

# SPECIFICATION OF WORKS

## Former YMCA Building

Pontmorlais West, Merthyr Tydfil, CF47 8UU

**Client:** Merthyr Tydfil County Borough Council

**REV B:** Construction Issue

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Davies Sutton Architects

Penhevad Studios

Penhevad Street

Cardiff

CF11 7LU

T. 02920 664455  
W. [www.davies-sutton.co.uk](http://www.davies-sutton.co.uk)

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## B91: Buildings in the Landscape

### Clauses

**2 To be read with preliminaries/ general conditions.**

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### Products

#### 340B Bicycle shelter

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1. **Description:** In car park
2. **Manufacturer:** AUTOPA Limited
  - 2.1. **Product reference:** 3.5m Canterbury Cycle Shelter: 138200615
3. **Size:** 3.5 m
4. **Frame:** Frame is manufactured from galvanized carbon steel tube. Uprights of steel tube diameter 76 x 3.2 mm thick
5. **Roof covering:** Polycarbonate
6. **Accessibility:** Double sided
7. **Accessories/ Special requirements:** None
8. **Method of fixing to ground or base:** Set in concrete

### Execution/ erection/ installation

#### 600 Erection/ installation generally

---

1. **Frameworks:** Assemble and brace, including temporary members required for installation.
2. **Contact between dissimilar metals:** Avoid.
3. **Fixings:** Fully bolt together. Tighten bolts.
4. **Temporary support:** Do not subject members to non-design loadings.

#### 610 Concrete foundations generally

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1. **Concrete:** To BS 8500-2.
2. **Mix:** Designated concrete not less than GEN 1 or standard prescribed concrete not less than ST2.
3. **Admixtures:** Do not use.
4. **Depth of foundations, bedding, haunching:** Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.
5. **Foundation holes:** Neat vertical sides.
6. **Components:** Accurately positioned and securely supported.
7. **Concrete fill:** Compact as filling proceeds.
8. **Concrete foundations exposed to view:** Compact until air bubbles cease to appear on the upper surface, then weather to shed water and trowel smooth.
9. **Temporary component support:** Maintain undisturbed for minimum 48 hours.

#### 630 Erection of prefabricated buildings/ structures

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1. **Checking:** Five days (minimum) before proposed erection date, check foundations, holding down bolts, etc.
2. **Inaccuracies or defects in prepared bases or supplied buildings/ structures:** Report immediately. Obtain instructions before proceeding.

**645 Making good galvanized surfaces**

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1. **Minor damage in areas up to 40 mm<sup>2</sup> (including on fixings and fittings):** Make good.
  - 1.1. **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.
  - 1.2. **Thickness:** Sufficient to provide a zinc coating at least equal to the original layer.

Ω End of Section

## C20: Demolition

### General Requirements

#### 130 Groundworks

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

#### 140 Bench marks

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

#### 150 Features to be retained

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1. General: Keep in place and protect the following: as stated on the drawings.

### Services affected by deconstruction/ demolition

#### 210 Services regulations

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

#### 220 Location of services

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

#### 230 Services disconnection arranged by contractor

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

#### 240 Disconnection of drains

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

#### 250 Live foul and surface water drains

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1. Drains and associated manholes, inspection chambers, gullies, vent pipes and fittings
  - 1.1. Protect; maintain normal flow during deconstruction/ demolition.
  - 1.2. Make good any damage arising from deconstruction/ demolition work.
  - 1.3. Leave clean and in working order at completion of deconstruction/ demolition work.
2. **Other requirements:** Provide a post completion camera survey of all drains

### Deconstruction / Demolition work

#### 310 Workmanship

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1. **Standard:** Demolish structures in accordance with BS 6187.
2. Operatives
  - 2.1. Appropriately skilled and experienced for the type of work.

2.2. Holding, or in training to obtain, relevant CITB Certificates of Competence.

3. **Site staff responsible for supervision and control of work:** Experienced in the assessment of risks involved and methods of deconstruction/ demolition to be used.

### 350 Adjoining property

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1. **Temporary support and protection:** Provide. Maintain and alter, as necessary, as work proceeds. Do not leave unnecessary or unstable projections.
2. **Defects:** Report immediately on discovery.
3. **Damage:** Minimize. Repair promptly to ensure safety, stability, weather protection and security.
4. **Support to foundations:** Do not disturb.

### 360 Structures to be retained

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1. **Extent:** as indicated on the drawings
2. **Parts which are to be kept in place:** Protect.
3. **Interface between retained structures and deconstruction/ demolition:** Cut away and strip out with care to minimize making good.

### 370 Partly demolished structures

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1. **General:** Leave in a stable condition, with adequate temporary support at each stage to prevent risk of uncontrolled collapse. Make secure outside working hours.
2. **Temporary works:** Prevent overloading due to debris.
3. **Access:** Prevent access by unauthorized persons.

### 410 Unforeseen hazards

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

### 420 Open basements, etc

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1. **Temporary support:** Leave adequate buttress walls or provide temporary support to basement retaining walls up to ground level.
2. **Safety:** Make remaining sections of retaining and buttress walls safe and secure.
3. **Water movement:** Make holes in basement floors to allow water drainage or penetration (depending on water table). Provide a hole for every 10 m<sup>2</sup>, not less than 600 mm in diameter.

## Materials arising

### 510 Contractor's property

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

Ω End of Section

## C40: Cleaning Masonry / Concrete / Metal

### General / Preparation

#### 110A Scope of work

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1. Cleaning of brick walls internally
2. Exact method and specification to be agreed following trials. Allow for the following: grit blast as Clause 452A

#### 111 Scope of work

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1. Cleaning of brick walls externally
2. Exact method and specification to be agreed following trials. Allow for the following: Allow for one pass at 150° at 50 bar of pressure of the Stonehealth Steam DOFF system and allow for a second pass under projecting arrises, Generally As clause 353

#### 112 Scope of work

---

1. Cleaning of terracotta
2. Exact method and specification to be agreed following trials. Allow for the following: Allow for two passes at 150° at 50 bar of pressure of the Stonehealth Steam DOFF system and allow an additional pass to projecting arrises, under projecting aris's, to the base of columns, top of sills and the tops of all copings, generally as clause 353

#### 113 Scope of work

---

1. Cleaning of concrete stairs
2. Exact method and specification to be agreed following trials Allow for the following: Allow for one pass at 150° at 50 bar of pressure of the Stonehealth Steam DOFF system. Generally, as clause 353.

#### 114 Scope of work

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1. Cleaning of iron balustrades
2. Exact method and specification to be agreed following trials by an approved conservator (Specification of abrasives, jet type and pressure to be agreed following trials). Allow for the following: Allow for dry Grit blasting entire balustrade, Resultant surface to be to final coating manufacturers recommendations

#### 120 Related repair and remedial works

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1. **Work to be carried out before cleaning work:** Pointing to joints in masonry and terracotta, as section C41 and F10

#### 160A Protection

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1. **Surfaces not designated for cleaning:** Prevent damage by masking, including marking and staining.
2. **Existing openings:** Prevent ingress of water, cleaning agents, and detritus.
  - 2.1. **Vents and grilles:** Seek instructions before sealing up.
3. **Temporary mechanical fastenings:** not permitted.
4. **Additional protection:** - All terracotta to be masked off and temporarily sheeted to protect it from damage by cleaning of adjacent materials. Building to be sealed generally during abrasive cleaning of interior to prevent escape of dust and debris.

#### 175 Control and disposal of wash water and detritus

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1. **Disposal:** Safely. Obtain approvals from relevant Authority.

2. **Control of wash water:** Collect and divert to prevent ingress and damage to building fabric and adjacent areas.
3. **Above and below ground drainage systems:** Keep free from detritus and maintain normal operation.

#### 190 Cleaning generally

---

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

#### 215 Record of cleaning works

---

1. **Written report:** Record cleaning methods and procedures used for each type of surface and deposit.
  - 1.1. **Content:** Relevant attributes of cleaning methods used including:
    - 1.1.1. Equipment and settings.
    - 1.1.2. Dwell times.
    - 1.1.3. Number of applications.
    - 1.1.4. Ambient temperatures.
2. **Additional documentation:** None
3. **Submission:** At completion of cleaning works.

#### 220 Conditions of surfaces

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1. Walling and associated features/components are stable and that preparatory
2. repair works are complete.
3. Fixtures and fittings have been removed.

#### 230 Trial samples

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1. **Trial sample reference:** Brickwork cleaning, internally
  - 1.1. **Surface:** Clay brick
  - 1.2. **Location/ Size:** 3 panels, each of 1 sq/m, location to be agreed
  - 1.3. **Type of soiling:** Dirt and plant growth generally
  - 1.4. **Cleaning methods:** Abrasives as clause 452
2. **Records:** Maintain written records for each trial area, including cleaning methods and conditions, to enable replication of results elsewhere.

#### 231C Trial samples

---

1. **Trial sample reference:** Brickwork cleaning externally
  - 1.1. **Surface:** Clay brick
  - 1.2. **Location/ Size:** 3 panels, each of 1 sq/m, location to be agreed
  - 1.3. **Type of soiling:** Dirt and plant growth generally
  - 1.4. **Cleaning methods:** To be agreed, allow for the following: Pressurized steam cleaning as clause 353
2. **Records:** Maintain written records for each trial area, including cleaning methods and conditions, to enable replication of results elsewhere.

### 232 Trial samples

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1. **Trial sample reference:** Terracotta
  - 1.1. **Surface:** Terracotta
  - 1.2. **Location/ Size:** 3 panels, each of 1 sq/m, locations to be agreed
  - 1.3. **Type of soiling:** Atmospheric soiling, biological growths and dirt
  - 1.4. **Cleaning methods: To be agreed, allow for the following:** Pressurized steam cleaning as clause 353
2. **Records:** Maintain written records for each trial area, including cleaning methods and conditions, to enable replication of results elsewhere.

### 233 Trial samples

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1. **Trial sample reference:** Existing concrete stairs, internally
  - 1.1. **Surface:** Concrete
  - 1.2. **Location/ Size:** 3 panels 1 tread each, location to be agreed
  - 1.3. **Type of soiling:** Dirt generally
  - 1.4. **Cleaning methods: To be agreed:** - Abrasives, Chemicals and Steam
2. **Records:** Maintain written records for each trial area, including cleaning methods and conditions, to enable replication of results elsewhere.

### 240 Temperature conditions

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1. Do not use water-based cleaning procedures when air and surface temperatures are 5°C or less. Protect damp surfaces from frost during drying out periods.
2. Do not use any chemicals when surface temperatures are below those recommended by the manufacturer.

### 250 Cleaning generally

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1. Use operatives who are skilled and stone health approved, having been trained and experienced with the equipment, materials and procedures for the type(s) of cleaning and surfaces specified. Provide evidence of their training and experience to the CA on request.
2. Confine cleaning to designated area(s)/surfaces. Do not allow cleaning agents or residues to stray onto adjacent or protected surfaces.
3. Clean, collect and safely dispose of debris from scaffolding, ledges, etc. at the end of each day. Prevent debris falling to lower levels.
4. Prevent marking of cleaned areas from dirt and debris splashing up from scaffold boards.

### 280A Control of water

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1. Provide suitable temporary catchment boards/sheeting, gutters etc. to collect wash water and divert it to suitable discharge points. Alternatively, or for internal applications use the Stonehealth DOFF Recovery System in conjunction with the Stonehealth DOFF System, ensuring that the waste water is expelled from the discharge hose into the correct catchment area. Location of catchment area(s)
2. Ensure that water does not penetrate interiors and damage finishes, etc. Monitor interior of building and seek instructions when any signs of damp appear internally.
3. Do not let wash water build up at outlets or above levels of flashings or anywhere where there is risk of it penetrating and causing damage to the building fabric.

## Products / Equipment

### 312 Surface biocides

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1. **Types:** Registered by the Health and Safety Executive (HSE) and listed on the HSE website under non-agricultural pesticides.

2. **Compatibility with surface:** Free from staining or other harmful effects.

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**322A Abrasive cleaning equipment**

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1. Externally
2. **Type:** not permitted to terracotta and face brickwork without prior approval

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**322B Abrasive cleaning equipment**

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1. For internal use
2. **Manufacturer/ Supplier:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Nozzle types:** Contractor's choice
4. **Abrasives:** Subject to site trials

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**332 Water spray (mounted nozzles)**

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1. Equipment
  - 1.1. **Spray/ Nozzle types:** Subject to site trials
  - 1.2. **Nozzles:** Position and direction adjustable, relative to surfaces and profiles.
  - 1.3. **Controls:** as approved trial sample to achieve required finish

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**342A Pressurized water cleaning equipment**

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1. **Type:** [not permitted without prior approval].

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**353 Steam-based cleaning system**

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1. To terracotta and brickwork
2. **Manufacturer:** Stonehealth Ltd.
  - 2.1. **Web:** [www.stonehealth.com](http://www.stonehealth.com).
  - 2.2. **Email:** [info@stonehealth.com](mailto:info@stonehealth.com).
  - 2.3. **Tel:** +44 (0)1453 540600.
  - 2.4. **Product reference:** DOFF Steam Cleaning System
3. **Power supply:** 110 V, 50 Hz, 30 amp
4. **Method:** Generally, apply steam at the lowest pressure and temperature that will remove/soften/loosen deposits without abrading or disrupting the surface(s). If removing biological growth, it may be possible to be removed at a lower temperature but to ensure that the re-growth does not occur, the full temperature of 150°C should be applied over the whole surface in order to kill off the spores. Exact method is to be agreed following trials.

