATION OF COATINGS

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

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

530 RECORDS OF COATED STEEL

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

N
Furniture/Equipment

N16

Bird and vermin control systems

N16 Bird and vermin control systems

To be read with Preliminaries/ General conditions.

GENERAL

110 BIRD CONTROL TO PARAPET AND CANOPY LEADING EDGES

- Species: Determine on site .
- System manufacturer: NETWORK.
Detection: ELECTRONIC.
- Prevention: Roost inhibitors, sprung wires.
- Other requirements: Compatible with Building Management System .

SYSTEM PERFORMANCE

210 GENERAL REQUIREMENTS

- Standard: In accordance with BPCA members' information manual.
 - Documentation. Submit certification of training and experience for operatives.
- Survey: Identify nature, source and extent of infestation and/ or damage.
- Report content:
 - List pest species detected.
 - Factors affecting execution of the work: Identify problematic site conditions and restrictions, including the presence of protected species.
 - Associated work: Identify nature of repair and/ or replacement work required to building fabric in order to avoid re-infestation .
 - Other contaminants: Notify.
- Control measures: Submit proposals for:
 - Detection: Not required.
 - Prevention measures.
 - Elimination and disposal.
- Proposals: Include:
 - Drawings, schedules, technical information, calculations and manufacturers' literature.
 - Method statements.
 - Maintenance procedures and logbook.
- Mesh, nets, roost inhibitors, traps and guards: Capable of resisting temporary and permanent loads.

PRODUCTS

340 ROOST INHIBITORS SPRUNG WIRES

- Manufacturer: Network
www.networkbird.net
info@pandlsystems.com
T: +44 (0)800 988 5359
F: +44 (0)1423 863 497
Sterling House, Grimbald Crag Close, Knaresborough, North Yorkshire. HG5 8PJ .
 - Product reference: AVIPOINT.
- Material: Stainless steel.
 - Number of rows: 1.
 - Special fixings: None.

370 POWERED DEVICES ELECTRONIC DETERRENT

- Manufacturer: Network
www.networkbird.net
info@pandlsystems.com
T: +44 (0)800 988 5359
F: +44 (0)1423 863 497
Sterling House, Grimbold Crag Close, Knaresborough, North Yorkshire. HG5 8PJ .
- Product reference: AVISHOCK.
- Construction: COPPER STRIPS AND PLASTIC COVERS.
- Range: N/A.
- Service requirement: Electrical power.

FABRICATION

505 FABRICATION GENERALLY

- Design: Complete detailed design of items specified in this sub-section and obtain approval prior to commencing fabrication.
- Shop drawings: Submit.
- Structural calculations: Submit.
- Frameworks: Assemble and brace, including temporary members required for installation.
- Contact between dissimilar metals: Avoid.
- Temporary support: Do not subject members to non-design loadings.

EXECUTION

610 WORKMANSHIP GENERALLY

- Preparation:
 - Water supplies: Do not contaminate.
 - Existing building services and components: Protect, and leave undamaged.
- Timing: Coordinate with other related trades.
- Damaged building components: Obtain instructions.
- Contaminants: Remove and leave affected area clean.
- Coatings:
 - Suitability of substrates: Sufficiently dry and sound, to suit coatings.
 - Preparation and application: As section M60, and in accordance with BS 6150.
- Fasteners and adhesives: As section Z20.
 - Material: Compatible with building components and substrate.
 - Metals: Isolate dissimilar metals to avoid electrolytic corrosion.
- Thermal and building movement: Allow for, where appropriate.
 - Movement joints: Do not bridge.
- Roost inhibitors, nets and mesh screens: Correctly fitted and tensioned.

COMPLETION

940 DOCUMENTATION

- General: Submit:
 - Manufacturer's maintenance instructions.
 - Recommendations for measures to prevent re-infestation.
 - General product information.
 - Installation information.
 - Guarantees, warranties, test certificates, record schedules and log books.
- Number of copies: TWO.
- Submission: 2 weeks prior to date when principal contractor expects work to be practically complete.

N25

Permanent access and safety equipment

N25 Permanent access and safety equipment

To be read with Preliminaries/ General conditions.

TYPES OF SYSTEM/ EQUIPMENT

- 210 GUIDED TYPE FALL ARREST SYSTEM TO SERVICE YARD CANOPY AND FRONT CANOPY - WHERE INDICATED ON PLANS
- Manufacturer: Latchways plc
www.latchways.com/rbs
info@latchways.com
T: +44 (0)1380 732700
F: +44 (0)1380 732701
Hopton Park, Devizes, Wiltshire. SN10 2JP
 - - System reference: ManSafe® Constant Force® Fall Arrest System.
 - Anchorage device: Horizontal stainless steel cable.
 - Overall system length: TO SUIT ROOF, ENSURING EDGE OF ROOF CANNOT BE OVERSAILED.
 - Intermediate support spacing: AS RECOMMENDED BY MANUFACTURER.
 - Accessories/ Other requirements: WRITTEN APPROVAL OF FIXING SYSTEM.
 - Installation: In accordance with BS 7883 by the system manufacturer or a contractor approved by the system manufacturer.
 - Structural anchors: Type recommended by the system manufacturer to suit the structure/ fabric into which they will be fixed.

DESIGN/ PERFORMANCE REQUIREMENTS

- 420 WIND LOADING FROM EXISTING DATA
- General: Design the access/ safety system to withstand specified wind loads with equipment in position of maximum exposure and in parked position.
 - Wind loads:
TO BE DETERMINED BY SYSTEM MANUFACTURER.
- 430 SAFETY
- General: The equipment as installed must have no irregularities/ projections capable of inflicting personal injury.
 - Finished surfaces and edges of all accessible parts: Regular and smooth.
- 440 DESIGN LIFE/ MAINTENANCE PROGRAMME
- Design life of access/ safety system: Not less than 30 years.
 - Schedule for maintenance and for replacement of components: Submit.
- 450 TESTING OF PERMANENT SUSPENDED ACCESS EQUIPMENT
- Pre-installation testing: Test roof rig at manufacturer's/ supplier's works. The rig must be capable of lifting and sustaining a proof load of 125% of the specified rated load without suffering damage or permanent deformation.
 - Post-installation testing: Immediately on completion of installation, or when otherwise agreed, examine and test the complete installation in accordance with recommendations given in BS 6037-1, clause 14. Give adequate notice of testing arrangements.
 - Certificates for works and site testing: Submit within 7 days of completion of satisfactory acceptance tests.

460 ASSESSMENT/ TESTING OF ANCHOR DEVICES

- Design and testing of anchors: To BS EN 795.

FABRICATION, ASSEMBLY AND INSTALLATION

510 FABRICATION AND ASSEMBLY GENERALLY

- Machine cutting, drilling and assembly: Carry out as much as possible in the workshop. Obtain approval for any reassembly on site.
- Dissimilar metal surfaces of assembly components/ supports/ fixings: Isolate to prevent electrolytic corrosion.

520 PROTECTION

- General: Do not deliver to site any components or assemblies that cannot be installed immediately or unloaded into a suitable well protected storage area.

530 SUITABILITY OF STRUCTURE/ FABRIC

- Visual and geometric survey of supporting structure and fabric: Carry out before commencing installation of access/ safety system. Report immediately if structure/ fabric will not allow required accuracy/ security of erection/ fixing.

535 EXECUTION GENERALLY

- Structural members: Do not modify, cut notch or make holes in structural members without permission.
- Frameworks: Assemble and brace, including temporary members required for installation.
 - Temporary support: Do not use access systems as temporary support or strutting for other work.
- Bolted joints:
 - Contact between dissimilar metals: Avoid.
 - Bolts and washers: Select types, sizes and quantities of fasteners or packings and spacings to retain supported components without distortion or loss of support.
- Welded joints: Comply with latest edition of National Structural Steelwork Specification (NSSS), Section 5.
- Finished components: Smooth, free from distortion, cracks, burrs and sharp arrises.

540 MECHANICAL FIXINGS

- Materials: Unless otherwise recommended by equipment manufacturer:
 - Connecting bolts and other fixings fully accessible for inspection: Carbon steel hot dip galvanized to BS 7371-6.
- Nuts: Tapped after galvanizing.
 - Cast-in anchors and other fixings not accessible for routine inspection: Austenitic stainless steel, grade 1.4401 (316) to BS EN 10088-1.

550 FASTENERS, INSERTS AND BOLTS FOR BUILDING IN

- Supplier: Equipment manufacturer/ supplier.

560 FIXINGS FOR SECURING EQUIPMENT

- Adjustment capability: Adequate three dimensional adjustment to accommodate building structure/ fabric irregularities.

570 FIXING ANCHOR INSTALLATION

- Site drilling or cutting into structure/ fabric: Permitted only in approved locations.
- Distance between all fixing devices and edges of supporting material: Not less than recommended by fixing manufacturer.