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**362A Chemical agents**

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1. **Type:** [not permitted without prior approval].

## **Application**

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**412 Removal of loosely adhered deposits**

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1. **Timing:** Before commencement of other cleaning methods.
2. **Surfaces:** Prevent damage, including abrasion.

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**422 Biocide application**

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1. **Preparation:** Remove loose growths
2. **Surfaces:** Prevent damage, including abrasion.
3. **Biocide treatment:** Appropriate solutions to kill growths and inhibit further growths.

### 3.1. Dead growths: Remove.

#### 442A Abrasive blocks

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1. For use on and heavily stained brick walls and terracotta
2. **Types:** Suitable grades of carborundum or gritstone.
3. **Application:** Lubricate with water. Remove detritus.
4. **Abrasive power tools:** Prohibited.

#### 452A Abrasive cleaning

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1. To masonry internally
2. **Type:** Grit blasting.
3. **Existing surfaces:** Minimize abrasion as far as possible.
  - 3.1. **Ingrained deposits:** Seek instructions.
4. **Equipment settings (including nozzle type and distance from surface):** Adjust regularly to achieve optimum cleaning performance for each surface.
5. **Detritus:** Remove with clean water.
6. **Special Requirements:** All existing external openings in the building to be sealed whilst undertaking such cleaning, to minimise dust and disturbance beyond the site.

#### 462 Water sprayed cleaning (mounted nozzles)

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

#### 500A Chemical cleaning

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

#### 520 Completion

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1. Obtain CA's approval of cleaning to each area/surface and before removal of temporary protection.
2. After removal of temporary protection, thoroughly clean all glazing, window frames, doors, sills and other affected surfaces.
3. Check that all gutters, hoppers, downpipes and gullies are free from obstruction and debris arising from cleaning works.
4. Give the CA 1 week notice before striking each stage of scaffolding, to allow for final inspections.
5. Complete all necessary documentation, review and record final results with supportive drawings and photographs.

Ω End of Section

## C41: Repairing / Renovating/ Conserving masonry

### Clauses

#### 2 Untitled

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1. To be read with preliminaries/ general conditions

### General / Preparation

#### 110 Scope of work

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1. **Record terracotta to be replaced:** Before starting work, assist the CA to record bonding patterns, joint widths, special features, etc.
2. **Identification of terracotta units to be removed, replaced or repaired:** Mark clearly, but not indelibly, on face of masonry units or parts of units to be cut out and replaced. Transcribe markings to drawings/ photographs.
3. Identify areas of masonry (brick and terracotta) that require repointing, agree areas that are to be repointed with CA before commencement.

#### 120 Site inspection via scaffold

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1. **Purpose:** To confirm, agree and identify the type and extent of repair/ renovation/ conservation work shown on drawings and described in survey reports and schedules of work.
2. **Parties involved:** CA, Structural Engineer, specialist terracotta supplier and contractor.
3. **Timing:** to be agreed.

#### 125 Removal of existing

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1. **Items to be removed and reinstated on completion of repair work:** As architect's drawings.
2. **Removal:** Carefully remove and set aside for re-use.
3. **Identification:** As clause 110.
4. **Storage:** Protect against damage and store on site until required.
5. **Items unsuitable or not required for reuse:** Remove from site.
6. Do not damage existing terracotta during removal and replacement.

### Workmanship generally

#### 150 Power tools

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1. **Usage for removal:** Permitted only with the CA's prior approval and following submission of the contractor's proposed method statement(s).
2. **Other requirements:** non-percussive drills to be used at all times.

#### 160 Protection

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1. Prevent overstressing during transit, storage, handling and fixing. Store on level bearers clear of the ground, separated with resilient spacers. Protect from adverse weather and keep dry. Prevent soiling, chipping and contamination. Lift units at designed lifting points, where provided.
2. Prevent damage to both existing terracotta being retained and new units by using suitable nonstaining slats, boards, tarpaulins, etc. All arrises, projecting features and delicate, friable surfaces, etc are particularly to be protected. Prevent mortar/ grout splashes and other staining and marking on facework generally. Remove protection on completion of the work.

### 165 Protection of terracotta/ masonry being retained insitu

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1. Prevent damage to the arrises of all terracotta being retained via metal templates, whilst the adjacent units are being cut-out. remove protection on completion of the work.

### 170 Disturbance to retained terracotta/masonry

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1. All terracotta and/or masonry in the vicinity of repair works that is to be retained is to be disturbed as little as possible.
2. **Existing retained terracotta/masonry:** To be protected whilst the existing is being removed as clauses 160 and 165, do not cut or adjust to accommodate new or reused units.
3. **Retained loose masonry units and those vulnerable to movement during repair works:** Prop or wedge so as to be firmly and correctly positioned.

### 185 Adverse weather

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1. **General:** Do not use frozen materials or lay masonry units on frozen surfaces.
2. **Air temperature:** Do not bed masonry units or repoint:
3. In cement gauged mortars when ambient air temperature is at or below 3°C and falling or unless it is at least 1°C and rising, unless mortar has a minimum temperature of 4°C when laid and the masonry is adequately protected.
4. **In hydraulic lime:** sand mortars when ambient air temperature is at or below 5°C and falling or unless it is at least 3°C and rising.
5. **Temperature of the work:** Maintain above freezing until mortar has fully set.
6. **Rain, snow and dew:** Protect masonry by covering during precipitation, and at all times when work is not proceeding.
7. **Hot conditions and drying winds:** Prevent masonry from drying out rapidly.
8. **New mortar damaged by frost:** Rake out and replace.

### 190 Control samples

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1. **General:** Complete an area of each of the following types of work, and arrange for inspection before proceeding with the remainder:
  - 1.1. **Cutting out:** allow for 3 existing individual blocks to be cut out, tagree and approve contractors required methodology.
  - 1.2. **Repointing:** allow for 3 samples, tagree and approve method of removing existing joints.
  - 1.3. **Repointing:** allow for 6 samples, tagree and approve colour and texture of new mortar.
  - 1.4. **Replacement:** allow for 6 samples to be replaced, tagree and approve method of working, colour and texture of new terracotta components.
  - 1.5. **Inserts:** allow for 3 samples to be replaced, tagree and approve method of working.
  - 1.6. **Grouting:** allow for 3 samples, tagree and approve method of grouting existing joints.
  - 1.7. **Relaying:** allow for 3 new terracotta blocks to be replaced, tagree and approve method of working.

## Materials / Production / Accessories

### 210 Advance registration: JCT subcontract (intermediate named subcontract) icsub/nam

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1. **Material registered in advance by the Employer:** Obtain from the supplier named in the JCT Subcontract (Intermediate named subcontract) ICSUB/NAM document.
2. **Ordering:** Supersede the Employers registration and place an order in accordance with this named subcontractor covering price, supply and delivery of all materials to suit the progress of the work.

## 225 Material samples

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1. **Representative samples:** Submit samples of new terracotta before placing any orders and sufficient to represent range of tonal variations proposed.
2. **Retention of samples:** Unless instructed otherwise, retain samples on site for reference. Protect from damage and contamination.

## 275 Replacement terracotta units

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1. **Manufacturer/ Supplier:** Contractors to Submit Proposals
2. **Quality:** Free from imperfections that will adversely affect durability and in accordance with BS EN 771-1:2011.
3. **Finish/ Colour/ Texture:** To match existing as clause 215.
4. **Dimensions:** To match existing units to ensure all joint widths replicate the existing.
5. **Holes for fixings:** Accurately aligned and positioned.
6. **Drain holes:** Provide where there is any risk of water entering voids in exposed blocks in copings, cornices and projecting features, etc.
7. **Marking:** Mark each unit clearly and indelibly on a concealed face to indicate position in the finished work.

## 281 Fixings for replacement terracotta

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1. **Type:** As required contractor to Submit proposals.
2. **Material:** Austenitic stainless steel.
3. **Size, strength and number:** As necessary to resist loads likely to occur during the life of the building, and to prevent lateral displacement or pulling apart of the construction.

## 285 Repairing existing terracotta units

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1. **Manufacturer/ Supplier:** To be agreed.
2. **Quality:** Free from imperfections that will adversely affect durability.
3. **Finish/ Colour/ Texture:** To match existing as clause 215.
4. **Dimensions:** To match existing units to ensure all joint widths replicate the existing.
5. **Holes for fixings:** Accurately aligned and positioned.
6. **Drain holes:** Provide where there is any risk of water entering voids in exposed blocks in copings, cornices and projecting features, etc.
7. **Marking:** Mark each unit clearly and indelibly on a concealed face to indicate position in the finished work.

## Dismantling / Rebuilding

### 310 Dismantling terracotta/masonry for reuse

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1. **Units to be reused:** Remove carefully and in one piece whilst protecting existing terracotta/masonry as clause 165.
2. **Treatment:** Carefully clean off:
3. All old mortar within joints using flat scrapers and/or chisels.
4. Remove all organic growths and dirt, using clean soapy water and nylon brushes.
5. Leave units in a clean and suitable condition for rebuilding.
6. **Identification:** Mark each unit clearly and indelibly on a concealed face, indicating its original position in the construction. Transcribe markings to drawings/ photographs.

### 320 Rebuilding terracotta

---

1. **Replacement materials:** Terracotta as clause 275 and 310.

2. **Mortar:** As section Z21, the mortar being as dry as possible whilst still being workable:
3. **Mix: 1:3 hydraulic lime (NHL 3.5):** sand/stone dust
4. **Sand source/ type:** Well graded from 1.18mm sieve size down.
5. **Additives:** Dust, well graded from 1.18mm sieve size down, to be added to ensure the new mortar matches the existing in both colour and texture.
6. **Grouting of voids:** as clause 390.
7. **Fixings:** as clause 281.
8. **Rebuilding:** To match existing face and joint lines, joint widths and bonding. Adequately bond to retained work/ backing masonry, as appropriate.
9. **Joint surfaces:** Dampen, as necessary, to control suction.
10. **Laying masonry units:** On a full bed of mortar, perpend joints filled.
11. **Exposed faces:** Remove mortar and grout splashes immediately.
12. **Joints:** Flush pointed to match approved sample as clause 190.
13. **Other requirements:** all to match existing.

### 320A Rebuilding brickwork

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1. **Replacement materials:** Brick as clause F10.111/F10.230
2. **Mortar:** As section Z21, the mortar being as dry as possible whilst still being workable:
3. **Mix: 1:2.5. - hydraulic lime (NHL 3.5):** sand/stone dust.
4. **Rebuilding:** To match existing face and joint lines, joint widths and bonding. Adequately bond to retained work/ backing masonry, as appropriate.
5. **Joint surfaces:** Dampen, as necessary, to control suction.
6. **Laying bricks:** On a full bed of mortar, perpend joints filled.
7. **Exposed faces:** Remove mortar and grout splashes immediately.
8. **Joints:** Flush pointed to match approved sample
9. **Other requirements:** all to match existing.

## Replacements and insertions

### 330 Preparation for replacement terracotta

---

1. **Defective material:** Carefully remove to the extent agreed following protection of adjacent units as clause 165. Do not disturb, damage or mark any adjacent terracotta/masonry being retained.
2. **Existing metal fixings, frame members, etc:** Report when exposed for subsequent instruction.
3. **Recesses:** Remove projections and loose material; leave joint surfaces in a suitable condition to receive replacement units. Protect from adverse weather if units are not to be placed immediately

### 340 Terracotta inserts

### 375 Replacement of terracotta

---

1. **Terracotta:** As clause 275.
2. **Filling to blocks:** as clause 400.
3. **Mortar:** As section Z21, the mortar being as dry as possible whilst still being workable:
4. **Mix: hydraulic lime (NHL 3.5):** sand/stone dust ~ 6:1.
5. **Sand source/ type:** Well graded from 1.18mm sieve size down.
6. **Additives:** Dust, well graded from 1.18mm sieve size down, to be added to ensure the new mortar matches the existing in both colour and texture.
7. **Grouting of voids:** as clause 390.
8. **Fixings:** As clause 281.

9. **Joints:** Pointed to match approved sample as clause 190.
10. **Other requirements:** Provide a sample for the CA's approval as clause 190

### 385 Laying replacement units

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1. **Exposed faces of new material:** Keep to agreed face lines.
2. **Faces, angles and features:** Align accurately. Set out carefully to ensure satisfactory junctions with existing masonry and maintain existing joint widths.
3. **Joint surfaces:** Dampen to control suction as necessary.
4. **Laying units:** On a full bed of mortar, all joints filled.
5. **Exposed faces:** Keep clear of mortar and grout.
6. **Joints:** Pointed to match approved sample as clause 190.
7. **Other requirements:** Provide a sample for the CA's approval as clause 190.

### 390 Grouting joints/voids

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1. **Grout mix:** Limelite Heritage Grout 1-5.
2. **Manufacturer:** Tarmac Building Products (t) 01283 550060 (e) cmssales&distribution@tarmac.co.uk.
  - 2.1. **Location: Joints that cannot be repointed or fully filled with bedding mortar:** Grout thoroughly to fill all voids.
  - 2.2. **Grouting:** Keep grout back from exposed face to allow for the depth of pointing, using an approved temporary sealing material e.g., tow (hemp) or clay. Prevent grout staining exposed face.
  - 2.3. **Other requirements:** Provide a sample for the CA's approval as clause 190.

### 395 Installing terracotta inserts

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1. **Pockets to receive inserts:**
2. Cut out accurately. Undercut sides of pocket, where necessary, to provide space for bonding material.
3. Adjust depth so that insert stands flush with existing terracotta.
4. Clean out thoroughly.
5. **Inserts:** Cut to the smallest regular shape necessary to replace the defective area and provide a firm seating in order to minimise the quantity of terracotta that has to be removed. Install accurately and securely.
6. **Exposed faces:** Keep clear of bonding material.
7. **Existing joint widths:** Maintain, do not bridge joints

### 400 Filling terracotta blocks

---

1. **Voids in blocks: Fill with un-compacted, semidry, 1:1–2 bedding mortar:** coarse aggregate mix, of uniform consistence. Infill to be carried out at least 24 hours in advance of fixing blocks.
2. **Coarse aggregate:** Weak mix, no-fines concrete.
3. **Existing surfaces:** Dampen to control suction as necessary.

### 405 Bonded pins/dowels

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1. **Size:** The size location and direction of each dowel should be chosen to minimise their impact but maximise their effect (often the diameter of a dowel may be reduced by careful consideration of the orientation), each dowel being individually cut to length.
2. **Material:** Threaded and/or helical austenitic stainless steel of sufficient tensile strength to perform the task for which they are being used. They can be flat or round; their dimensions being dictated by each situation.
3. **Adhesive:** epoxy-set or grout-set injected into all holes.

**4. Holes for dowels:**

5. Suitably sized and accurately aligned in masonry background and in rear of replacement/ insert terracotta.
6. Drilled using diamond tipped bits slightly thicker than the dowel, taking care to drill perpendicular to the broken surface.
7. The holes and break surface are flushed with clean water, ensuring all are clean and dry before applying the resin.
8. **Other requirements:**
9. Do not use adhesive to bond terracotta at joints unless instructed.
10. All components to be dry assembled to check for suitable fit.
11. Timber wedges are to be used to support individual components until the resin has set, alignment therefore being perfect.
12. Point to match approved sample as clause 190.

**410 Corroded metal fixings**

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1. **Removal:** Where instructed cut out carefully, causing the least possible disturbance to surrounding masonry. Remove associated rust debris.
2. **Replacement:** Compatible fixings, as clause 281.

**420 Temporary distance pieces for joints**

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1. **Material:** Lead or stainless steel.
2. **Removal:** When mortar/ grout is sufficiently strong to take loading without compression.

**Crack repairs / ties / reinforcement****610 Mortar repair of cracks**

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1. **Mortar:** As section Z21, the mortar being as dry as possible whilst still being workable:
2. **Mix: hydraulic lime (NHL 3.5):** sand/stone dust ~ 6:1.
3. **Sand source/ type:** Well graded from 1.18mm sieve size down.
4. **Additives:** Dust, well graded from 1.18mm sieve size down, to be added to ensure the new mortar matches the existing in both colour and texture.
5. **Preparation:**
6. Clean out cracks to remove debris, dust and dirt and flush with clean water.
7. Dampen recesses, as necessary, to control suction.
8. **Applying mortar:** Press well into cracks so that they are fully filled. Ensure that mortar does not encroach upon exposed faces. Point to match approved sample as clause 190.

**620 Resin injection repair of cracks**

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1. **Grout mix:** Crackbond TE Self-Mix non shrink pure epoxy resin.
2. **Manufacturer:** Hellifix Structural solutions (t) 02087355200 (e) sales@hellifix.co.uk.
  - 2.1. **Preparation:**
  - 2.2. **Drill holes using diamond tipped bits at 75mm intervals along the crack and to its maximum depth. Hole diameter to be the smallest possible:** 3mm minimum and no greater than the width of the crack.
  - 2.3. Clean out all holes and cracks to remove debris, dust and dirt and flush with clean water.
  - 2.4. Dampen recesses, as necessary, to control suction.
  - 2.5. **Applying grout:** Inject grout into all cracks, holes and internal cavities, filling voids from the lowest point of the crack upwards and using a grout pump capable of limiting the pressure to between 8 to 10 psi.

- 2.6. **Exposed faces:** Keep clean and free from stains and using a temporary filler if required (e.g. clay or plasticine), to avoid spillage.
- 2.7. **Finishing:** Point to match approved sample as clause 190.

#### 625 Grout injection repair of cracks

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1. **Grout mix:** Limelite Heritage Grout 1-5.
2. **Manufacturer:** Tarmac Building Products (t) 01283 550060 (e) cmssales&distribution@tarmac.co.uk.
  - 2.1. **Preparation:**
  - 2.2. **Drill holes using diamond tipped bits at 75mm intervals along the crack and to its maximum depth. Hole diameter to be the smallest possible:** 3mm minimum and no greater than the width of the crack.
  - 2.3. Clean out all holes and cracks to remove debris, dust and dirt and flush with clean water.
  - 2.4. Dampen recesses, as necessary, to control suction.
  - 2.5. **Applying grout:** Inject grout into all cracks, holes and internal cavities, filling voids from the lowest point of the crack upwards and using a grout pump capable of limiting the pressure to between 8 to 10 psi.
  - 2.6. **Exposed faces:** Keep clean and free from stains and using a temporary filler if required (e.g. clay or plasticine), to avoid spillage.
  - 2.7. **Finishing:** Point to match approved sample as clause 190.

#### 630 Ties/ brackets/cramps

---

1. **Material:** austenitic stainless steel.
2. **Type/ Size:** To suit individual condition.
3. **Holes:**
4. Suitably sized and accurately aligned in masonry background and in rear of replacement/ insert terracotta.
5. Drilled using diamond tipped bits, taking care to drill perpendicular to the broken surface.
6. All holes to be flushed with clean water, ensuring all are clean and dry before fixing ties and/or brackets and/or cramps.
7. **Adjacent masonry:** Do not damage during drilling. Keep cavities behind facings free from debris.
8. **Ends of ties:** Keep back from face of masonry to allow for making good.
9. **Exposed masonry faces:** Keep clean and free from grout/ mortar stains.

#### 640 Pinning

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1. **Dowels/ Pins:** As small as possible, several small items being used rather than 1 single large item.
2. **Type:** Austenitic stainless steel.
3. **Diameter:** Various.
4. **Additional requirements:**
5. Threaded or helical profiling.
6. If more than one dowel/pin is required, none should be parallel and/or perpendicular to another to provide a suitable anchorage.
7. **Resin:** Epoxy-set or grout-set, depending on location.
8. **Holes:**
9. Drill carefully, sloping downwards into background and using diamond tipped bits. Remove drilling dust and debris for use within the mortar.
10. Flush with clean water, ensuring all are clean and dry before applying the resin/grout.
11. **Filling holes:**

12. Check that dowel lengths are correct before filling with resin/grout.
13. Use sufficient resin/grout so that when the dowel/pin is inserted the infill is dispersed to achieve an effective repair.
14. **Exposed faces:** Keep clean and free from resin stains. Use temporary plugging material and/ or isolating membranes as necessary.
15. **Clearances:** Keep ends of all fixings and resin/grout back from the face of all terracotta.
16. **Making good:** Point to match approved sample as clause 190.
17. **Other requirements:**
18. All components to be dry assembled to check for suitable fit.
19. Timber wedges are to be used to support individual components until the resin/grout has set.

## Pointing / Repointing

### 805 Preparation for repointing

---

1. Identify and agree with CA all areas of pointing to be removed.
2. Tools for the work (raking out and pointing) to be approved by the CA prior to commencement. Use suitable jointing, plugging and toothed masonry chisels; hacksaw blades and bent spikes may also be used. On no account should a wedge-shaped tool (e.g. chisel) or hacking hammers be used. Mechanical discs and other power tools shall not be used. Carefully rake out by hand existing mortar joints to a depth twice the width of the joint, but in no case less than 30mm, except where this will cause damage to the substrate e.g. to terracotta.
  - 2.1. Take care not to damage arrises of the masonry.
3. Clean down the wall surface (including joints) with a soft or stiff bristle brush working from the top to the bottom of the wall.
4. Areas of algae or lichen shall be washed with a biocide solution, on the dry surface, only where instructed by the CA.
5. Dampen down dry any dry background to prevent excessive suction. The prepared surface shall be thoroughly dampened using a hose with spray head directed on the wall. The wall should then be left for a sufficient period for the free surface water to dry out. The wall should be dampened again 1-2 hours before the commencement of work, dependent upon prevailing conditions.
6. As the work progresses, the joints should not be allowed to dry out before the application of the mortar and should be dampened, but not soaked, repeatedly by the use of sprayers.
7. Sitting water should be mopped away before work commences to avoid slipping out of the joint and to reduce smearing on the face of the wall.
8. All raked joints to be inspected by CA.

### 810 Raked joints

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1. To be inspected by the CA before repointing.
  - 1.1. Remove all dust and debris, saving for reuse within new mortar.

### 815A Application generally

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1. Keep wall damp as previously described above. Roughen up old mortar to provide a good key for new work.
2. Introduce mortar to the joint with a suitably sized tool such as a pointing iron or jointer, no wider than the joint itself.
3. The mortar should be pressed firmly into the joint right back onto the prepared face, or as far back into the joint as possible. The joint should be packed full of as dry a mix as is workable.
4. Compress work as it stiffens, mortar on the face of the joint first being exposed to the air, as a leathery crust forms this should be broken down with a stiff brush as clause 850.
5. Do not overwork the material, as this will bring fines to the surface, blocking the pores and increasing the risk of shrinkage.

6. Prevent excessively rapid or localised drying out by periodic damping down with a fine spray and covering with Hessian and/or polythene sheeting as the work proceeds.
7. **Lime mortars take much longer to go off than gypsum or cement products:** care should be taken not to remove protection too early, before the pointing has gained sufficient strength to withstand rain or frost.
8. The overall impression shall be of a smooth, unified finish with the faces of the masonry units still slightly proud of the work.

#### 820 Repointing of terracotta

---

1. **Preparation of joints:** As clause 810.
2. **Mortar:** As section Z21, the mortar being as dry as possible whilst still being workable:
3. **Mix: 1:3 / NHL 3.5:** sand/stone dust.
4. **Sand source/ type:** Well graded from 1.18mm sieve size down.
5. **Additives:** Dust, well graded from 1.18mm sieve size down, to be added to ensure the new mortar matches the existing in both colour and texture.
6. **Joint profile/ finish:** To match approved sample as clause 190.
7. **Other requirements:**
8. As clause 840.
9. To be carried out only once the fixing of all components has fully set.

#### 821 Repointing of brickwork

---

1. **Preparation of joints:** As clause 810.
2. **Mortar:** As section Z21, the mortar being as dry as possible whilst still being workable:
3. **Mix: 1:2.5 / NHL 2:** sand/stone dust.
4. **Sand source/ type:** Well graded from 1.18mm sieve size down.
5. **Additives:** Dust, well graded from 1.18mm sieve size down, to be added to ensure the new mortar matches the existing in both colour and texture.
6. **Joint profile/ finish:** To match approved sample as clause 190.
7. **Other requirements:**
8. As clause 840.
9. To be carried out only once the fixing of all components has fully set.

#### 840 Pointing with tools/ irons

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1. **General:** Press mortar well into joints using pointing keys that fit into the joints, so that they are fully filled.
2. **Face of masonry:** Keep clear of mortar. Use suitable temporary adhesive tape on each side of joints where necessary. Finish joints neatly.

#### 850 Finish

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1. Finish exposed joints neatly and consistently as the work proceeds. After the initial set has taken place, stipple joints with a stiff brush to remove laitance and give a coarse texture, to match existing adjacent walls in appearance generally.

Ω End of Section

## C51: Repairing / Renovating / Conserving timber

### General

#### 110 Inspection

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1. **Purpose:** To confirm nature and extent of repair/ renovation/ conservation work shown on drawings and described in survey reports and schedules of work.
2. **Parties involved:** Contract administrator
3. **Timing:** when lath and plaster ceilings have been removed.
4. **Instructions issued during inspection:** Confirm in writing, with drawings and schedules as required, before commencing work

#### 160 Timber supplier

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1. **Supplier:** Contractor's choice

### Products

#### 360 Softwood for joinery repairs

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1. **Description:**
2. **Species:** air dried timber to closely match the existing windows to avoid differential movement
3. **Quality:** Generally to BS EN 942; free from decay and insect attack (except pinhole borers).
  - 3.1. Appearance class: Class J2.
4. **Treatment:** to NBS section Z12 and Wood Protection Association Commodity Specification and compatible with the paint system
5. **Moisture content on delivery:** 9-13%

#### 370 Hardwood for joinery repairs

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1. **Description:**
2. **Species:** Any Hardwood
3. **Quality:** Generally to BS EN 942; free from decay and insect attack (except pinhole borers).
  - 3.1. Appearance class: Class J10.
4. **Treatment:** Organic solvent to NBS section Z12 and Wood Protection Association Commodity Specification C2
5. **Moisture content on delivery:** 9-13%

#### 480 Screws

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1. **Description:** Contractor's choice
2. **Standard:** As section Z20.
3. **Material:** Stainless steel
4. **Tensile strength (minimum):** 550 N/mm<sup>2</sup>
5. **Finish as delivered:** None

#### 530A Nonferrous dowels

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1. **Description:** Oak
2. **Material:** OAK
3. **Manufacturer:** contractors' choice
  - 3.1. **Product reference:** contractors' choice

## Execution

### 600 Workmanship

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1. **Skill and experience of site operatives:** Appropriate for types of work on which they are employed.
  - 1.1. **Documentary evidence:** Submit on request.