605 IDENTIFICATION AND REGISTRATION LABELS FOR SUSPENDED ACCESS SYSTEM

- Provision:
 - Suspension rig and any non-dedicated track systems: Provide and fix a permanent label giving:
 - a) Manufacturer's name, address and telephone number.
 - b) Name and/ or reference code of model.
 - c) Serial number and year of manufacture.
 - d) Rated load of suspended platform (where the platform is permanently attached to the system) or maximum total suspended load (where the platform can be derigged).
 - Suspended platform: As a), b) and c) above, plus
 - d) Rated load and self weight in kg of the platform.
 - e) Maximum number of persons allowed on the platform.
 - f) Identification mark or number of the suspension rig or rigs with which the platform is compatible (where the platform can be derigged).
 - Suspension and safety ropes (detachable): Marked with length and unique identification number.
- Location: In positions such that labels can be easily read.

615 CE MARKING AND DECLARATION OF CONFORMITY OF PERMANENTLY INSTALLED SUSPENDED ACCESS EQUIPMENT

- Marking: Equipment to be clearly labelled with a CE mark indicating conformity with the current edition of the Supply of Machinery (Safety) Regulations.
- Declaration of conformity: Provide for the complete installation a declaration of conformity with Machinery Directive 2006/42/EC together with certificates of incorporation for parts not supplied or installed by the main equipment manufacturer or supplier.

630 LIFTING EQUIPMENT CONFIGURATION

- General: Where the rated load of machinery for lifting depends on its configuration, the identification and registration labels and rated load notices must indicate the rated load for each configuration.

640 MARKING OF ANCHOR DEVICES

- Provision: Provide on or near each anchor device a label or other clear marking giving:
 - Manufacturer's name and telephone number.
 - Serial number and year of manufacture of device.
 - Maximum number of personnel that may be attached to the device at any one time.
 - Requirements for energy absorbers, ground clearance, etc.
- Anchor devices intended solely for use with personal protective equipment: Indicate restriction of use by pictogram or other suitable marking on or near the device.

810 SERVICE/ MAINTENANCE REQUIREMENT

- General: Following acceptance of the completed installation, service and maintain the equipment for the period stated below as and at intervals recommended by the manufacturer. Such maintenance to include a 'call-out' service during normal working hours to maintain the equipment in an acceptable and safe condition.
- Service/ Maintenance period: 6 months.

820 OPERATING INSTRUCTIONS

- Equipment and accessories: Where appropriate, mark in such a way that it is possible to identify the correct mode of operation for their safe use.

830 OPERATING AND MAINTENANCE MANUAL

- General: Provide, for inclusion in the Building Manual, printed instructions and recommended procedures to be established by the Employer for operating and routinely maintaining the equipment. Provide diagrams where appropriate.
- Content:
 - Instructions for assembling/ erecting equipment for use.
 - Comprehensive operating instructions, including safety and emergency procedures, for all motions including upward, downward and lateral travel, and slew.
 - Servicing and planned maintenance procedures, including assembly instructions where maintenance necessitates dismantling of machinery parts.
 - List of replacement parts, with references.
 - Recommended procedures for testing equipment.

840 AS INSTALLED DRAWINGS

- General: After commissioning/ testing of the equipment provide as installed drawings for inclusion in the Building Manual.
 - Number of sets: TWO.
- Drawing content:
 - Contractor's name and contract number.
 - Location and date of installation.
 - Manufacturer's name, model and type numbers.
 - General arrangement of the complete installation.
 - Electrical circuit wiring diagrams complete with details and ratings of all items of equipment.

P

Building fabric sundries

P10

Sundry insulation/ proofing work

P10 Sundry insulation/ proofing work

SUNDRY INSULATION/ PROOFING WORK

To be read with Preliminaries/ General conditions.

TYPES OF INSULATION

125A INSULATION TO PERIMETER OF BUILDING FLOOR SLAB 1200MM WIDE

- Manufacturer: Kingspan Insulation Ltd
Pembroke, Leominster, Herefordshire, HR6 9LA.
 - Product reference: Styrozone H350R.
- Material: rigid extruded polystyrene.
- Recycled content: Not applicable.
- Thickness: 30mm.
- Installation requirements:
 - Installation standard: Not applicable.
 - Joints: Butted, no gaps.
 - Insulation to have DPM to underside and top side

P20

Unframed isolated trims/ skirtings/ sundry items

P20 Unframed isolated trims/ skirtings/ sundry items

To be read with Preliminaries/ General conditions

200 MEDIUM DENSITY FIBREBOARD WINDOW CILL BOARDS TO OFFICE

- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Standard: To BS EN 622-5.
 - Type: MDF.
 - Formaldehyde class: To BS EN 622-1, Class E1.
- Fire rating: Class 0 as defined in Building Regulations .
- Thickness: 20 mm.
Edges: Quarter rounded.
- Finish: None.
- Recycled content: Submit proposals.
- Support/ Fixing: Fix to softwood grounds with lost head nails at 600 mm centres. .

EXECUTION

510 INSTALLATION GENERALLY

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

P21

Door/ window ironmongery

P21 Door/ window ironmongery

To be read with Preliminaries/ General conditions.

10 QUANTITIES AND LOCATIONS

- Quantities and locations of ironmongery are scheduled by the supplier .
- Fixing: As sections L10 and L20.

GENERAL

122 IRONMONGERY FROM LISTED PROPRIETARY RANGES

- Source: One only of the following manufacturers/ suppliers and ranges:
Eisenware Swann .
- Notification: Submit details of selected range, manufacturer and/ or supplier.
- Principal material/ finish: brushed stainless steel .
- Items unavailable within selected range: Submit proposals.

170 IRONMONGERY FOR FIRE DOORS

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

180 CATEGORY OF DUTY FOR DOOR IRONMONGERY

- Standard: To DD 171.
 - Category of duty of doors: 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

315 PERFORMANCE SPECIFICATION FOR SINGLE AXIS DOOR HINGES TO EXTERNAL DOORS

- Standard: To BS EN 1935.
 - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
- Minimum classification grades:
 - Category of use: 3 .
 - Durability: 7 .
 - Test door mass: 4 .
 - Suitability for use on fire/ smoke doors: 1 .
 - Safety: 1.
 - Corrosion resistance: 4 .
 - Security - Burglar resistance: 1 .
 - Hinge grade: 13 .
- Type: Double ball bearing butt .
- Size: As schedule .
- Material/ finish: Satin stainless steel, grade 1.4301 (304) .
- Other requirements: to comply with DD171 and provide a security rating of 4 as defined in the LPS 1175 .

DOOR OPERATING DEVICES

412 PERFORMANCE SPECIFICATION FOR OVERHEAD DOOR CLOSERS TO ALL SELF CLOSING 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.
 - Corrosion resistance: 4 .
- Type: SLIDE ARM WITH CAM ACTION .
- Other functions: FULLY ADJUSTABLE LATCH, CLOSING SPEED AND POWER .
- Casing finish: SATIN 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.

DOOR SECURING DEVICES

525 PERFORMANCE SPECIFICATION FOR DOOR LOCKS AND LATCHES GENERALLY

- Standard: To BS EN 12209.
- Minimum classification grades:
 - Category of use: 3.
 - Durability: S.
 - Door mass and closing force: 6.
 - Suitability for use on fire/ smoke doors: 1.
 - Safety: 0.
 - Corrosion resistance and temperature: G.
 - Security and drill resistance: 7.
 - Field of door application: G.
 - Type of key operation and locking: F.
 - Type of spindle operation: 4.
 - Key identification requirement: F.
- Backset: As schedule.
- Material/ finish: Stainless steel faceplate.
- Keying: In master keyed suite.

572 PERFORMANCE SPECIFICATION FOR EMERGENCY EXIT DEVICES TO ALL MEANS OF ESCAPE DOORS

- Standard: To BS EN 179.
 - Emergency exit devices for locked doors on escape routes: CE marked.
- Minimum classification grades:
 - Category of use: 3.
 - Durability: 7 .
 - Door mass: 6 .
 - Suitability for use on fire/ smoke doors: 1 .
 - Safety: 1.
 - Corrosion resistance: 5 .
 - Security: 4 .
 - Projection of operating element: 2 .
 - Type of operation: A: Lever handle operation .
- Material/ finish: Satin stainless steel .
- Additional requirements: Security alarmed .

578 PERFORMANCE SPECIFICATION FOR PANIC EXIT DEVICES TO ALL MEANS OF ESCAPE DOORS

- Standard: To BS EN 1125.
 - Panic exit devices for locked doors on escape routes: CE marked.
- Minimum classification grades:
 - Category of use: 3.
 - Durability: 7 .
 - Door mass: 6 .
 - Suitability for use on fire/ smoke doors: 1 .
 - Safety: 1.
 - Corrosion resistance: 4 .
 - Security: 2.
 - Projection of bar: 2 .
 - Type of bar operation: A: Push bar operation .
- Material/ finish: Satin stainless steel .
- Additional requirements: Security alarmed .

731 PERFORMANCE SPECIFICATION FOR LETTER PLATES FOR MAIN ENTRANCE

- Standard: To BS EN 13724.
- Minimum classification grades:
 - Type of aperture: 4.
 - Aperture size: 2 .
 - Corrosion resistance: 4 .
 - Security: 2.
- Operation: Inward opening sprung flap .
- Material/ finish: Satin stainless steel, grade 1.4401 (316) .
- Features: None .