### 610 Temporary supports/ propping

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1. **General:** Provide adequate temporary support at each stage of repair work to prevent damage, oversteering or uncontrolled collapse of any part of the structure.
2. **Bearings for temporary supports/ propping:** Suitable to carry loads throughout repair operations.

### 620 Protection of timber and wood components before and during installation

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1. **Storage:** Keep dry, under cover, clear of the ground and with good ventilation. Support sections/ components on regularly spaced, level bearers on a dry, firm base.
2. **Handling:** Do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.

### 640 Prototypes

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1. **General:** Prepare one of each of the following items and arrange for inspection before starting repetitive fabrication: Jambs, meeting rails stiles and glazing bars to repaired windows.

### 650 Dimensions generally

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1. **Site dimensions:** Take as necessary before starting fabrication.
  - 1.1. **Discrepancies with drawings:** Report without delay and obtain instructions before proceeding.

### 670A Cross section dimensions of non-structural hardwood

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1. For the repair of windows
2. Dimensions and profiles are to exactly match existing.
3. **Maximum permitted deviations:** NONE

### 680 Warping of timber

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1. **Bow, spring, twist and cup:** Not greater than the limits set down in BS 4978 or BS EN 14081-1 for softwood, or BS 5756 for hardwood

### 690 Processing treated timber

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1. **Cutting and machining:** Carry out as much as possible before treatment.
2. **Extensively processed timber:** Retreat timber sawn lengthways, thickened, planed, ploughed, etc.
3. **Surfaces exposed by minor cutting and/ or drilling:** Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

### 700 Wood components – as delivered finish

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1. **Components to be painted:** Primed
2. **Components to be clear finished:** Natural

### 740A Removal of existing decorative/ protective finish

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1. **Description:** Lath and plaster ceiling finish
2. **Extent:** Remove completely back to bare wood.

3. **Method:** carefully hack of lath and plaster and remove existing nails

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#### 750 Cleaning dirty or stained wood

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1. **Generally:** Scrub with neutral pH soap and clean, warm water.
2. **Old varnish:** Remove using mixture of turpentine (not turpentine substitute) and acetone in proportions determined by experiment, followed by washing down.

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#### 761 Repair of members - cutting out members

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1. To shopfronts.
2. **Extent of timber removal:** Cut out full cross section of member where wood is defective or decayed, plus: 100 mm of sound wood.
3. **Distance from face of support to cut end of existing timber:** Obtain instructions if dimension exceeds: 500 mm
4. **Joint profile:** Bevel splice jointed

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#### 765 Repair/replacement of shopfront awnings

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1. To shopfronts.
2. Arrange inspection of existing awning by Specialist Restoration Company.
3. Specialist to provide a report and costs for the repair of the existing awning and the provision of a new awning to match the existing on the adjacent shopfront.
4. Examples of restoration work and where applicable samples for approval by CA.

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#### 770A Repair of compression members - piecing in

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1. **Defective wood:** Remove only decayed or defective wood. Finish cut-outs to clean, regular profiles.
2. **Timber inserts:** Cut accurately to fit. Glue and pin in place. Lie of grain to match as closely as possible that of parent timber.
3. **Joint profile:** Splayed half scarf
  - 3.1. **Fixing:** Oak pins

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#### 780 Repair of distorted timber members

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1. **Generally:** Repair to shape that member has assumed.

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#### 790A Pegs for mortise and tenon joints in timber

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1. **Wood species:** Oak.
2. **Condition:** Dry, preferably oven 'baked' before use.
3. **Shape:** Round and tapered.
4. **Second hand pegs:** Do not use.
5. **Peg holes:** Slightly offset such that when pegs are driven home, sections being joined are pulled together.

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#### 850A Glued joints

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1. **Adhesive:** Epoxy resin
  - 1.1. **Compatibility:** Where relevant, obtain manufacturer's confirmation that adhesive is compatible with preservative/ fire retardant treatment.
2. **Glued structural components:** Fabricated to BS 8212 in clean, controlled workshop conditions.

**870 Moisture content testing**

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1. **Procedure:** When instructed, test timber sections with an electrical moisture meter with deep probes, that has been carefully calibrated against oven drying tests or otherwise guaranteed by an independent testing authority.
2. **Test sample:** Test 5% but not less than 10 lengths of each cross-section in the centre of the length.
3. **Test results:** 90% of values obtained to be within the specified range. Provide records of all tests.

Ω End of Section

## D20: Excavating and Filling

### Generally/the site

#### 110 Site investigation

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1. **Report:** A copy will be made available once received.

#### 145 Variations in ground water level

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1. **Give notice:** If levels encountered are significantly different from levels in the site investigation report or previously measured

### Clearance/excavating

#### 168 Site clearance

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1. **Timing:** Before topsoil stripping, if any.
2. **General:** Clear site of rubbish, debris and vegetation. Do not compact topsoil.
3. **Treatment:** Apply suitable residual herbicide to areas to receive gravel surfacing

#### 170 Removing small trees, shrubs, hedges and roots

---

1. **Identification:** Clearly mark trees to be removed.
2. **Small trees, shrubs and hedges:**
  - 2.1. Cut down.
  - 2.2. **Roots:** Grub up and dispose of without undue disturbance of soil and adjacent areas.
3. **Safety:** Comply with HSE/ Arboriculture and Forestry Advisory Group safety leaflets.

#### 220 Stripping topsoil

---

1. **General:** Before beginning general excavation or filling, strip topsoil from areas where there will be regrading, buildings, pavings/ roads and other areas shown on drawings.
2. **Depth:**
  - 2.1. **Remove to an average depth of:** 150 mm
  - 2.2. Give notice where the depth of topsoil is difficult to determine.
3. **Handling:** Handle topsoil for reuse or sale in accordance with clause 225.
4. **Around trees:** Do not remove topsoil from below the spread of trees to be retained.
5. **Site storage:** Not required

#### 221 Treating topsoil

---

1. **Treatment:** Apply a suitable translocated nonresidual herbicide.
2. **Timing:** Not less than two weeks before excavating topsoil.

#### 225 Handling topsoil

---

1. **Standard:** To BS 3882.
2. **Aggressive weeds:**
  - 2.1. **Species:** Included in the Weeds Act, section 2 or the appropriate Wildlife and Countryside Act for the relevant jurisdiction.
  - 2.2. **Give notice:** Obtain instructions before moving topsoil.
3. **Contamination:** Do not mix topsoil with:
  - 3.1. Subsoil, stone, hardcore, rubbish or material from demolition work.

- 3.2. Other soil or material containing aggressive weeds, sharps, plastics and non soil forming materials and notifiable animal or plant diseases.
- 3.3. Oil, fuel, cement or other substances harmful to plant growth.
- 3.4. Other classifications of topsoil.
4. **Multiple handling:** Keep to a minimum. Use topsoil immediately after stripping.

#### 240 Adjacent excavations

---

1. **Requirement:** Where an excavation encroaches below a line drawn at an angle from the nearest formation level of another higher excavation, the lower excavation, all work within it and backfilling thereto must be completed before the higher excavation is made.
2. **Angle of line below horizontal:** 30°
3. **Backfill material:** Compacted general filling

#### 242 Excavations adjacent to existing backfilled trenches

---

1. **Proximity: When width of undisturbed ground between the two excavations will be less than:** 1000 mm
2. **Action:** Assume that the ground between the trenches is unstable and provide side support accordingly.

#### 244 Excavations adjacent to existing foundations

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1. **Prior to commencing excavation:**
  - 1.1. Excavate trial pits adjacent to existing foundations to determine extent and formation levels.
  - 1.2. Allow for inspection of trial pits.
  - 1.3. Allow time for amendment of details if required.
    - 1.3.1. **Time period:** 5 working days
2. **Backfill material to new excavation:** Compacted general filling

#### 250 Permissible deviations from formation levels

---

1. **Beneath mass concrete foundations:** ±25 mm.
2. **Beneath ground bearing slabs and r.c. foundations:** ±15 mm.
3. **Embankments and cuttings:** ±50 mm.
4. **Ground abutting external walls:** ±50 mm, but such as to ensure that finished level is not less than 150 mm below dpc.

#### 270 Foundations generally

---

1. **Give notice if:**
  - 1.1. A natural bearing formation of undisturbed subsoil is not obtained at the depth shown on the drawings.
  - 1.2. The formation contains soft or hard spots or highly variable material.

#### 275 Foundations bearing

---

1. **Requirement:** Foundations are designed to bear on:
  - 1.1. **Strata:** Rock (sandstones and or siltstones) at shallow depths and sloping steeply across the site.
  - 1.2. **Safe bearing capacity (minimum):** 250 kN/.
2. **Give notice@** If the material at the design depth of the foundations does not comply with this description, contains soft or hard spots or highly variable material.

#### 280 Trench fill foundations

---

1. **Excavation:** Form trench down to formation in one operation.

2. **Safety:** Prepare formation from ground level.
3. **Inspection of formations:** Give notice before commencing excavation.
  - 3.1. **Period of notice:** 5 working days
4. **Shoring:** Where inspection of formation is required, provide localised shoring to suit ground conditions.
5. **Concrete fill:** Place concrete immediately after inspection and no more than four hours after exposing the formation.

### 310 Unstable ground

---

1. **Generally:** Ensure that the excavation remains stable at all times.
2. **Give notice:** Without delay if any newly excavated faces are too unstable to allow earthwork support to be inserted.
3. **Take action:** If instability is likely to affect adjacent structures or roadways, take appropriate emergency action.

### 330 Unrecorded features

---

1. **Give notice:** If unrecorded foundations, beds, voids, basements, filling, tanks, pipes, cables, drains, manholes, watercourses, ditches, etc. not shown on the drawings are encountered.

### 360 Excess excavation

---

1. **Excavation taken wider than required:**
  - 1.1. **Backfill:** With well graded granular material
2. **Excavation taken deeper than required:**
  - 2.1. **Backfill:** With well graded granular material or lean mix concrete

### 370 Underground structures in landscape areas

---

1. **Generally:** Remove walls, roads, foundations, disused services, drains, manholes and the like to minimum depth.
2. **Minimum depth below finished levels:**
  - 2.1. **Grass, ground cover and perennial planting:** 500 mm.
  - 2.2. **Shrub planting:** 750 mm.
  - 2.3. **Within 2000 mm of tree planting:** 1000 mm.
3. **Walls and slabs remaining:** In every 10 m<sup>2</sup> of wall or slab, make a drainage hole at least 600 mm diameter.

## Disposal of materials

### 410 Excavated topsoil storage

---

1. **Storage: Stockpile in temporary storage heaps:** on site

### 441 Surplus subsoil

---

1. **Excavated material:** Stockpile in temporary storage heaps.
2. **Retained material:** Spread and level surplus subsoil on site.
  - 2.1. **Locations:** TBC
  - 2.2. **Protected areas:** Do not raise soil level within root spread of trees that are to be retained.
3. **Remaining material:** Remove from site.

### 450 Water

---

1. **Generally:** Keep all excavations free from water until:

- 1.1. Formations are covered.
- 1.2. Below ground constructions are completed.
- 1.3. Basement structures and retaining walls are able to resist leakage, water pressure and flotation.
2. **Drainage:** Form surfaces of excavations and fill to provide adequate falls.
3. **Removal of water:** Provide temporary drains, sumps and pumping as necessary. Do not pollute watercourses with silt laden water.

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**454 Ground water level, springs or running water**

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1. **Give notice:** If it is considered that the excavations are below the water table.
2. **Springs/ Running water:** Give notice immediately if encountered.

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**457 Pumping**

---

1. **General:** Do not disturb excavated faces or stability of adjacent ground or structures.
2. **Pumped water:** Discharge without flooding the site or adjoining property.
3. **Sumps:** Construct clear of excavations. Fill on completion.
  - 3.1. **Locations:** Submit proposals

**Filling**

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**500 Proposed fill materials**

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

---

**510 Hazardous, aggressive or unstable materials**

---

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

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**520 Frost susceptibility**

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1. **General:** Except as allowed below, fill must be non frost susceptible as defined in Highways Agency 'Specification for highway works', clause 801.8.
2. **Test reports:** If the following fill materials are proposed, submit a laboratory report confirming they are non-frost-susceptible:
  - 2.1. Fine grained soil with a plasticity index less than 20%.
  - 2.2. Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve.

- 2.3. Crushed chalk.
- 2.4. Crushed limestone fill with average saturation moisture content in excess of 3%.
- 2.5. Burnt colliery shale.
- 3. **Frost-susceptible fill:** May only be used:
  - 3.1. **At depths below the finished ground surface greater than:** 600 mm
  - 3.2. Within the external walls of buildings below spaces that will be heated. Protect from frost during construction.
  - 3.3. Where frost heave will not affect structural elements.

#### 530 Placing fill

---

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

#### 535 Compaction generally

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- 1. **General:** Compact fill not specified to be left loose as soon as possible after placing.
- 2. **After compaction:** Surface of each layer must be well closed, showing no movement under compaction plant, and without cracks, holes, ridges, loose material and the like.
- 3. **Defective areas:** Remove and recompact to full thickness of layer using new material.