Q

Paving/Planting/Fencing/Site furniture

Q10

Kerbs/ edgings/ channels/ paving accessories

Q10 Kerbs/ edgings/ channels/ paving accessories

To be read with Preliminaries/General conditions.

TYPES OF KERBS/EDGINGS AND CHANNELS

- 110 PROPRIETARY PRECAST CONCRETE KERBS
- Standard: To BS EN 1340.
 - Manufacturer: Contractor's choice.
 - - Product reference: Contractor's choice.
 - Recycled content: Contractor's choice.
 - Designations:
 - EBN Edging, bullnosed;
 - EF Edging, flat top;
 - BN Kerb, bullnosed;
 - HB1 Kerb, half battered;
 - HB2 Kerb, half battered; and
 - SP Kerb, splayed.
 - Size (width x height x length): as designations.
 - Special shapes:
 - Transition kerbs TL and TR as shown on drawings;
 - Dropper kerbs DL1 and DR1 to footway crossings;
 - Dropper kerbs DL2 and DR2 to footway crossings;
 - Quadrant kerbs as shown on drawings;
 - Internal radius kerbs as shown on drawings; and
 - External radius kerbs as shown on drawings.
 - Finish: As cast.
 - Colour: Natural.
 - Bedding: to structural engineers details.
 - Joints generally: Dry, 2-3 mm gap.
 - Sealant movement joints: as recommended by structural engineer.
 - Accessories: None.
- 180A DRAINAGE CHANNEL SYSTEMS WITH GRATINGS
- Manufacturer: ACO Water Management: Civils & Infrastructure, Div of ACO Technologies plc.
 - Web: www.aco.co.uk.
 - Email: customersupport@aco.co.uk.
 - Product reference: S100
 - Channel:
 - Type of fall: as indicated on structural engineers drawings.
 - Joints: Drain union, PVC-U.
Size: 110 mm diameter.
 - Accessories: as indicated on structural engineers drawings.
 - Gratings:
 - Load class F900: 774 'Heelguard™' heavy duty ductile iron .
 - Load class E600: 778 Solid ductile iron cover .
- 250 MATERIAL SAMPLES
- Samples representative of colour and appearance of designated materials: Submit before placing orders.
 - Designated materials: aco channel grate .

ROADS/PAVING ACCESSORIES/MARKING

305A TREE GRILLES AND SURROUNDS

- Manufacturer: Greenleaf Horticulture.
 - Web: www.greenleaftrees.co.uk.
 - Email: enquiries@greenleaftrees.co.uk.
 - Product reference: Tree Grilles and Frames
- Loading: Heavy duty.
- Type: Clyde fabricated grille.
- Size: 1200 x 1200 mm.
- Material: Stainless steel .
- Finish: Stainless steel.
- Accessories: Root Rain Precinct System installation.

395 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 to be compatible with SIKA.
- Colour: White.
- Retroreflectivity to BS EN 1436: Class R2.

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.

547 BEDDING/BACKING OF UNITS ON FRESH CONCRETE RACES

- Standard: To BS 7533-6.

- 550 KERB DOWELS
- Dowels: Steel bar to BS 4482.
 - Size: 12 mm diameter, 150 mm long.
 - Installation of dowels: Vertically into foundation while concrete is plastic.
 - Centres: To suit holes in kerbs.
 - Projection: 75 mm.
 - Grouting of holes in kerbs: Filled with 1:3 cement:sand mortar finished flush.
- 560 HAUNCHING DOWELS
- Dowels: Steel bar to BS 4482.
 - Size: 12 mm diameter, 150 mm long.
 - Installation of dowels: Vertically into foundation while concrete is plastic.
 - Centres: 450 mm.
 - Distance from back face of kerb: 50 mm.
 - Projection: 75 mm.
 - Haunching: Rectangular cross section, cast against formwork, fully enclosing and protecting dowels.
- 570 CHANNELS
- Installation: To an even gradient, without ponding or backfall.
 - Lowest points of channels: 6 mm above drainage outlets.
- 590 DRAINAGE CHANNEL SYSTEMS WITH BUILT IN FALL
- Installation: Top of channels level, installed in correct sequence to form an even gradient without ponding or backfall. Commence laying from outlets.
 - Silt and debris: Removed from entire system immediately before handover.
 - Washings and detritus: Safely disposed without discharging into sewers or watercourses.
- 600 RADIUS KERBS/CHANNELS
- Usage: Radii of 15 m or less.
- 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.
- 625 REGULARITY OF PAVED SURFACES
- Maximum undulation of (non-tactile) paving surface: 3 mm.
 - Method of measurement: Under a 1 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface).
 - Difference in level between adjacent units (maximum):
 - Joints flush with the surface: Twice the joint width (with 5 mm max difference in level).
 - Recessed, filled joints: 2 mm.
 - Recess depth (maximum): 5 mm.
 - Unfilled joints: 2 mm.
 - Sudden irregularities: Not permitted.
- 640 TOOLED MORTAR JOINTS
- Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled and tooled to a neat flush profile.
 - Joint width: 6 mm.

650 SEALANT MOVEMENT JOINTS

- Joint filler: Compressible cellular rubber or plastics compatible with specified sealant.
- Filler installation: Built in as work proceeds, extending through haunching and foundation. Filler positioned accurately to fully support sealant at the recommended depth below exposed faces of units.
- Joint width: 10 mm.
- Sealant: High modulus silicone.
 - Colour: Natural.
- Sealant application: As section Z22.

Q25

Slab/ brick/ sett/ cobble pavings

Q25 Slab/ brick/ sett/ cobble pavings

To be read with Preliminaries/ General conditions.

GENERAL

PRODUCTS

315 CONCRETE FLAGS TO PEDESTRIAN AREAS

- Standard: To BS EN 1339.
 - Manufacturer: Marshalls plc
www.marshalls.co.uk
info@marshalls.co.uk
T: +44 (0)870 241 4725
F: +44 (0)870 241 4165
Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire. HX5 9HT.
Product reference: PERFECTA SMOOTH.
- Recycled content: AS SUPPLIED.
- Colour: BUFF.
 - Finish: SMOOTH GROUND.
 - Nominal sizes: 450 x 450 x 70mm THICK TRAFICA FORMAT.
- Arrises: Square.
- Water absorption and freeze/ thaw resistance class: 3.
- Bending strength class: 3.
- Abrasion resistance class: 4.
- Slip/ Skid resistance: PTV 40.
- Breaking load class: CONSULT MARSHALLS.

320 TACTILE FLAGS AND SLABS FOR PEDESTRIAN CROSSING POINTS AND EXTERNAL STAIR LANDINGS

- Standard: To DD CEN/TS 15209.
- Material: Precast concrete.
 - Manufacturer: Marshalls plc
www.marshalls.co.uk
info@marshalls.co.uk
T: +44 (0)870 241 4725
F: +44 (0)870 241 4165
Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire. HX5 9HT.
Product reference: BLISTER PAVING.
- Recycled content: AS STANDARD.
- Nominal sizes: 450 x 450 x 70mm.
- Colour: Buff.
- Type of surface: Blister – type B1.

365 GEOTEXTILE SHEET - BELOW SAND LAYING COURSE

- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Recycled content: Contractor's choice.

- 390 SAND FOR FLEXIBLE LAYING COURSE AND JOINTING OF CONCRETE FLAG PAVING GENERALLY.
- Standard: To BS 7533-4, unbound construction laying course and jointing material.
 - Purity: Free from deleterious salts, contaminants, lime and cement.
 - Procurement: Obtain from one source and ensure consistent grading.
- 455 JOINT FILLER FOR MOVEMENT JOINTS TO PAVING - EXACT LOCATION TO BE CONFIRMED WITH SUPPLIER OF PAVING
- Type: Compressible rubber or plastics compatible with specified sealant. .
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- 465 SEALANT FOR MOVEMENT JOINTS FOR USE WITH clause 455
- Sealant:
 - Type: High modulus silicone .
 - Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
 - Colour: Brown.

EXECUTION

- 620 ADVERSE WEATHER
- General:
 - Temperature: Do not lay or joint paving if the temperature is below 3°C on a falling thermometer or below 1°C on a rising thermometer.
 - Frozen materials: Do not use. Do not lay bedding on frozen or frost covered bases.
 - Paving with mortar joints and/ or bedding:
 - Protect from frost damage, rapid drying out and saturation until mortar has hardened.
 - Paving laid and jointed in sand:
 - Stockpiled bedding sand: Protect from saturation.
 - Exposed areas of sand bedding and uncompacted areas of sand bedded paving: Protect from heavy rainfall.
 - Saturated sand bedding: Remove and replace, or allow to dry before proceeding.
 - Laying dry-sand jointed paving in damp conditions: Brush in as much jointing sand as possible. Minimize site traffic over paving. As soon as paving is dry, top up joints and complete compaction.
- 625 LAYING PAVINGS - GENERAL
- Appearance: Smooth and even with regular joints and accurate to line, level and profile.
 - Falls: To prevent ponding.
 - Bedding of paving units: Firm so that rocking or subsidence does not occur or develop.
 - Bedding/ Laying course: Consistently and accurately graded, spread and compacted to produce uniform thickness and support for paving units.
 - Slopes: Lay paving units upwards from the bottom of slopes.
 - Paving units: Free of mortar and sand stains.
 - Cutting: Cut units cleanly and accurately, without spalling, to give neat junctions with edgings and adjoining finishes.
- 630A LEVELS OF PAVING
- Permissible deviation from specified levels:
 - Generally: ± 5 mm.
 - Height of finished paving above features:
 - At gullies: +5 to +8 mm.
 - At drainage channels and kerbs: +3 to +5 mm.

635A REGULARITY OF PAVED SURFACES

- Maximum variation in gap under a 3 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface):
 - Precast concrete paving blocks and clay pavers for flexible pavements: 10 mm.
 - Precast concrete flags or natural stone slabs: 3 mm.
- Difference in level between adjacent paving units (maximum): 2 mm.
- Sudden irregularities: Not permitted.

640 COLOUR BANDING

- General: Unless premixed by manufacturer, select from at least FIVE separate packs in rotation to avoid colour banding.

645 PROTECTION

- Cleanliness: Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
- Materials storage: Do not overload pavings with stacks of materials.
- Handling: Do not damage paving unit corners, arrises, or previously laid paving.
- Mortar bedded pavings: Keep free from traffic after laying:
 - Pedestrian traffic (minimum): 24 hours.
 - Vehicular traffic (minimum): 7 days.
- Access: Restrict access to paved areas to prevent damage from site traffic and plant.

675 LAYING GEOTEXTILE SHEET EDGING STRIPS

- Location: Immediately below sand laying course, abutting features which interrupt the laying course, including:
 - Perimeters/ Edge restraints/ Kerbs.
 - Other types of paving.
 - Drainage fittings, e.g. channels and manholes.
- Edge detail: Turn sheet up to a height not less than thickness of sand bedding to form an upstand fitted neatly against features.
- Width: 300 mm.
- Jointing: Lap by 300 mm.

710 LAYING FLAG AND SLAB PAVING - SAND LAYING COURSE AND JOINTING

- Standard: In accordance with BS 7533-4.
- Flag installation and cutting: To Interpave 'Concrete flag paving'.
- Laying course:
 - Nominal thickness after compaction: AS RECOMMENDED BY MANUFACTURER OF PAVING.
- Joint width: 2-5 mm.

COMPLETION

915 COMPLETION OF PAVING WITH DRY SAND OR FINE AGGREGATE FILLED JOINTS

- Sand dressing: Leave a thin layer of dry jointing sand over the paving until opened to public access.
- Final compaction of the surface course: In accordance with BS 7533-3.
- Vacuum cleaning machines: Not allowed.

930 SLIP RESISTANCE TESTING

- Surfaces to be tested: all paved areas.
 - Surface condition: Dry and wet.
- Timing: Two weeks prior to handover, but after initial cleaning .
- Period of notice (minimum): 3 working days.
- Test standard: To BS 7976.
 - Testing authority: A UKAS accredited laboratory .
 - Witnessing/ Certification: Arrange for tests to be witnessed/ certified by: Contract administrator.
 - Report: Submit.
 - Format: As required under BS 7976.

Q40
Fencing

Q40 Fencing

To be read with Preliminaries/ General conditions.

FENCING SYSTEMS

125A OPEN MESH STEEL PANEL GENERAL PURPOSE FENCING

- .Manufacturer: Betafence Limited
www.betafence.co.uk
sales.sheffield@betafence.com
T: +44 (0)114 256 7863
F: +44 (0)114 256 7893
PO Box 119, Shepcote Lane, Sheffield. S9 1TY.
 - Product reference: Paladin Classic - Colour CHARCOAL.
 - " Standard: To BS 1722-14, category 1.
 - " Height: 2200mm and 2400 mm.
 - " Mesh and wire: Welded mesh.
 - Vertical wires: 50 x 12.5 x 3 mm.
 - Horizontal wires: 50 x 3 mm with additional 4 mm diameter wires incorporated within the 'V' beams which span horizontally across the panel..
 - " Posts: Sentinel twifix 2000 RHS, galvanized rectangular hollow section 60 x 60 x 2 mm..
 - " Maximum centres of posts: 3 m.
 - " Method of setting posts: 450 mm square x 750 mm deep holes filled to not less than half the depth with concrete.
 - " Bottom of fencing: Anchored to a concrete sill.
 - " Accessories: Solid electrically operated gates.
 - " Conformity: Submit manufacturer's and installer's certificates, to BS 1722-14.

310 CLOSE BOARDED FENCING

- Manufacturer: Contractor's choice.
 - Product reference: Contractor's choice.
- Standard: To BS 1722-5, type PCM 165.
- Height: 2200 and 2400mm.
- Wood: Homegrown hardwoods.
 - Treatment: To provide a 30 year service life .
 - Finish: Exterior wood stain, as section M60.
- Boards/ rails: Softwood feather edged boards on arris rails.
- Posts: Concrete.
- Centres of posts (maximum): 2.4 m.
- Method of setting posts: 300 mm square or round holes, 750 mm deep filled to not less than half the depth with concrete .
- Accessories: Concrete gravel board.
- Conformity: Submit manufacturer's and installer's certificates, to BS 1722-5.

GATES, POSTS AND STILES

- 550 WOOD GATE TO EXISTING GAS GOVERNOR ON SOUTHAM ROAD
- Manufacturer: Contractors choice.
 - Standard: To BS 5709.
 - Wood: to match fence.
 - Treatment: As section Z12 and Wood Protection Association Commodity Specification C3.
 - Type: To provide a 30 year service life.
 - Finish: Exterior wood stain, as section M60.
 - Adhesive: Synthetic resin to BS EN 301, type 1.
 - Workmanship: As section Z10.
 - Fittings: Two hook and band hinges, return spring and a padbolt with padlock.
 - Finish: Hot dip galvanized to BS EN ISO 1461 .
 - Method of fixing: Concrete foundation, 450 mm square x 750 mm deep.
 - Accessories: None.
- 560A STEEL SOLID ELECTRONIC GATES TO SERVICE YARD - WITH MANUAL OVER-RIDE
- Manufacturer: Newgate - Newark ltd or similar approved.
 - Standard:
 - Steel gates: To BS 1722-12.
 - Materials and workmanship: As section Z11.
 - Finish: Hot dip galvanized to BS EN ISO 1461 and Powder coated to BS 1722-16 .
 - Colour: BLACK RAI 9005.
 - Jointing: Welded.
 - Fittings: stop posts, safety edge to bottom rails, magnetic lock, .
 - Finish: Hot dip galvanized to BS EN ISO 1461 and Polyester powder coated, as section Z31 ral 9005.
 - Method of fixing: gate posts set in sockets set in concrete, cast into place prior to gate delivery approx 800mm deep.
 - Accessories: Electronic RAM operators to both leaves, gate stiles extended to meet floor mounted centre stop, vertical safety edge slam to stiles, photocell stop posts set in concrete, gate infill construction to be solid.
- GROUND TO BE LEVEL ACROSS FULL ARC OF GATES AND AT CLOSED POSITION.
DUCTING TO BE PROVIDED FOR INTERCOM LINKED TO WAITROSE ADMIN..
- 560B STEEL SOLID PEDESTRIAN MOE GATES TO SERVICE YARD
- Manufacturer: Newgate - Newark ltd or similar approved.
 - Standard:
 - Steel gates: To BS 1722-12.
 - Materials and workmanship: As section Z11.
 - Finish: Hot dip galvanized to BS EN ISO 1461 and Powder coated to BS 1722-16 RAL 9005.
 - Colour: BLACK RAL 9005.
 - Jointing: Welded.
 - Fittings: stop posts, safety edge to bottom rails, .
 - Finish: Hot dip galvanized to BS EN ISO 1461 and Polyester powder coated, as section Z31 RAL 9005.
 - Method of fixing: gate posts set in sockets set in concrete, cast into place prior to gate delivery approx 800mm deep.
 - Accessories: gate infill construction to be solid.clear opening to be min 1300mm, when in 90 degree position, fully shrouded push pad lock to be provided, with key hole to outer face to allow access to key holders
- GROUND TO BE LEVEL ACROSS FULL ARC OF GATES AND AT CLOSED POSITION..

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.

715 COMPETENCE

- Operatives: Contractors must employ competent operatives.
- Qualifications: Submit certification of training.
 - NHSS Sector Scheme 2A sub categories: (a) and (e).
 - NHSS Sector Scheme 2C sub categories: N/A.

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.

766 ARRIS RAILS

- Fixing:
 - Rail end section: Shaped to adequately fill the post mortice or recess.
 - Recessed posts: Rails bolted to each post.
 - Top rails: Fixed at both ends using One 8 mm diameter bolt .
- Rails with split ends: Replace.

770 SITE CUTTING OF WOOD

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

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.

Q41

Barriers/ guardrails

Q41 Barriers/ guardrails

To be read with Preliminaries/ General conditions.