#### 540 Benching infill

---

- 1. **Adjacent areas:** If, during filling the difference in level between adjacent areas of filling exceeds 600 mm, cut into edge of higher filling to form benches 600 mm minimum width and height equivalent to depth of a layer of compacted filling.
- 2. **New filling:** Spread and compact to ensure maximum continuity with previous filling.

#### 610 Compacted filling for landscape areas

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- 1. **Fill:** Material capable of compaction by light earthmoving plant.
- 2. **Filling:** Layers not more than 200 mm thick. Lightly compact each layer to produce a stable soil structure.

#### 617 Highways agency type 1 unbound mixture

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- 1. **Fill:** To Highways Agency 'Specification for highway works', clauses 801 and 803:
  - 1.1. Crushed rock (other than argillaceous rock).
  - 1.2. Crushed concrete.
  - 1.3. Recycled aggregates.
  - 1.4. Crushed non-expansive slag to clause 801.2.
  - 1.5. Well-burned non-plastic colliery shale.
- 2. **Amendments to requirements in Highways Agency 'Specification for highway works':** None
- 3. **Filling:** To Highways Agency 'Specification for highway works', clause 802.

### 618 Highways agency type 2 unbound mixture

---

1. **Fill:** To Highways Agency 'Specification for highway works', clauses 801 and 804:
  - 1.1. Crushed rock (other than argillaceous rock).
  - 1.2. Crushed concrete.
  - 1.3. Crushed non-expansive slag to clause 801.2.
  - 1.4. Well-burned non-plastic colliery shale.
  - 1.5. Natural gravel.
  - 1.6. Natural sand.
2. **Amendments to requirements in Highways Agency 'Specification for highway works':** None
3. **Filling:** To Highways Agency 'Specification for highway works', clause 802.

### 620 Subgrade improvement layer (capping)

---

1. **Fill:** To Highways Agency 'Specification for highway works', clause 802.
2. **Filling:** Place and compact to Highways Agency 'Specification for highway works', table 6/1 clause 612 and clause 613.3, 613.10.

### 626 Compacted general fill

---

1. **Suitable material:** Well graded granular material
2. **Excavated material:** Select suitable material and keep separate.
3. **Filling:** Spread and level material in layers. As soon as possible thoroughly compact each layer.
4. **Required compaction:** To suit use of fill as shown on drawings
5. **Proposals:** Well in advance of starting work submit details of proposed:
  - 5.1. Materials to be used, including quantities of each type.
  - 5.2. Type of plant.
  - 5.3. Maximum depth of each compacted layer.
  - 5.4. Minimum number of passes per layer.

### 650 Protection of compacted filling

---

1. **Temporary protective filling:** before allowing construction traffic, raise level of compacted cohesive soil filling at least 150 mm above formation level using properly compacted temporary filling.
2. **Removal:** Remove temporary protective filling from site before permanent construction.

### 700 Backfilling around foundations

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1. **Under oversite concrete and pavings:** Hardcore.
2. **Under grassed or soil areas:** Material excavated from the trench, laid and compacted in 300 mm maximum layers.

### 710 Hardcore filling

---

1. **Fill:** Granular material, free from excessive dust, well graded, all pieces less than 75 mm in any direction:
  - 1.1. **Test requirements:**
    - 1.1.1. **Minimum 10% fines value tested in a soaked condition to BS 812-111:** Not required
    - 1.1.2. **Impact value SZ tested to BS EN 1097-2:** Not required
2. **Material:**
  - 2.1. **In any one layer only one of the following:**
  - 2.2. Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.

- 2.3. Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
- 2.4. Crushed non-expansive slag.
- 2.5. Gravel or hoggins with not more clay content than is required to bind the material together, and with no large lumps of clay.
- 2.6. Well-burned non-plastic colliery shale.
- 2.7. Natural gravel.
- 2.8. Natural sand.
- 3. **Filling:** Spread and level in 150 mm maximum layers. Thoroughly compact each layer.

### **730 Blinding**

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- 1. **Surfaces to receive sheet overlays or concrete:**
- 2. **Blind with:**
  - 2.1. Concrete where shown on drawings; or
  - 2.2. Sand, fine gravel, or other approved fine material applied to fill interstices. Moisten as necessary before final rolling to provide a flat, closed, smooth surface.
- 3. **Sand for blinding:** To BS EN 12620, grade 0/4 or 0/2 (MP).
- 4. **Permissible deviations on surface level:** +0 -25 mm.

Ω End of Section

## D50: Underpinning

### Clauses

**2 To be read with preliminaries/ general conditions.**

---

### Tendering

**10 Information to be provided with tender**

---

1. **Submit:** A full description of underpinning proposals including:
  - 1.1. **Drawings:** As necessary for understanding the proposals.
  - 1.2. Method statement.
  - 1.3. **Additional information:** NA

### General

**115 Underpinning - design and construction**

---

1. **Purpose:** To avoid undermining of existing building by new foundations
2. **Extent:** As drawings indicate
3. **Standards used for design:** Mass concrete underpinning to BS 8004
4. **Load factor:** NA
5. **Assumed bearing strata:** Rock (sandstone and siltstone)
6. **Design proposals:** Confirm as adequate for the particular ground conditions revealed in the works or submit alternatives.

**155 Ground investigation**

---

1. **Report:** Will be provided once completed.
  - 1.1. **Datum for borehole logs:** As shown in report.
2. **Obstructions/ voids:** As described in the ground investigation report.

### Types of underpinning

**210 Continuous mass concrete underpinning**

---

1. **Underpinning blocks:**
  - 1.1. **Depth:** To depth of adjacent proposed foundations
  - 1.2. **Length (maximum):** As shown on drawings
  - 1.3. **Width on either side of wall centre line (minimum):** To outside face of wall
  - 1.4. **Depth of hard pack:** Contractor's choice
2. **Materials:**
  - 2.1. **Concrete:** C28/35
  - 2.2. **Hard packing:** 1:1¼:2 cement:sand:fine aggregate
    - 2.2.1. **Water content:** Sufficient only to ensure that packing binds together.
3. **Sequence:** Contractors method statement to be approved
4. **Curing periods (minimum):**
  - 4.1. **Between casting underpinning block and pinning up:** Contractors method statement to be approved

**4.2. Between completion of pinning up and commencement of excavation for the next sequence of underpinning:** Contractors method statement to be approved

4.2.1. Extend curing periods to allow for inclement weather.

5. **Shear connection between underpinning blocks:** Not required
6. **Features:** None

## Execution

### 610 Repair of masonry

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1. **Specification:** As section C41.
2. **Timing:** After completion of underpinning

### 615 Construction of mass concrete underpinning

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1. **Block and working space:** Excavate together.
2. **Formation:**
  - 2.1. **Preparation:** Remove or compact loose material.
  - 2.2. **Protection:** Cover with 50 mm thickness of concrete if there will be a delay of more than four hours between completion of excavation and casting of concrete underpinning.
3. **Split sleeves:** Provide around drain/ service passing through underpinning. Closely fit a rigid sheet to each side of opening to prevent ingress of fill or vermin.
  - 3.1. **Clearance around drain/ service (minimum):** 200 mm
4. **Dowels/ Shear key/ Front shutter:** Provide where required.
5. **Casting underpinning:** In one lift, leaving a gap for packing up beneath existing foundation.
6. **Packing:** On completion of concrete curing period, hard pack gap between underpinning block and existing foundation. Allow packing to cure before commencing excavation for the next sequence of underpinning.

## Completion

### 910 Health and safety file - mass concrete underpinning

---

1. **Requirement:** Collate and submit a full set of records for inclusion in the health and safety file.
  - 1.1. **Number of copies:** 2
2. **Content:** For each underpinning block record:
  - 2.1. Date of casting.
  - 2.2. Depth of base below datum.
  - 2.3. Length.
  - 2.4. Width either side of wall.
  - 2.5. Details of drains and services built into block and diameter of sleeving.
3. **Latest date for submission:** Within 14 days of completion

Ω End of Section

## E05: In situ concrete construction generally

To be read with preliminaries/general conditions.

### 220 Structural design provided

---

1. **Description:** For all areas.
2. **Requirements:**
  - 2.1. Generally; As section B50.
  - 2.2. **Additional requirements:** None.
3. **Production/ execution records:** In accordance with the designated code of practice.

### 223 Structural drawings and schedules

---

1. Standards
  - 1.1. Drawings: To BS EN ISO 3766 and 'Standard method of designated code of practice.
  - 1.2. Reinforcement schedules: To BS 8666.

### 225 Temperature records

---

1. **Requirement:** Throughout period of concrete construction record:
  - 1.1. **Daily:** Maximum and minimum atmospheric shade temperatures
  - 1.2. **Under adverse temperature conditions:** Temperature at commencement and end of placing.
2. **Equipment:** Contractor's choice.
  - 2.1. **Location:** In the shade, close to the structure.

### 235 Openings, inserts and fixings

---

1. **Requirement:** Collate all information.
2. **Submit:** Details where openings, inserts and fixing can only be accommodated by adjustments to reinforcement.
3. **Location reinforcement:** To ensure specifies minimum cover at openings and inserts and to be clear of fixing positions.

### 290 Accuracy of construction

---

1. **Setting out:** To BS 5964-1.
2. **Geometrical tolerances:** To BS 5606
  - 2.1. **Conflicts:** Notwithstanding tolerances specified elsewhere, do not exceed requirements for compliance with the designated code of practice.
  - 2.2. **Substitution of alternative requirements:** None

### 300 Levels of structural concrete floors

---

1. **Tolerances (maximum):**
2. **Level of floor:**  $\pm 10$  mm as measured from nearest temporary benchmark
3. **Steps in floor level:**  $\pm 3$  mm

### 310 Surface regularity of concrete floors to BS 8204 – general

---

1. **Standard:** To BS 8204-1 or -2.
2. **Measurement:** From underside of a 2 m straightedge (between points of contact) placed anywhere on surface and using a slip gauge.

Ω End of Section

## E10: Mixing/casting/curing in situ concrete

### Clauses

2 To be read with preliminaries/general conditions.

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### Concrete

#### 101 Specification

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1. **Concrete generally:** To BS 8500-2.
2. **Exchange of information:** Provide concrete producer with information required by BS 8500-1, clauses 4 and 5.

#### 105 Designated concrete

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1. **Description:** For all areas
2. **Designation:** RC28/35
3. **Fibres:** Not required
4. **Aggregates**
  - 4.1. **Size (maximum):** 40 mm
  - 4.2. **Coarse recycled aggregates:** No special requirements
  - 4.3. **Additional aggregate requirements:** None
5. **Special requirements for cement/ combinations:** None
6. **Consistence class:** Contractor's choice
7. **Chloride class:** Normal
8. **Admixtures:** Contractor's choice
9. **Additional mix requirements:** None

### Materials, batching and mixing

#### 215 Ready-mixed concrete

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1. **Production plant:** Currently certified by a body accredited by UKAS to BS EN ISO/IEC 17065 for product conformity certification of ready-mixed concrete.
2. **Source of ready-mixed concrete:** Obtain from one source if possible. Otherwise, submit proposals.
  - 2.1. **Name and address of depot:** Submit before any concrete is delivered.
  - 2.2. **Delivery notes:** Retain for inspection.
3. **Declarations of nonconformity from concrete producer:** Notify immediately.

#### 218 Site mixed concrete

---

1. Batching by mass
  - 1.1. **Restrictions:** Maximum pour size 3 m<sup>3</sup>
  - 1.2. **Accuracy of measuring devices:** To BS EN 206, clause 9.6.2.2
  - 1.3. **Tolerances for quantity of constituent material:** To BS EN 206, Table 27.
2. Batching by volume
  - 2.1. **Restrictions:** Maximum pour size 0.5 m<sup>3</sup>
3. **Mixing:** To BS 8000-2.1, subsections 2, 3 and 4.

## 225 Changes to specification

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1. **Changes to specification of fresh concrete (outside concrete producer's responsibility):** Submit proposals

## 230 Interruption of supply during concreting

---

1. **Elements without joints:** Where elements are detailed to be cast in a single pour without joints, make prior arrangements for a back-up supply of concrete.
2. **Elsewhere:**
  - 2.1. **Preparation:** Manage pour to have a full face and have materials available to form an emergency construction joint while concrete can still be worked.
  - 2.2. **Before pour is completed:** Submit location and details of joint, make proposals for joint preparation.

## 415 Admixtures

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1. **Calcium chloride and admixtures containing calcium chloride:** Do not use.

## Project testing / Certification

### 505 Project testing of concrete - general

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1. **Testing:** To BS 8500-1, Annex B
  - 1.1. **Nonconformity:** Obtain instructions immediately.
2. **Recording:** Maintain complete correlated records including:
  - 2.1. Concrete designation.
  - 2.2. Sampling, site tests, and identification numbers of specimens tested in the laboratory.
  - 2.3. Location of the parts of the structure represented by each sample.
  - 2.4. Location in the structure of the batch from which each sample is taken.

### 520 Testing laboratory

---

1. **Laboratory:** Accredited by UKAS or another national equivalent.
  - 1.1. **Name and UKAS reference number:** Submit well in advance of making trial mixes or concrete for use in the works.

### 530 Tests results

---

1. **Submission of reports:** Within one day of completion of each test.
  - 1.1. **Number of copies:** Three
2. **Reports on site:** A complete set, available for inspection.