TYPES OF BARRIERS/ GUARDRAILS

- 130 PROTECTIVE BARRIERS TO SHOPFRONT GLAZING
- Standard: To BS 6180.
 - Height above datum: 275mm.
 - Material/ Protection: STAINLESS STEEL 316 grade.
 - Surface finish: STAINLESS STEEL 316 grade.
 - Colour/ Texture: N/A.
 - Minimum film thickness: N/A.
 - Fixings/ Foundations: AS DETAILED BY STRUCTURAL ENGINEER.
 - Other requirements: 316 grade stainless steel to ensure resistance to salt speding.
- 135 PROPRIETARY PROTECTIVE BARRIERS TO CARPARK LAMPOSTS AND TREES
- Standard: To BS 6180.
 - Manufacturer: Marshalls Street Furniture
www.marshalls.co.uk/streetfurniture
msf.sales@marshalls.co.uk
T: +44 (0)870 600 2425
F: +44 (0)870 600 2426
Landscape House, Premier Way, Lowfields Business Park, Elland, West Yorkshire. HX5 9HT OR SIMILAR APPROIVED.
 - Product reference: Rhino Light Column Protector. OR SIMILAR APPROVED .
 - Height above datum: 1200mm MINIMUM.
 - Material/ Protection: Steel to BS EN 10025-2 S275 Grade .
 - Surface finish: STAINLESS STEEL 316 grade.
 - Colour/ Texture: BRUSHED.
 - Minimum film thickness: N/A.
 - Fixings/ Foundations: IN ACCORDANCE WITH MANUFACTURERS DETAILS.
 - Other requirements: None.
- 170 VEHICLE SAFETY FENCES - METAL ARMCO BARRIERS TO EXPOSED CORNERS OF BUILDING TO WAITROSE SERVICE YARD SEE EXTERNAL WORKS DRAWING FOR DETAILS
- Standard: To PD 6634-1.
 - Type and reference: ARMCO TYPE TO BS 6579-8.
 - Manufacturer: Contractor's choice.
 - Product reference: ARMCO.
 - Surface finish: GALVANISED.
 - Colour/ Texture: N/A.
 - Minimum film thickness: N/A.
 - Fixings/ Foundations: TO STRUCTURAL ENGINEERS DETAILS.
 - Testing: Fence post and foundation testing Supervised.

190A VEHICLE ACCESS POINT BARRIER

- NO HEIGHT RESTRICTION BARRIER INCLUDED
MANUAL VERTICAL BOOM BAR CAR PARK BARRIER WITH SKIRT
AUTOPA LTD

Cottage Leap
Rugby
Warwickshire
CV21 3XP
UK

Telephone +44 (0)178 855 0556

Fax +44 (0)178 855 0265

Email info@autopa.co.uk

Boom Arm:

Aluminium construction, 76 x 38mm section. Boom weight 2.0kg/m.

Lockable in either open or closed position.

Boom arm to be white with red adhesive reflective stripes.

The lock to be supplied must be to Waitrose Standard and suited to the main branch master system.

Recommended concrete foundation 600x600x500mm deep minimum for main post.

Catch post foundation 300mm cube.

Requires 4 qty 16mm bolts for main pivot post. Main base size 400 x 400 x 10mm steel.

4 qty 12mm bolts required for catch post.

Measurements from flange front to end of boom.

N.B. The fixing points for the main pivot post and catch post must be set back a minimum of 450mm from the kerb line

INSTALLATION

405 COMPETENCE

- Operatives: Contractors must employ competent operatives.
- Qualifications: Submit certification of training.
 - UKAS Sector Scheme 2A sub categories: Not required.
 - UKAS Sector Scheme 2C sub categories: Not required.

410 WORK ON OR ADJACENT TO HIGHWAYS

- Requirement: Comply with the Department for Transport's 'Safety at street works and road works. A code of practice'. Retain a copy of this document on site at all times during the course of the works.

420 ALIGNMENT

- Erection: Fences/ barriers to present a flowing alignment. Tops of posts to follow ground profile.
- Tolerance: ± 30 mm of prescribed alignment and, within any 10 m length, ± 15 mm from the straight or required radius.

430 ERECTION GENERALLY

- Protection: Coat all internal and external surfaces of aluminium and steel posts below and up to 150 mm above ground level, with two coats of bituminous paint to BS 6949 type 2, unless other applied surface finish is specified.
- Prevention of electrolytic corrosion: Isolate dissimilar metals.
- Steel components: Do not drill, cut or weld after galvanizing.

480 CONCRETE FOUNDATIONS FOR POSTS

- Excavations: To have vertical sides. Dispose of all arisings. Blind excavation bottoms with a 50 mm layer of concrete.
- Concrete mix: To BS 8500-2, Designated mix not less than GEN 4 or Standard mix not less than ST5. Do not use admixtures.
- Placing concrete: Fill holes to the specified depth and fully compact. Do not backfill for at least four days.
- Temporary support to posts: Provide for a at least four days after placing concrete.

490 DAMAGE REPAIR TO GALVANIZED SURFACES

- Areas of repair: Minor damage, including fixings and fittings.
 - Total area of repair not to exceed 0.5% of total surface area.
 - Each area not to exceed 1000 mm².
- Renovation: Use low melting point zinc alloy repair rods or powders or at least two coats of zinc-rich paint to BS 4652.

Q50

Site/ street furniture/ equipment

Q50 Site/ street furniture/ equipment

To be read with Preliminaries/ General conditions.

GATES, BARRIERS AND PARKING CONTROLS

- 190A BOLLARDS ANTI RAM RAID TO SHOPFRONT AND CUSTOMER DROP OFF - MAX 1500mm CENTRES
- Manufacturer: McCUE CORPORATION
Mount House
Bond Avenue
Mount Farm
Milton Kynes
MK1 1SF
UK
Telephone +44 (0) 190 8365 511
Fax +44 (0) 190 836 5527
Email
Website <http://www.mccuecorp.com> .
 - Product reference: ECO BOLLARD RAM RAID SPEC .
 - Material: 89.9mm dia STEEL ANTI RAM RAID CORE WITH 114mm DIA POLYETHELENE COVER OVER .
 - Finish as delivered: As manufactured .
 - Colour: None .
 - Height above ground: 1200mm .
 - Special features: Two No LIGHT REFLECTIVE STRIPS .
 - Method of fixing: Root, 512 mm below ground, set in concrete base as recommended by manufacture / structural engineer .
- 190B BOLLARDS BOLLARDS TO WAITROSE SERVICE YARD TO WAITROSE STANDARDS AND REQUIREMENTS 2000mm and 1200mm HIGH x 225mm DIAMETER GALVANISED STEEL TUBE 9mm THICK FILLED WITH CONCRETE WITH ROUNDED TOP PAINTED BLACK AND YELLOW
- Manufacturer: McCUE CORPORATION
Mount House
Bond Avenue
Mount Farm
Milton Kynes
MK1 1SF
UK
Telephone +44 (0) 190 8365 511
Fax +44 (0) 190 836 5527
Email
Website <http://www.mccuecorp.com> .
 - Product reference: AS ABOVE .
 - Material: AS ABOVE .
 - Finish as delivered: As manufactured .
 - Colour: AS ABOVE .
 - Height above ground: 1200mm .
 - Special features: NONE .
 - Method of fixing: Root, 500 mm below ground, set in concrete base as recommended by manufacture / structural engineer .

SITE AND STREET FURNITURE

210 CYCLE STANDS

- Manufacturer: Furnitubes International Ltd
www.furnitubes.com
sales@furnitubes.com
T: +44 (0)20 8378 3200
F: +44 (0)20 8378 3250
3rd Floor, Meridian House, Royal Hill, Greenwich, London. SE10 8RD .
 - Product reference: FIN 600.
- Material: Stainless steel.
 - Finish: Brushed.
 - Colour: None.
- Number of stands: 10.
- Accessories: Anti-graffiti coating.
- Method of fixing: Base plate bolted to 400 x 400 x 400 mm concrete base 100 mm below paving surface.

210A CYCLE STANDS TO SERVICE YARD

- Manufacturer: McCUE CORPORATION
Mount House
Bond Avenue
Mount Farm
Milton Kynes
MK1 1SF
UK
Telephone +44 (0) 190 8365 511
Fax +44 (0) 190 836 5527
Email
Website <http://www.mccuecorp.com> .
 - Product reference: BIKE RAK 3 TRI 950 .
- Material: Steel .
 - Finish: Hot dip galvanized to BS EN ISO 1461 .
 - Colour: None .
- Number of stands: 2 .
- Accessories: Anti-graffiti coating .
- Method of fixing: Proprietary anchored base fixed to concrete floor finish .

210B CYCLE SHELTERS TO SERVICE YARD

Manufacturer:

NUTEK LTD

20 Triumph Way

Woburn Road Industrial Estate

Kempston

Bedford

MK42 7QB

UK

Telephone+44 (0) 1234 305444

Fax+44 (0) 1234 305577

Emailinfo@nuteklimited.co.uk

Websitehttp://www.nuteklimited.co.uk .

- Product reference: P22-004 2285 x 4013mm.

- Material: Steel.
 - Finish: Hot dip galvanized to BS EN ISO 1461 .
 - Colour: None.
- Number of stands: 1.
- Accessories: Anti-graffiti coating.
- Method of fixing: Proprietary anchored base fixed to concrete floor finish .

210C CYCLE SHELTERS TO CAR PARK

Manufacturer: Broxap Ltd

www.broxap.com

sales@broxap.com

T: +44 (0)1782 564411

F: +44 (0)1782 565357

Rowhurst Industrial Estate, Chesterton, Newcastle-under-Lyme. ST5 6BD.

- Product reference: BXMW/AP APOLLO.

" Material: POLYESTER POWDER COATED AS SECTION Z31.

- Finish: MATT 30% GLOSS. .

- Colour: BLACK.

- Number of stands: 2.
- Accessories: Anti-graffiti coating.
- Method of fixing: Base plate bolted to 400 x 400 x 400 mm concrete base 100 mm below paving surface.

210D TROLLEY SHELTERS TO CAR PARK

Manufacturer: NUTEK LTD

20 Triumph Way

Woburn Road Industrial Estate

Kempston

Bedford

MK42 7QB

UK

Telephone+44 (0) 1234 305444

Fax+44 (0) 1234 305577

Emailinfo@nuteklimited.co.uk

Websitehttp://www.nuteklimited.co.uk

" Material: POLYESTER POWDER COATED AS SECTION Z31.

- Finish: MATT 30% GLOSS. .

- Colour: RAL 7016 black grey.

- Number of stands: 6.
- Accessories: Anti-graffiti coating.
- Method of fixing: Base plate bolted to 400 x 400 x 400 mm concrete base 100 mm below paving surface.

210E TROLLEY PARKING CORRAL / PROTECTION HOOPS TO CUSTOMER ENTRANCE

Manufacturer: "McCUE CORPORATION

Mount House

Bond Avenue

Mount Farm

Milton Kynes

MK1 1SF

UK

Telephone +44 (0) 190 8365 511

Fax +44 (0) 190 836 5527

Email

Website <http://www.mccuecorp.com> Material: STAINLESS STEEL 50.8mm dia. -

Finish: STAINLESS STEEL. .

- Colour: None .

- Number of stands: 3 - subject to confirmation from Waitrose .
- Accessories: Anti-graffiti coating .
- Method of fixing: Base plate bolted to 400 x 400 x 400 mm concrete base 300 mm below paving surface .

210F SERVICE YARD WHEEL GUARDS TO CAR PARK

Manufacturer: "McCUE CORPORATION

Mount House

Bond Avenue

Mount Farm

Milton Kynes

MK1 1SF

UK

Telephone +44 (0) 190 8365 511

Fax +44 (0) 190 836 5527

Email

Website <http://www.mccuecorp.com>

Material: MILD STEEL 165mm DIAMETER 2000mm LONG SET 35mm ABOVE GROUND

LEVEL . - Finish: PAINTED YELLOW. .

- Colour: None .

- NUMBER: 2No .
- Accessories: Anti-graffiti coating .
- Method of fixing: SET IN CONCRETE MIN 150mm SURROUND 450mm BELOW GROUND .

210G TROLLEY RETENTION SYSTEM TO CAR PARK, EXACT LOCATION AND EXTENT TO BE CONFIRMED

Manufacturer:

GATEKEEPER SYSTEMS UK LTD

MILTON KEYNES

TEL 044 01908 827333

GLOBALSALES@GATEKEEPERSYSTEMS.COM

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210H SMOKING SHELTER TO SERVICE YARD

Manufacturer:

NUTEK LTD

20 Triumph Way

Woburn Road Industrial Estate

Kempston

Bedford

MK42 7QB

UK

Telephone+44 (0) 1234 305444

Fax+44 (0) 1234 305577

Emailinfo@nuteklimited.co.uk

Websitehttp://www.nuteklimited.co.uk .

- Product reference: NSS 4200 10 PERSON SHELTER.

• Material: Steel.

- Finish: Hot dip galvanized to BS EN ISO 1461 and Polyester powder coated as section Z31.

- Colour: WHITE.

• Number of stands: 1.

• Accessories: Anti-graffiti coating.

• Method of fixing: Proprietary anchored base fixed to concrete floor finish to include Hockey stick base bolted to legs.

240 LITTER BINS TO CAR PARK 7No

• Manufacturer: GLASDON.

- Product reference: COMMUNITY BIN 500mm dia x 1072mm high.

• Material: Plastics.

- Finish: As manufactured.

- Colour: black.

• Accessories/ Special requirements:

- Anti-graffiti coating;

- Hinged, locking side door; and

- Zinc coated steel liner.

• Method of fixing: Floor fixed to manufacturers recommendations.

INSTALLATION

510 CONCRETE FOUNDATIONS GENERALLY

• Standard: To BS 8500-2.

• Concrete: As section E10.

• 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.

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.

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

R10 Rainwater drainage systems

To be read with Preliminaries/ General conditions.

GENERAL

- 110 GRAVITY RAINWATER DRAINAGE SYSTEM
- Rainwater outlets: Wade international or similar equal approved.
 - Gutters: AS DETAILED IN H31/234.
 - Pipework: Aluminium.
 - Below ground drainage: TO STRUCTURAL ENGINEERS DETAILS.
 - Disposal: TO STRUCTURAL ENGINEERS DETAILS.
 - Controls: TO STRUCTURAL ENGINEERS DETAILS.
 - Accessories:
 - Anticlimb rainwater pipe covers;
 - Masking plates; and
 - Sealant for gutters
 - Bolt on access plates.

SYSTEM PERFORMANCE

- 210 DESIGN
- Design: Complete the design of the rainwater drainage system.
 - Standard: To BS EN 12056-3, clauses 3-7 and National Annexes.
 - Proposals: Submit drawings, technical information, calculations and manufacturers' literature.
- 221 COLLECTION AND DISTRIBUTION OF RAINWATER
- General: Complete, and without leakage or noise nuisance.
- 230A DESIGN PARAMETERS - GENERAL ROOF / WALL CLADDING SUB CONTRACTOR TO BE RESPONSIBLE FOR A FULLY DESIGNED SYSTEM INCLUDING SIZING OF ALL GUTTERS, OUTLETS AND DOWN PIPES IN DETAIL SUFFICIENT FOR PRESENTING TO BUILDING CONTROL.
SUB-CONTRACTOR TO ENSURE CO-ORDINATION WITH STEEL FABRICATOR TO ENSURE CLEAR RUNS FOR DOWN PIPES, PAYING PARTICULAR ATTENTION TO CLADDING RAILS.
- ..
 - Design rate of rainfall: As BS EN 12056-3, National Annex NB.2.
 - Category: TO BE DETERMINED BY SUB CONTRACTOR.
 - Design life of building: 50 years.
 - Available capacity of existing below ground drainage (maximum): TO BE CONFIRMED BY STRUCTURAL ENGINEER.

PRODUCTS

370A ALUMINIUM PIPEWORK

- Standard: Agrément certified .
- Manufacturer: Alumasc Exterior Building Products Ltd
www.alumasc-exteriors.co.uk
info@alumasc-exteriors.co.uk
T: +44 (0)1744 648400
F: +44 (0)1744 648401
White House Works, Bold Road, Sutton, St Helens. WA9 4JG.
 - Product reference: Contractor's choice.
- Type/ Thickness : Extruded, 1.2 mm.
- Section: Round.
- Nominal size: TBC.
- Finish Polyester powder coating .
- Colour: RAL 9006 SILVER.
- Brackets: Extruded aluminium pipe clips coated as pipes .
 - Fixings: Stainless steel screws.
Size: AS RECOMMENDED BY MANUFACTURER .
- Accessories: Access fittings and Leaf / bird guards to roof.

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.

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: Plugged and screwed into cladding joints .
- Distance between bracket fixing centres (maximum): 1800 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.

675 CUTTING COATED PIPEWORK AND GUTTERS

- Cutting: Recoat bare metal.

690 ELECTRICAL CONTINUITY - PIPEWORK

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

695 ELECTRICAL CONTINUITY - GUTTERS

- Joints in metal gutters: Purpose made links supplied by the gutter manufacturer to ensure electrical continuity.

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): 48 hours.
- 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.

915 MAINTENANCE INSTRUCTIONS

- General: At completion, submit printed instructions recommending procedures for maintenance of the rainwater installation, including full details of recommended inspection, cleaning and repair procedures.

920 IMMEDIATELY BEFORE HANDOVER

- Construction rubbish, debris, swarf, temporary caps and fine dust which may enter the rainwater system: Remove. Do not sweep or flush into the rainwater system.
- Access covers, rodding eyes, outlet gratings and the like: Secure complete with fixings.

Z

Building fabric reference specification

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 10169-1.
- 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.

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 ending radius not less than material thickness.
 - Tubes: Cold bending radius not less than 2 x tube diameter.
- Welding: In addition to general welding requirements:
 - Protect adjacent surfaces from weld spatter.
 - Pickle all welds before post fabrication treatments.
- Protection: Provide protection to fabricated components during transit and on site.

555 BRAZING

- Standard: To BS EN 14324.
- Testing:
 - Destructive testing: To BS EN 12797.
 - Nondestructive testing: To BS EN 12799.