### 550 Broken cubes from failed strength tests

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1. **Nonconformity:** Keep separately the pieces of each cube which fail to meet the conformity.
2. **Period for keeping cubes:** Obtain instructions.

## Placing / compacting / curing and protecting

### 630 Premature water loss

---

1. **Requirement:** Prevent water loss from concrete laid on absorbent substrates.
  - 1.1. **Underlay:** Select from:
    - 1.1.1. **Polyethylene sheet:** 250 micrometres thick.
    - 1.1.2. **Building paper:** To BS 1521, grade B1F.

## 1.2. Installation: Lap edges 150 mm.

### 648 Adverse temperature conditions

---

1. **Requirement:** Submit proposals for protecting concrete when predicted ambient temperatures indicate risk of concrete freezing or overheating.

### 650 Surfaces to receive concrete

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1. **Cleanliness of surfaces immediately before placing concrete:** Clean with no debris, tying wire clippings, fastenings or free water.

### 670 Transporting

---

1. **General:** Avoid contamination, segregation, loss of ingredients, excessive evaporation and loss of workability. Protect from heavy rain.
2. **Entrained air:** Anticipate effects of transport and placing methods in order to achieve specified air content.

### 680 Placing

---

1. **Records:** Maintain for time, date and location of all pours.
2. **Timing:** Place as soon as practicable after mixing and while sufficiently plastic for full compaction.
3. **Temperature limitations for concrete:** 30°C (maximum) and 5°C (minimum), unless otherwise specified. Do not place against frozen or frost covered surfaces.
4. **Continuity of pours:** Place in final position in one continuous operation up to construction joints. Avoid formation of cold joints.
5. **Discharging concrete:** Prevent uneven dispersal, segregation or loss of ingredients or any adverse effect on the formwork or formed finishes.
6. **Thickness of layers:** To suit methods of compaction and achieve efficient amalgamation during compaction.
7. **Poker vibrators:** Do not use to make concrete flow horizontally into position, except where necessary to achieve full compaction under void formers and cast-in accessories and at vertical joints.

### 690 Compacting

---

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

### 720 Vibrators

---

1. **General:** Maintain sufficient numbers and types of vibrator to suit pouring rate, consistency and location of concrete.
2. **External vibrators:** Obtain approval for use.

### 730 Plastic settlement

---

1. **Settlement cracking:** Inspect fresh concrete closely and continuously wherever cracking is likely to occur, including the top of deep sections and at significant changes in the depth of concrete sections.
  - 1.1. **Timing:** During the first few hours after placing and while concrete is still capable of being fluidized by the vibrator.
2. **Removal of cracks:** Revibrate concrete.

### 810 Curing generally

---

1. **Evaporation from surfaces of concrete:** Prevent, including from perimeters and abutments, throughout curing period.
  - 1.1. **Surfaces covered by formwork:** Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking.
  - 1.2. **Top surfaces:** Cover immediately after placing and compacting. If covering is removed for finishing operations, replace it immediately afterwards.
2. **Surface temperature:** Maintain above 5°C throughout the specified curing period or four days, whichever is longer.
3. **Records:** Maintain details of location and timing of casting of individual batches, removal of formwork and removal of coverings. Keep records on site, available for inspection.

### 811 Coverings for curing

---

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

### 812 Preventing early age thermal cracking

---

1. **Deep lifts or large volume pours:** Submit proposals for curing to prevent early age thermal cracking, taking account of:
  - 1.1. Temperature differentials across sections.
  - 1.2. Coefficient of thermal expansion of the concrete.
  - 1.3. Strain capacity of the concrete mix (aggregate dependant)
  - 1.4. Restraint.

### 818 Curing periods generally

---

1. Minimum periods: When not otherwise indicated, to BS EN 13670, Annex F.8.5.

### 840 Protection

---

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

Ω End of Section

## E20: Formwork for in situ concrete

### Clauses

2 To be read with preliminaries/ general conditions.

---

### Generally / preparation

#### 110 Loadings

---

1. **Requirement:** Design and construct formwork to withstand the worst combination of the following:
  - 1.1. Total weight of formwork, reinforcement and concrete.
  - 1.2. Construction loads including dynamic effects of placing, compacting and construction traffic.
  - 1.3. Wind and snow loads.

#### 132 Propping

---

1. **General:** Prevent deflection and damage to the structure. Carry down props to bearings strong enough to provide adequate support throughout concreting operations.
2. **Method statement:** Submit proposals for prop bearings and sequence of propping/ repropping and backpropping.
  - 2.1. **Timing of submission:** To be agreed between the permanent work designer and the temporary works coordinator.

#### 145 Permanent formwork

---

1. **Location and materials:** Submit proposals.

#### 170 Work below ground

---

1. **Description:** For all areas
2. **Casting vertical faces against faces of excavation:** Permitted provided face of excavation is stable
  - 2.1. **Requirements:** Increase width of section to give nominal cover to reinforcement of 75 mm and prevent contamination of concrete by loose soil

#### 174A Use of permanent steel shuttering as working platform

---

1. **Description:** All work areas
2. **Requirement:** Prevent overload or damage until slab is self supporting.
3. **Restrictions:**
  - 3.1. **Without temporary supports:** Do not use.
  - 3.2. **Propped sheets when slab is not self supporting:** Not applicable.

### Construction

#### 310 Accuracy

---

1. **General requirement for formwork:** Accurately and robustly constructed to produce finished concrete in the required positions and to the required dimensions.
2. **Formed surfaces:** Free from twist and bow (other than any required cambers).
3. **Intersections, lines and angles:** Square, plumb and true.

### 315 Substructure formwork and underslab insulation

---

1. **Cutting:** Neat and accurate to edges, and around penetrations and downstands.
2. **Laying:** Tightly butted and fully supported on firm, even substrate.
3. **Vertical faces:** Stiffen as necessary to act as shutter.
4. **Formwork/ insulation surfaces:** Protect from indentation by spacers and other items.
5. **Joints in formwork/ insulation and with edge structure and penetrations:** Seal to prevent penetration of concrete.
6. **Concrete placement:** Restrain formwork/ insulation against movement.

### 320 Joints in forms

---

1. Requirements including joints in form linings and between forms and completed work
  - 1.1. Prevent loss of grout, using seals where necessary.
  - 1.2. Prevent formation of steps. Secure formwork tight against adjacent concrete.

### 330 Inserts, holes and chases

---

1. Positions and details
  - 1.1. **Dimensioned on drawings provided on behalf of the Employer:** Do not change without consent.
  - 1.2. **Undimensioned or from other sources:** Submit proposals.
2. **Positioning relative to reinforcement:** Give notice of any conflicts well in advance of placing concrete.
3. **Method of forming:** Fix inserts or box out as required. Do not cut hardened concrete without approval.

### 340 Kickers

---

1. **Method statement:** Submit proposals including means of achieving quality of concrete consistent with that specified for the column or wall.
  - 1.1. **Kickers height:** 150 mm.

### 350 Form ties

---

1. **Metal associated with form ties/ devices:** Prohibited within cover to reinforcement.
2. Compatible with reinforcement metal.

### 470 Release agents

---

1. **Use:** All formwork.
2. **General:** Achieve a clean release of forms without disfiguring the concrete surface.
3. **Product types:** Compatible with formwork materials, specified formed finishes and subsequent applied finishes. Use the same product throughout the entire area of any one finish.
4. **Protection:** Prevent contact with reinforcement, hardened concrete, other materials not part of the form face, and permanent forms.

### 480 Surface retarders

---

1. **Use:** Obtain approval.
2. **Reinforcement:** Prevent contact with retarder.

## Striking

### 510 Striking formwork

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1. **Timing:** Prevent any disturbance, damage or overloading of the permanent structure.

**521 Minimum period for retaining formwork/ temporary supports in position**

---

1. **Concrete strength at time of formwork removal (minimum):**
2. ½ of 28 day strength
3. **Assumptions:** None
  - 3.1. **Before removing formwork:** Submit proposals if assumptions will not be realised.
4. **Method to be used in assessing early age strength of concrete:** Submit proposals

**Formed finishes****610 Basic finish**

---

1. **Location:** All below ground work
2. **Finish:** Faces fully compacted and cover to reinforcement provided.

**620 Plain finish**

---

1. **Location:** For all above ground work
2. **Finish:** Even and dense. Arrange formwork panels in a regular pattern as a feature of the surface.
3. Permissible deviation of surfaces
  - 3.1. **Sudden irregularities (maximum):** 3 mm.
  - 3.2. **Gradual irregularities (maximum):** 3 mm, when measured from the underside of a 1 m straightedge, placed anywhere on surface.
4. Variations in colour
  - 4.1. **Permitted:** Those caused by impermeable formwork linings.
  - 4.2. **Not permitted:** Those caused by contamination or grout leakage.
5. Surface blemishes
  - 5.1. **Permitted:** Blowholes less than 10 mm in diameter and at an agreed frequency.
  - 5.2. **Not permitted:** Voids, honeycombing, segregation and other large defects.
6. **Formwork tie holes:** In a regular pattern and filled with matching mortar.

Ω End of Section

## E30: Reinforcement for in situ concrete

### Reinforcement

#### 110 Quality assurance of reinforcement

---

1. Standards
  - 1.1. **Reinforcement:** To BS 4449, BS 4482, BS 4483 or BS 6744.
  - 1.2. **Cutting and bending:** To BS 8666.
2. **Source of reinforcement:** Companies holding valid certificates of approval for product conformity issued by the UK Certification Authority for Reinforcing Steels (CARES).

#### 150 Ribbed bar reinforcement

---

1. **Standard:** To BS 4449.
  - 1.1. **Strength grade:** B500B

#### 210 Standard fabric reinforcement

---

1. **Standard:** To BS 4483.
2. **Strength grade:** B500B

### Workmanship

#### 310 Cutting and bending reinforcement

---

1. **General:** To schedules and to BS 8666.
2. **Bending on site, including minor adjustments:** Permitted for reinforcement less than H12 diameter

#### 320 Protection of reinforcement

---

1. **Dropping from height, mechanical damage and shock loading:** Prevent.
2. **Cleanliness of reinforcement at time of pouring concrete:** Free from corrosive pitting, loose mill scale, loose rust and contaminants which may adversely affect the reinforcement, concrete, or bond between the two.

#### 425 Laps not detailed on drawings

---

1. **Laps in bar reinforcement (minimum):** Generally 45 x bar diameter
2. **Laps in fabric reinforcement (minimum):** 45 x bar diameter
  - 2.1. **Laps at corners:** Avoid four layer build-up.

#### 451 Fixing reinforcement

---

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

**480 Nominal cover to reinforcement**

---

1. **Top face:** 50 mm
2. **Formed faces:** 50 mm

**510 Rust staining**

---

1. **Staining of surfaces of concrete which will be exposed to view in the finished work:** Prevent.

**520 Cover meter survey**

---

1. **Purpose of survey:** To check positions of reinforcement and that the specified cover has been achieved.
2. **Type of cover meter:** A magnetic induction digital type selected to suit arrangement and type of reinforcement.
  - 2.1. **Use:** In accordance with recommendations of BS 1881-204 and manufacturer as appropriate to yield accurate results.
  - 2.2. **Surveyor:** Experienced with cover meter surveys.
3. **Calibration:** At the outset and there after regularly at 45 minute (maximum) intervals.
4. **Locations for checking:** Include columns, beams, cantilevers, slab soffits and all faces exposed to the weather in the finished structure.
5. **Timing:** As soon as practicable after casting.
  - 5.1. **Notification:** Give adequate notice.
6. **Results:** Submit. Notify immediately where specified cover has not been achieved.

Ω End of Section

## **E41: Worked finishes to in situ concrete**

**To be read with preliminaries/ general conditions.**

### **150 Finishing**

---

1. **Timing:** Carry out at optimum times in relation to setting and hardening of concrete.
2. Prohibited treatments to concrete surfaces
  - 2.1. Wetting to assist surface working.
  - 2.2. Sprinkling cement.

### **310 Smooth floated finish**

---

1. **Surface on completion:** Even, with no ridges or steps.

Ω End of Section

## F10: Brick/ Block walling

### Clauses

2 To be read with preliminaries/ general conditions.

---

### Types of walling

#### 111 Clay facing brickwork

---

1. **Description:** New
2. **Bricks:** To BS EN 771-1.
  - 2.1. **Manufacturer:** Contractor's choice
  - 2.2. **Colour and texture:** to match existing.
  - 2.3. **Recycled content:** Not applicable
  - 2.4. **Special shapes:** As shown on drawings
3. **Mortar:** As section Z21.
  - 3.1. **Standard:** Not applicable
  - 3.2. **Mix:** 1:2.5 / NHL2 : sharp well graded sand
  - 3.3. **Additional requirements:** Coloured mortar to match existing
4. **Bond:** To match existing
5. **Joints:** to match existing
6. **Features:** as detailed

#### 230A Reclaimed brick facing brickwork

---

1. **Description:** Externally
2. **Reclaimed bricks:**
  - 2.1. **Condition:** Sound, free deleterious matter.
  - 2.2. **Supplier/ Source:** salvaged from existing demolished external brickwork
3. **Mortar:** As section Z21.
  - 3.1. **Standard:** Not applicable
  - 3.2. **Mix:** 1:2.5 / NHL2 : sharp well graded sand
  - 3.3. **Additional requirements:** Coloured mortar to match existing
4. **Bond:** To match existing
5. **Joints:** To match existing
6. **Features:** As drawings, all to match existing
7. **Additional Requirements:**
  - 7.1. Salvaged bricks to be carefully sorted and sourced so as to ensure only the best available are re-used.
  - 7.2. All existing mortar to be carefully removed from existing bricks using chisels, sanders and/or hacksaws as required, except to the prime face.