FINISHING

710 FINISHING WELDED AND BRAZED JOINTS VISIBLE IN COMPLETE WORK

- Standard: To BS EN ISO 8501-3.
 - Preparation grade: P1.
- 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. 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 8501-1.
Grade: St 2½.

790 VITREOUS ENAMELLING

- Standard: To BS EN 14431.
- Substrate metal: Carbon steel or cast iron.

COMPLETION

910 DOCUMENTATION

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

920 COMPLETION

- Protection: Remove.
- Cleaning and maintenance: Carry out in accordance with procedures detailed in fabricators' guarantees.

Z12

Preservative/ fire retardant treatment

Z12 Preservative/ fire retardant treatment

To be read with Preliminaries/ General conditions.

- 110 TREATMENT APPLICATION
- Timing: After cutting and machining timber, and before assembling components.
 - Processor: Licensed by manufacturer of specified treatment solution.
 - Operatives: Preferably WPA trained.
 - Certification: For each batch of timber provide a certificate of assurance that treatment has been carried out as specified.
- 120 COMMODITY SPECIFICATIONS
- Standard: Current edition of the Wood Protection Association (WPA) publication 'Industrial wood preservation specification and practice'.
- 130 PRESERVATIVE TREATMENT SOLUTION STRENGTHS/ TREATMENT CYCLES
- General: Select to achieve specified service life and to suit treatability of specified wood species.
- 140 COPPER-ORGANIC PRESERVATIVE TREATMENT
- Solution:
 - Manufacturer: CONTRACTORS CHOICE.
Product reference: CONTRACTORS CHOICE.
 - Colour: Brown.
 - Application: High pressure impregnation.
 - Moisture content of wood:
 - At time of treatment: Not more than 28%.
 - After treatment: Timber to be surface dry before using.
- 160 ORGANIC SOLVENT PRESERVATIVE TREATMENT
- Solution:
 - Manufacturer: CONTRACTORS CHOICE.
Product reference: CONTRACTORS CHOICE.
 - Application: Double vacuum + low pressure impregnation, or immersion.
 - Moisture content of wood:
 - At time of treatment: As specified for the timber/ component at time of fixing.
 - After treatment: Timber to be surface dry before use.
- 165 WATER BASED MICROEMULSION PRESERVATIVE TREATMENT
- Solution:
 - Manufacturer: CONTRACTORS CHOICE.
Product reference: CONTRACTORS CHOICE.
 - Application: Double vacuum + low pressure impregnation.
 - Moisture content of wood:
 - At time of treatment: As specified for the timber/ component at time of fixing.
 - After treatment: Timber to be surface dry before use.

- 167 BORON COMPOUND PRESERVATIVE TREATMENT
- Solution:
 - Manufacturer: CONTRACTORS CHOICE.
 - Product reference: CONTRACTORS CHOICE.
 - Application: High pressure impregnation.
 - Moisture content of wood:
 - At time of treatment: Not more than 28%.
 - After treatment: Timber to be surface dry before using.
- 180 RECYCLED TIMBER CONTAINING CREOSOTE OR CHROMIUM/ ARSENIC BASED PRESERVATIVE
- Usage: NOT PERMITTED.
- 210 FIRE RETARDANT TREATMENT
- Solution type: CONTRACTORS CHOICE.
 - Manufacturer: CONTRACTORS CHOICE.
 - Product reference: CONTRACTORS CHOICE.
 - Application: Vacuum + pressure impregnation.
 - Moisture content of wood:
 - At time of treatment: As specified for the timber/ component at time of fixing.
 - After treatment: Timber to be redried slowly at temperatures not exceeding 65°C to minimize distortion and degradation.
- 220 LEACH RESISTANT FIRE RETARDANT TREATMENT
- Solution type: LR
 - Manufacturer: CONTRACTORS CHOICE.
 - Product reference: CONTRACTORS CHOICE.
 - Application: Vacuum + pressure impregnation.
 - Moisture content of wood:
 - At time of treatment: As specified for the timber/ component at time of fixing.
- 610 MAKING GOOD TO PRESERVATIVE TREATMENT ON SITE
- Preservative solution: Compatible with off-site treatment.
 - Application: In accordance with preservative manufacturer's recommendations.
- 620 MAKING GOOD TO FIRE RETARDANT TREATMENT ON SITE
- Fire retardant: Compatible with off-site treatment.
 - Application: In accordance with fire retardant manufacturer's recommendations.

Z20

Fixings and adhesives

Z20 Fixings and adhesives

To be read with Preliminaries/ General conditions.

PRODUCTS

- 310 FASTENERS GENERALLY
- Materials: To have:
 - Bimetallic corrosion resistance appropriate to items being fixed.
 - Atmospheric corrosion resistance appropriate to fixing location.
 - Appearance: Submit samples on request.
- 320 PACKINGS
- Materials: Noncompressible, corrosion proof.
 - Area of packings: Sufficient to transfer loads.
- 330 NAILED TIMBER FASTENERS
- Nails:
 - Steel: To BS 1202-1 or BS EN 10230-1.
 - Copper: To BS EN 1202-2.
 - Aluminium: To BS 1202-3.
- 340 MASONRY FIXINGS
- Light duty: Plugs and screws.
 - Heavy duty: Expansion anchors or chemical anchors.
- 350 PLUGS
- Type: Proprietary types to suit substrate, loads to be supported and conditions expected in use.
- 360 ANCHORS
- Types:
 - Expansion: For use in substrate strong enough to resist forces generated by expansion of anchor.
 - Adhesive or chemical:
 - For use in substrate where expansion of anchor would fracture substrate.
 - For use in irregular substrate where expansion anchors cannot transfer load on anchor.
 - Cavity: For use where the anchor is retained by toggles of the plug locking onto the inside face of the cavity.
- 370 WOOD SCREWS
- Type:
 - Wood screws (traditional pattern).
 - Standard: To BS 1210.
 - Wood screws.
 - Pattern: Parallel, fully threaded shank or twin thread types.
 - Washers and screw cups: Where required are to be of same material as screw.
- 380 MISCELLANEOUS SCREWS
- Type: To suit the fixing requirement of the components and substrate.
 - Pattern: Self-tapping, metallic drive screws, or power driven screws.
 - Washers and screw cups: Where required to be of same material as screw.

390 ADHESIVES GENERALLY

- Standards:
 - Hot-setting phenolic and aminoplastic: To BS 1203.
 - Thermosetting wood adhesives: To BS EN 12765.
 - Thermoplastic adhesives: To BS EN 204.

410 POWDER ACTUATED FIXING SYSTEMS

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

EXECUTION

610 FIXING GENERALLY

- Integrity of supported components: Select types, sizes, quantities and spacings of fixings, fasteners and packings to retain supported components without distortion or loss of support.
- Components, substrates, fixings and fasteners of dissimilar metals: Isolate with washers/sleeves to avoid bimetallic corrosion.
- Appearance: Fixings to be in straight lines at regular centres.

620 FIXING THROUGH FINISHES

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

630 FIXING PACKINGS

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

640 FIXING CRAMPS

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

650 NAILED TIMBER FIXING

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

660 SCREW FIXING

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

670 PELLETTED COUNTERSUNK SCREW FIXING

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

680 PLUGGED COUNTERSUNK SCREW FIXING

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

690 USING POWDER ACTUATED FIXING SYSTEMS

- Powder actuated fixing tools: To BS 4078-2 and Kitemark certified.
- Operatives: Trained and certified as competent by tool manufacturer.

700 APPLYING ADHESIVES

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

Z21
Mortars

Z21 Mortars

To be read with Preliminaries/ General conditions.

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:
 - Types: To BS 4027 and Kitemarked.
 - To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.
 - Strength class: 32.5, 42.5 or 52.5.
 - Masonry cement: To BS EN 413-1 and CE marked.
 - Class: MC 12.5.

- 180 ADMIXTURES FOR SITE MADE CEMENT GAUGED MORTARS
- Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
 - Other admixtures: Submit proposals.
 - Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.
- 190 RETARDED READY TO USE CEMENT GAUGED MORTAR
- Standard: To BS EN 998-2.
 - Lime for cement:lime:sand mortars: Nonhydraulic to BS EN 459-1.
 - Type: CL 90S.
 - Pigments for coloured mortars: To BS EN 12878.
 - Time and temperature limitations: Use within limits prescribed by mortar manufacturer.
 - Retempering: Restore workability with water only within prescribed time limits.
- 200 STORAGE OF CEMENT GAUGED MORTAR MATERIALS
- Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases.
 - Factory made ready-mixed lime:sand/ ready to use retarded mortars: Keep in covered containers to prevent drying out or wetting.
 - Bagged cement/ hydrated lime: Store off the ground in dry conditions.
- 210 MAKING CEMENT GAUGED MORTARS
- Batching: By volume. Use clean and accurate gauge boxes or buckets.
 - Mix proportions: Based on dry sand. Allow for bulking of damp sand.
 - Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
 - Mortars containing air entraining admixtures: Mix mechanically. Do not overmix.
 - Working time (maximum): Two hours at normal temperatures.
 - Contamination: Prevent intermixing with other materials.