#### 235 Reclaimed brick facing brickwork

---

1. **Description:** Internally
2. **Reclaimed bricks:**
  - 2.1. **Condition:** Sound, free from deleterious matter.
  - 2.2. **Supplier/ Source:** [salvaged from existing demolished internal brickwork].

3. **Mortar:** As section Z21.
  - 3.1. **Standard:** [Not applicable].
  - 3.2. **Mix:** [1:2.5 / NHL2 hydraulic lime:sharp well graded sand].
  - 3.3. **Additional requirements:** [Coloured mortar to match existing].
4. **Bond:** [To match existing].
5. **Joints:** [To match existing].
6. **Features:** [As drawings, all to match existing].
7. **Additional Requirements:**
  - 7.1. Salvaged bricks to be carefully sorted and sourced so as to ensure only the best available are re-used.

### 316 Clay common brickwork

---

1. **Description:** Generally
2. **Bricks:** To BS EN 771-1.
  - 2.1. **Size:** to match adjacent brick and/or blockwork.
  - 2.2. **Mean compressive strength (minimum):** to match adjacent brick and/or blockwork.
  - 2.3. **Mix:** 1:1:6 cement:lime:sand 4 N/mm<sup>2</sup> (mortar class 4)

### 345A Concrete common brickwork

---

1. **Description:** Generally
2. **Bricks:** To BS EN 771-3.
  - 2.1. **Size:** to match adjacent brick and/or blockwork.
  - 2.2. **Mean compressive strength (minimum):** [ to match adjacent brick and/or blockwork.].
3. **Mortar:** As section Z21.
  - 3.1. **Mix:** [1:1:6 cement:lime:sand 4 N/mm<sup>2</sup> (mortar class 4)].

### 355A Concrete common blockwork

---

1. **Description:** Generally
2. **Blocks:** To BS EN 771-3.
  - 2.1. **Compressive strength:** As stated on drawings 7N/mm<sup>2</sup>
  - 2.2. **Mix:** [1:1:6 cement:lime:sand 4 N/mm<sup>2</sup> (mortar class 4)].
3. **Bond:** Half lap stretcher

### 356 Fairfaced blockwork

---

1. **Description:** Generally
2. **Blocks:** To BS EN 771-3.
  - 2.1. **Manufacturer:** Contractor's choice
  - 2.2. **Compressive strength:** 7N/mm<sup>2</sup>
  - 2.3. **Additional requirements:** close textured finish for subsequent painting
3. **Mortar:** As section Z21.
4. **Mix:** [1:1:6 cement:lime:sand 4 N/mm<sup>2</sup> (mortar class 4)].
5. **Bond:** [Half lap stretcher].

### 385A Engineering brickwork

---

1. **Description:** Generally
2. **Bricks:** To BS EN 771-1.
  - 2.1. **Type:** HD.

- 2.2. **Mean compressive strength:** Greater than or equal to 75 N/mm<sup>2</sup>
- 3. **Mortar:** As section Z21.
  - 3.1. **Mix:** 1:0.25:3 cement:lime:sand
- 4. **Joints:** Flush.

## Workmanship generally

### 500A Laying generally

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- 1. **Mortar joints:** Fill vertical joints. Lay bricks, solid and cellular blocks on a full bed.
- 2. **Bond where not specified:** Half lap stretcher.
- 3. **Vertical joints in brick and concrete block facework:** Even widths. Plumb at every fifth cross joint.

### 535 Height of lifts in walling using cement gauged or hydraulic lime mortar

---

- 1. **Quoins and advance work:** Rack back.
- 2. **Lift height (maximum):** 1.2 m above any other part of work at any time.
- 3. **Daily lift height (maximum):** 1.5 m for any one leaf.

### 545 Levelling of separate leaves

---

- 1. **Locations for equal levelling of cavity wall leaves:** As follows:
  - 1.1. Every course containing vertical twist type ties or other rigid ties.
  - 1.2. Every third tie course for double triangle/ butterfly ties.
  - 1.3. Courses in which lintels are to be bedded.

### 561 Coursing brickwork with existing

---

- 1. **Gauge:** Line up with existing brick courses.

### 580 Laying frogged bricks

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- 1. **Single frogged bricks:** Frog uppermost.
- 2. **Double frogged bricks:** Larger frog uppermost.
- 3. **Frog cavity:** Fill with mortar.

### 610 Support of existing work

---

- 1. **Joint above inserted lintel or masonry:** Fully consolidated with semidry mortar to support existing structure.

### 620 Block bonding new walls to existing

---

- 1. **Pocket requirements:** Formed as follows:
  - 1.1. **Width:** Full thickness of new wall.
  - 1.2. **Depth (minimum):** 100 mm.
  - 1.3. Vertical spacing
    - 1.3.1. **Brick to brick:** 4 courses high at 8 course centres.
    - 1.3.2. **Block to block:** Every other course.
- 2. **Pocket joints:** Fully filled with mortar.

### 668 Repairs to existing

---

- 1. **Description:** Face brickwork

2. Where brickwork is loose and a substantial part of its bonding mortar has disintegrated or is missing, the masonry should be carefully dismantled and rebuilt to match existing as directed by the CA. All the new
3. **Work to match that of the original. Where individual bricks, or small groups of bricks, are loose or damaged, these should be carefully removed and reset/replaced using lime mortar as previously specified and pointed up after initial carbonation has occurred. Repoint as section F25: to approved sample**

#### 671 Fire stopping

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1. **Avoidance of fire and smoke penetration:** Fit tightly between cavity barriers and masonry. Leave no gaps.

#### 690 Adverse weather

---

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

### Additional requirements for facework

#### 710 The term facework

---

1. **Definition:** Applicable in this specification to all brick/ block walling finished fair.
  - 1.1. **Painted facework:** The only requirement to be waived is that relating to colour.

#### 740 Finished masonry work reference panels

---

1. **General:** Before proceeding to construct the following walling types, construct panels as specified. Give notice when panels are dry.
2. **Selection masonry units:** Reasonably representative of the average quality of the whole order to be delivered
3. Panel types
  - 3.1. **Walling type:** F10/111 & 230A
    - 3.1.1. **Location:** to be agreed
    - 3.1.2. **Size:** 1.5 x 0.9 m
    - 3.1.3. **Other requirements:** Brick arch as detailed

#### 760 Appearance

---

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

**5. Methods of protecting facework:** Submit proposals.**780 Ground level**

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

**800 Toothed bond**

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1. **New and existing facework in same plane:** Bond together at every course to achieve continuity.

**830 Cleanliness**

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

Ω End of Section

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

### Cavities

#### 110 Concrete fill to base of cavity

---

1. **Concrete generally:** To BS EN 206 and BS 8500-2.
2. **Concrete type:** Designated GEN1
  - 2.1. **Workability:** High.
3. **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.
4. **Placement:** Compact to eliminate voids.

#### 120 Cleanliness

---

1. **Cavity base and faces, ties, insulation and exposed dpcs:** Free from mortar and debris.

#### 130 Perpend joint weep holes

---

1. **Form:** Open perpend joint.
2. **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.
3. **Provision:** At not greater than 1000 mm centres and not less than two over each opening.

#### 150 Full fill cavity insulation

---

1. **Insulation:** Rock wool batts to BS EN 13162
  - 1.1. **Product certification:** British Board of Agreement (BBA) Certificate
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Recycled content:** Contractor's choice
4. **Face size (nominal length x width):** To suit wall tie spacing
5. **Thickness (nominal):** 100 mm
6. **Thermal conductivity:** 0.035 W/(m.K)
7. **Reaction to fire class:** F
8. **Additional requirements:** None
9. **Placement:** Continuous and free of mortar and debris.

#### 155 Partial fill cavity insulation

---

1. **Insulation:** Contractors choice
  - 1.1. **Product certification:** British Board of Agreement (BBA) Certified
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Recycled content:** Contractor's choice
4. **Face size (length x width):** Contractors choice
5. **Thickness (nominal):** 125 mm
6. **Thermal conductivity:** 0.034 W/(m.K)
7. **Reaction to fire class:** F
8. **Additional requirements:** Clips to ensure the insulation is retained tightly against the inner masonry leaf at all times

9. **Placement:** Secure against face of inner leaf.
  - 9.1. **Residual cavity:** Clear and unobstructed.
10. **Joints between boards, at closures and penetrations:** No gaps and free from mortar and debris.

#### 160A Air bricks in external walling

---

1. **Manufacturer:** J W Longbottom Ltd, Bridge Foundry, Holmfirth, Huddersfield, HD9 7AW
2. (t) 01484 681513.
  - 2.1. **Product reference:** Cast Iron air brick
3. **Apertures:** Square hole
4. **Work sizes and frame/surround:** To match existing
5. **Placement:** Built in to match existing with no gaps at joints.

#### 180 Cavity closers

---

1. **Description:** To new cavity walling
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Accessories:** To include integral insulation and DPC.

#### 186 Thermal insulation block

---

1. **Manufacturer:** Marmox (UK) Ltd.
  - 1.1. **Web:** [www.marmox.co.uk](http://www.marmox.co.uk).
  - 1.2. **Email:** [info@marmox.co.uk](mailto:info@marmox.co.uk).
  - 1.3. **Tel:** +44 (0)1634 835290.
  - 1.4. **Product reference:** Thermoblock
2. **Thickness:** 100 mm
3. **Width:** 215 mm

### Reinforcing / fixing accessories

#### 214A Cavity wall ties

---

1. **Description:** For all cavity walls
2. **Standard:** To BS EN 845-1.
  - 2.1. **Type:** 2 (Masonry general purpose)
3. **Manufacturer:** Contractor's choice
  - 3.1. **Product reference:** Contractor's choice
4. **Material/ finish:** Zinc coated steel strip - material/ coating reference 9
5. **Sizes:** Various
6. **End types:** Asymmetrical deformed plate and fishtail for mortar bedding.
7. **Design embedment length (minimum):** 50 mm
8. **Movement:** Tolerant
9. **Additional requirements:** **Sizes:** to suit cavity width with 50mm minimum insertion into both leaf's of cavity wall.

#### 215 Cavity wall ties used with partial fill insulation

---

1. **Description:** For all cavity walls using partial fill insulation
2. **Standard:** To BS EN 845-1.

- 2.1. **Type:** 2 (Masonry general purpose)
- 3. **Manufacturer:** Contractor's choice
  - 3.1. **Product reference:** Contractor's choice
- 4. **Material/ finish:** Zinc coated steel strip - material/ coating reference 9
- 5. **Sizes:** 325 mm
- 6. **End types:** Asymmetrical deformed plate and fishtail for mortar bedding.
- 7. **Design embedment length (minimum):** 50 mm
- 8. **Movement:** Tolerant
- 9. **Additional requirements:** Resistance to water crossing cavity: Resistant
- 10. **Tie mounted insulation retaining clips:** As recommended by the manufacturer.

#### 225 Fixing ties in masonry cavity walls

---

- 1. **Embedment in mortar beds (minimum):** 50 mm.
- 2. **Placement:** Sloping slightly downwards towards outer leaf, without bending. Drip centred in the cavity and pointing downwards.
- 3. **Spacing:** Staggered in alternate courses.
  - 3.1. **Horizontal centres:** 900
  - 3.2. **Vertical centres:** 450
- 4. **Additional ties:** Provide within 225 mm of reveals of unbonded openings and at the vertical reveals of unsupported masonry.
  - 4.1. **Spacing:** At not more than 300 mm centres vertically

#### 233 Fixing ties in masonry cavity walls with partial fill cavity insulation

---

- 1. **Embedment in mortar beds (minimum):** 50 mm.
- 2. **Placement:** Sloping slightly downwards towards outer leaf, without bending. Drip centred in the cavity and pointing downwards.
- 3. **Spacing:** Evenly space in non staggered horizontal and vertical rows
  - 3.1. **Horizontal centres:** 600
  - 3.2. **Vertical centres:** 450
- 4. **Spacing centres of top (eaves) row of ties:** Not more than 450 mm
- 5. **Provision of additional ties:** Within 225 mm of reveals of unbonded openings and at the vertical reveals of unsupported masonry.
  - 5.1. **Spacing:** At not more than 300 mm centres vertically

#### 241 Wall starters/ connectors

---

- 1. **Manufacturer:** Contractor's choice
  - 1.1. **Product reference:** Contractor's choice
- 2. **Material/ finish:** Austenitic stainless steel
- 3. **Sizes:** to suit new masonry width

### Flexible damp proof courses/ cavity trays

#### 330 Damp proof courses

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- 1. **Description:** Pitch polymer
- 2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice

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**370 Preformed cavity trays**

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1. **Manufacturer:** Contractor's choice
  - 1.1. **Product references and locations:** Contractor's choice
2. **Placement:** To provide a free draining and watertight installation.

---

**380 Junction cloaks/ stop ends for preformed dpcs/ cavity trays**

---

1. **Manufacturer:** Contractor's choice
  - 1.1. **Product references and locations:** As shown on drawings
2. **Placement:** Seal laps with dpcs and/ or cavity trays.