LIME:SAND MORTARS

- 310 LIME:SAND MORTAR MIXES
- Specification: Proportions and additional requirements for mortar materials are specified elsewhere.
- 320 SAND FOR LIME:SAND MASONRY MORTARS
- Type: Sharp, well graded.
 - Quality, sampling and testing: To BS EN 13139.
 - Grading/ Source: As specified elsewhere in relevant mortar mix items.
- 330 READY PREPARED LIME PUTTY
- Type: Slaked directly from CL 90 quicklime to BS 890, using an excess of water.
 - Maturation: In pits/ containers that allow excess water to drain away.
 - Density of matured lime putty: 1.3 - 1.4 kg/litre.
 - Maturation period before use (minimum): Seek instructions.
- 345 ADMIXTURES FOR HYDRAULIC LIME:SAND MORTARS
- Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
 - Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

350 STORAGE OF LIME:SAND MORTAR MATERIALS

- Sands and aggregates: Keep different types/ grades in separate stockpiles on hard, clean, free-draining bases.
- Ready prepared nonhydraulic lime putty: Prevent drying out and protect from frost.
- Nonhydraulic lime:sand mortar: Store on clean bases or in clean containers that allow free drainage. Prevent drying out or wetting and protect from frost.
- Bagged hydrated hydraulic lime: Store off the ground in dry conditions.

360 MAKING LIME:SAND MORTARS GENERALLY

- Batching: By volume. Use clean and accurate gauge boxes or buckets.
- Mixing: Mix materials thoroughly to uniform consistency, free from lumps.
- Contamination: Prevent intermixing with other materials, including cement.

370 SITE PREPARED NONHYDRAULIC LIME:SAND MORTARS

- Mixing: Mix materials thoroughly by compressing, beating and chopping. Do not add water.
 - Equipment: Roller pan mixer or submit proposals.
- Maturation period before use (maximum): Seek instructions.

390 KNOCKING UP NONHYDRAULIC LIME:SAND MORTARS

- Knocking up before and during use: Achieve and maintain a workable consistency by compressing, beating and chopping. Do not add water.
 - Equipment: Roller pan mixer or submit proposals.

400 MAKING HYDRAULIC LIME:SAND MORTARS

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

Z22
Sealants

Z22 Sealants

To be read with Preliminaries/General conditions.

PRODUCTS

310 JOINTS AS SPECIFIED IN RELEVANT SECTION

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

EXECUTION

610 SUITABILITY OF JOINTS

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

620 PREPARING JOINTS

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

630 APPLYING SEALANTS

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

Z31

Powder coatings

Z31 Powder coatings

To be read with Preliminaries/ General conditions.

120 POWDER COATING MATERIALS

- Manufacturer: Obtain from one only of the following: CONTRACTORS 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.

235 INDEPENDENT INSPECTION AT PLANT

- Requirement: Contractors/ suppliers of the following designated components must commission an approved Independent Inspection Authority to carry out acceptance inspections to confirm that powder coating application complies with this specification.
 - Designated components: ALL .
- Acceptance inspections: Carry out for each variation of colour and finish of each component work package at applicator's plant prior to any fabrication of units, in accordance with the following:
 - Where three or more production runs are required for application of coatings, not less than three acceptance inspections must be carried out in accordance with BS 6001-1, general inspection level 2, with an acceptance quality limit of 1%.
 - Where less than three production runs are required for application of coatings, one acceptance inspection must be carried out in accordance with BS 6001-2, with a limiting quality of 5% where the probability of acceptance is 10%.
- Components failing inspection: Reprocess or replace and reinspect.
- Inspection reports: Independent Inspection Authority must submit copies.

240 QUALITY ASSURANCE SYSTEM

- Requirement: Powder and coating application to the following designated components is to be tested and approved in accordance with the Qualicoat system.
 - Designated components: ALL.

250 COMPONENT DESIGN

- Condition of components to be powder coated:
 - To comply with relevant recommendations of BS 4479-1, -3, and -4.
 - Of suitable size to fit plant capacity.
 - Of suitable thickness to withstand oven curing.

310 PRETREATMENT OF ALUMINIUM COMPONENTS

- Condition of components to be pretreated:
 - Free from corrosion and damage.
 - All welding and jointing completed and finish off as specified.
 - Free from impurities including soil, grease, oil.
 - Suitable for and compatible with the pretreatment process.
- Conversion coating requirements:
 - Chromate system: To BS 6496 or BS EN 12206-1.
 - Chromate-free system: To BS EN 12206-1. Submit details before using.
- Rinsing requirements: Use demineralized water. Drain and dry.

320 PRETREATMENT OF STEEL COMPONENTS

- Condition of components to be pretreated:
 - Free from corrosion and damage.
 - All welding and jointing completed and finish off as specified.
 - Free from impurities including soil, grease, oil.
 - Suitable for and compatible with the pretreatment process.
- Conversion coating requirements: To BS EN 13438.
- Rinsing requirements: Use demineralized water. Drain and dry.

430 EXTENT OF POWDER COATINGS

- Application: To visible component surfaces, and concealed surfaces requiring protection. Coated surfaces will be deemed 'significant surfaces' for relevant BS 6496 or BS EN 13438 performance requirements.

435 APPLICATION OF POWDER COATINGS

- Surfaces to receive powder coatings: Free from dust or powder deposits.
- Powder colours: Obtain from one batch of one manufacturer.
- Commencement of powder coating: To be continuous from pretreatment.
- Jig points: Not visible on coated components.
- Curing: Controlled to attain metal temperatures and hold periods recommended by powder coating manufacturer.
- Stripping and recoating of components: Only acceptable by prior agreement of powder coating manufacturer. Stripping, pretreatment and powder coating are to be in accordance with manufacturer's requirements.
- Overcoating of components: Not acceptable.

440 PERFORMANCE AND APPEARANCE OF POWDER COATINGS

- For aluminium components:
 - Standard: To BS 6496 or BS EN 12206-1.
- For steel components:
 - Standard: To BS EN 13438.
- Visual inspection after powder coating: Significant surface viewing distances to be as specified in the relevant Standard, unless specified otherwise.
- Colour and gloss levels: To conform with approved samples.

450 ALUMINIUM ALLOY FABRICATIONS

- Units may be assembled:
 - Before powder coating.
 - From components powder coated after cutting to size.
 - Where approved, from components powder coated before cutting to size.
- Exposure of uncoated background metal: Not acceptable.
- Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.

460 STEEL FABRICATIONS

- Unit assembly: Wherever practical, before powder coating.
- Exposure of uncoated background metal: Not acceptable.
- Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.

470 FIXINGS

- Exposed metal fixings: Powder coat together with components, or coat with matching repair paint system applied in accordance with the powder coating manufacturer's recommendations.

480 DAMAGED COMPONENTS - REPAIR/ REPLACEMENT

- Before delivery to site: Check all components for damage to powder coatings. Replace damaged components.
- Site damage: Submit proposals for repair or replacement.

510 PROTECTION

- Powder coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
- Protective coverings: Must be:
 - Resistant to weather conditions.
 - Partially removable to suit building in and access to fixing points.
- Protective tapes in contact with powder coatings: Must be:
 - Low tack, self adhesive and light in colour.
 - Applied and removed in accordance with tape and powder coating manufacturers' recommendations. Do not use solvents to remove residues as these are detrimental to the coating.
- Inspection of protection: Carry out monthly. Promptly repair any deterioration or deficiency.

535 DOCUMENTATION

- Submit the following information for each batch of powder coated components:
 - Supplier.
 - Trade name.
 - Colour.
 - Type of powder.
 - Method of application.
 - Batch and reference number.
 - Statutory requirements.
 - Test certificates.
 - Maintenance instructions.

540 COMPLETION

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

Z33
Anodizing

Z33 Anodizing

To be read with Preliminaries/ General conditions.

- 110 ANODIC COATING
- Anodizer: Select one only of the following: CONTRACTORS CHOICE.
 - Selected anodizer: Submit details before commencement of anodizing, including:
 - Name and contact details.
 - Details of accreditation schemes.
 - Technical data of product including current Agrément certificates.
- 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.
- 250 INDEPENDENT INSPECTION AT PLANT
- Requirement: Contractors/ suppliers of the following designated components must commission an approved Independent Inspection Authority to carry out acceptance inspections to confirm that anodic coating application complies with this specification.
 - Designated components: ALL.
 - Acceptance inspections: Carry out for each variation of colour and finish of each component work package at anodizer's plant prior to any fabrication of units, in accordance with the following:
 - Where three or more production runs are required for application of coatings, not less than three acceptance inspections must be carried out in accordance with BS 6001-1, general inspection level 2, with an acceptance quality limit of 1%.
 - Where less than three production runs are required for application of coatings, one acceptance inspection must be carried out in accordance with BS 6001-2, with a limiting quality of 5% where the probability of acceptance is 10%.
 - Components failing inspection: Reprocess or replace and reinspect.
 - Inspection reports: Independent Inspection Authority must submit copies.

- 255 QUALITY ASSURANCE SYSTEM
- Requirement: Powder and coating application to the following designated components is to be tested and approved in accordance with the Qualanod system.
 - Designated components: ALL.
- 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.