**Installation of dpcs / cavity trays**

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**415 Installation of horizontal dpcs**

---

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

---

**425 Installation of ground level dpcs**

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1. **Joint with damp proof membrane:** Continuous and effectively sealed.

---

**435 Installation of stepped dpcs in external walls**

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

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**445 Installation of sill dpcs**

---

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

---

**455 Installation of coping/ capping dpcs**

---

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

---

**465 Sealing of dpcs**

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1. **Description:** Generally
2. **Overlaps and junctions:** Seal with Double sided adhesive tape .

---

**485 Installation of cavity trays over openings and other cavity bridgings**

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

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**560 Installation of vertical dpcs**

---

1. **Form:** In one piece wherever possible.
  - 1.1. **Joints:** Upper part overlapping lower not less than 100 mm.

---

**570 Installation of jamb dpcs at openings**

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1. **Joint with cavity tray/ lintel at head:** Full underlap.
2. **Joint with sill/ horizontal dpc at base:** Full overlap.

3. **Projection into cavity:** Not less than 25 mm.
4. **Relationship with frame:** In full contact.

## Joists

### 650 Pointing in flashings

---

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

### 660 Pinning up to soffits

---

1. **Top joint of loadbearing walls:** Fill and consolidate with mortar.

### 670 Head of non-loadbearing walls

---

1. **Restraints:** As clause 251
  - 1.1. **Fixing:** Secure to soffit.
2. **Joint filler:** compressible seal to maintain fire resistance
  - 2.1. **Placement:** Full, no gaps.

## Proprietary sills / lintels / copings / dressings

### 735 Precast concrete lintels

---

1. **Standard:** To BS EN 845-2.
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Types:** Single
4. **Sizes:** As schedule
5. **Additional requirements:** As schedule
6. **Placement:** Bed on mortar used for adjacent work.
  - 6.1. **Bearing length (minimum):** 150 mm

### 745 Prestressed concrete lintels

---

1. **Standard:** To BS EN 845-2.
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Types:** Combined
4. **Material/ finish:** Zinc coated steel to BS EN ISO 1461 with minimum coating mass of 710 g/m<sup>2</sup> and coating minimum thickness 100 micrometres - material/ coating reference L10
5. **Sizes:** As schedule
6. **Additional requirements:** As schedule
7. **Placement:** Bed on mortar used for adjacent work.
  - 7.1. **Bearing length (minimum):** 150 mm

### 760A New terracotta coping units

---

1. To external walls
2. **Standard:** To BS 5642-2.
3. **Material:** Terracotta

4. **Manufacturer:** Contractor's choice
5. **Shape:** half round to match existing.
6. **Dimensions:** to match existing
7. **Finish:** to match existing
8. **Mortar for bedding/ jointing:** Hydraulic lime:sand as section Z21.
  - 8.1. **Hydraulic lime:** NHL 5
  - 8.2. **Sand source/ type:** [Sharp well graded sand to match existing.].
  - 8.3. **Mix:** [1:3 NHL5 hydraulic lime:sharp, well graded sand].
9. **Joints:** Flush.
10. **Placement:** Lay on a full bed of mortar, to line and level.
11. Fixing
  - 11.1. **Type:** As required contractor to Submit proposals.
  - 11.2. **Material:** Austenitic stainless steel.
  - 11.3. **Size, strength and number:** As necessary to resist loads likely to occur during the life of the building, and to prevent lateral displacement or pulling apart of the construction.

#### 767 Terracotta string course/sill units fixed back to existing structure

---

1. North east elevation
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Terracotta to match existing
3. **Dimensions:** As shown on drawings.
4. **Finish/ colour:** To exactly match existing
5. **Fixings:** Ancon stonework supports face fixed back to existing structure.
  - 5.1. **Product reference:** CFA/SD with thermal break between tie and existing structure.
  - 5.2. **Quantity:** As specified by fixing manufacturer. To be approved by Structural Engineer.
6. **Mortar for jointing:** Hydraulic lime:sand as section Z21.
  - 6.1. **Hydraulic lime:** NHL3.5
  - 6.2. **Sand:** Graded crushed stone.
    - 6.2.1. **Colour:** To match terracotta.
    - 6.2.2. **Source/ type:** Sharp well graded sand to approval
  - 6.3. **Mix:** 1:2.5 NHL 3.5 hydraulic lime:sharp well graded sand
7. **Joints:** Full and finished flush.
8. **Placement:** Lay to line and level.

### Miscellaneous items

#### 810A Tile sills

---

1. **Tiles:** Plain clay to BS EN 1304.
  - 1.1. **Manufacturer:** Contractor's choice
  - 1.2. **Size and appearance:** to match existing
2. **Placement:** Two courses, broken jointed, true to line and level on full bed of hydraulic lime:sand as section Z21.
  - 2.1. **Hydraulic lime:** NHL 3.5
  - 2.2. **Sand source/ type:** [Sharp well graded sand to match existing.].
  - 2.3. **Mix:** [1:2.5 NHL 3.5 hydraulic lime:sharp well graded sand].
3. **Joints:** Full and finished flush.

**840 Openings for frames**

---

1. **Formation:** Use accurate, rigid templates to required size.

**850 Wall plates**

---

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

**940A Chimney pots**

---

1. **Manufacturer:** Contractor's choice
  - 1.1. **Product reference:** to match existing
2. **Coping:** As shown on drawings
3. **Placement:** Bed solid in mortar specified for face brickwork, flaunches all round to match.

Ω End of Section

## F31: Precast concrete sills / lintels / copings / features

### Types of component

#### 140A Precast lintels

---

1. **Concrete: designated to BS 8500-2:** Minimum RC30.
  - 1.1. **Aggregate (maximum) size:** 20 mm.
2. Configuration
  - 2.1. Clear span up to 900 mm
    - 2.1.1. **Section:** 140 mm deep x width of wall.
    - 2.1.2. **Bearing:** 150 mm at both ends.
    - 2.1.3. **Reinforcement:** One 12 mm carbon steel bar for each 105 mm of wall thickness.
  - 2.2. Clear span 900 mm to 1800 mm
    - 2.2.1. **Section:** 215 mm deep x width of wall.
    - 2.2.2. **Bearing:** 225 mm at both ends.
    - 2.2.3. **Reinforcement:** One 16 mm carbon steel bar for each 105 mm of wall thickness.
3. **Cover to reinforcement:** 20 mm minimum.

### Installation

#### 420 Laying

---

1. **Mortar for bedding and jointing:** As section Z21.
  - 1.1. **Type:** Site batched and mixed
  - 1.2. **Mix:** 1:3 masonry cement:sand
  - 1.3. **Packing:** If required use slate.
2. **Bedding components:** On full bed of mortar.
3. **Removal of marks, stains and extraneous mortar on visible faces:** Rubbing not permitted.

#### 430 Support of existing work over new lintels

---

1. **Joint above lintels:** Fully fill and compact with semidry mortar.

Ω End of Section

## G10: Structural steel framing

### Clauses

2 To be read with preliminaries/ general conditions.

---

### General requirements/ information

#### 110 Contractor's design of joints

---

1. **Description:** For all hot rolled steelwork connections
2. **Design concept:** As shown on drawings
3. **Design responsibility:** Design connections and detail steelwork and connections.
  - 3.1. **Other responsibilities:** None
4. **Structural requirements:**
  - 4.1. **Generally:** As section B50.
    - 4.1.1. **Modifications:** None
  - 4.2. **Design:** Complete in accordance with the designated code of practice to satisfy specified performance criteria.
  - 4.3. **Connections:** Design forces to be provided at construction stage on drawings
  - 4.4. **Fixings to foundations and walls:** Agree location and design and detail fixings to concrete to designated code of practice
  - 4.5. **Additional requirements:** None
5. **Design and production information:** Method statements and quality plan

#### 115 Design constraints - general

---

1. **Members forming bracing systems or girders of lattice construction:** Unless detailed or instructed otherwise, position so that their lines of action intersect at a point.
2. **Bolts:**
  - 2.1. **Diameter (minimum):** 16 mm
  - 2.2. **Number per connection (minimum):** Two, unless otherwise indicated.
  - 2.3. **Other requirements:** None
3. **Punching of bolt holes:** Permitted
4. **Welds:** At least 6 mm fillet
5. **Other constraints:** None

#### 123 Drawings and calculations prepared by contractor

---

1. **Information required:** As submission schedule
2. **General arrangement drawings:** Submit before preparing calculations. Clearly identify:
  - 2.1. Individual steel members.
  - 2.2. Conflicts with other work.
  - 2.3. Proposed changes to contract drawings.
3. **Member and joint calculations:** Submit before preparing fabrication drawings.

#### 125 Specification standard

---

1. **Standard:** Comply with latest edition of National Structural Steelwork Specification CE Marking version.
  - 1.1. **Additional requirements:** None

- 1.2. **Document availability:** For the duration of the work, at fabrication shop and on site.
2. **References to Engineer in NSSS CE Marking version: For the purpose of this contract, interpret such references as being to:** Mann Williams
  - 2.1. **Exceptions:** Functions indicated in design checklists 1 and 2 as being delegated to the Engineer appointed by the Contractor

### 130 General steel sections and plates

---

1. **Description:** For all areas
2. **Standard:** To BS EN 10025-2
3. **Grade:** S355J0
  - 3.1. **Options:** None
4. **Source:** Obtain steel from a source accredited to a national or internationally accepted quality standard.
5. **Other requirements:** None

### 135 Hollow steel sections

---

1. **Description:** For all areas
2. **Standard:** To BS EN 10210-1
3. **Grade:** S355J0H
  - 3.1. **Options:** None
4. **Source:** Obtain steel from a source accredited to a national or internationally accepted quality standard.
5. **Other requirements:** None

## Fabrication

### 180 Notification of commencement

---

1. **Notice:** Give notice before fabrication is due to start.
  - 1.1. **Period of notice (minimum):** 5 working days

### 190 Marking

---

1. **Identifying and recording materials and components:** Submit detail of proposed methods.
2. **Locations of marks:**
  - 2.1. **Generally:** Visible for checking after erection.
  - 2.2. **Weathering steel:** On surfaces not exposed to open view in the completed work.
3. **Steel to be blast cleaned, pickled, metal sprayed or galvanized:** Marked so that subsequent treatment cannot obliterate the marking.

### 195 Hard stamping

---

1. **Usage:** Not permitted except as indicated on drawings.

### 210 End connections

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1. **Angle cleats:** Project 10 mm beyond ends of simply supported members.

### 215 Hollow sections

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1. **Insides of sections:** Debris and moisture removed before sealing ends and openings.

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**220 Access/ ventilation holes in base plates**

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1. Base plates larger than 1 m<sup>2</sup>. Make 25 mm diameter holes as necessary for pressure grouting, escape of entrapped air on direct compaction of filling/ bedding material.

**Welding**

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**255 Site welding**

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1. **Usage:** Permitted only where indicated on drawings.
2. **Working conditions:** Suitable and safe. Do not weld when surfaces are wet or when ambient temperature is below 0°C.

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**270 Additional welds**

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1. **Welds (including tack welds) not indicated on drawings:** Not permitted without approval.

**Bolt assemblies**

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**302 Non-preloaded bolt/ screw assemblies**

---

1. **Designation:** Black bolts to BS 4190, grade 8.8
  - 1.1. **Threading:** To suit design criteria
  - 1.2. **Nuts and washers:** To suit grade of bolt, as NSSS CE Marking version, clause 2.4.3.
2. **Coating applied by manufacturer:** None
3. **Other requirements:** None

**Erection**

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**405 Outline method of erection**

---

1. To be confirmed.

---

**410 Pre-erection checks**

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1. **Scope:** At least 7 days before proposed erection start date, check the following:
  - 1.1. **Foundations and other structures to which steelwork will be attached:** Accuracy of setting out.
  - 1.2. **Holding down bolts:** Position, protruding length, slackness and condition.
2. **Inaccuracies and defects:** Report without delay.
3. **Permission to commence erection:** Obtain.

---

**425 Modifications**

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1. **Steelwork:** Do not modify without approval.
2. **Temporary fabrication/ erection attachments:** May remain when they will not interfere with subsequent work, and will be completely hidden by finished; otherwise, remove.

---

**432 Temporary support**

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1. **Permanent bracing system:**
  - 1.1. **Vertical:** Stability of steel frame is combination of moment frames, masonry and concrete shear walls refer to drawing for details
  - 1.2. **Horizontal:** Horizontal stability up to third floor is provided by diaphragm action of existing concrete slabs. At third floor by diaphragm action of proposed timber floor and at roof by horizontally spanning beams between vertical stability

2. **Temporary bracing/ restraints:** Provide as necessary until permanent bracing system is complete and sufficiently mature to carry loads and all connections have been made to the permanent system.
3. **Elements to be supported:** Frames
4. **Bracing/ Restraints:** Provide as necessary until permanent connection can be made to: floor
5. **Forces and moments in elements:** Make an independent assessment

#### 440 Column bases

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1. **Levels:** Adjust using steel shims or folding wedges no larger than necessary.
2. **Location of shims/ wedges:** Position symmetrically around perimeter of base plate. Do not use a single central pack.
3. **Give notice:** If space beneath any column base is outside specified limits for bedding thickness.
4. **Accuracy of erection:** Check, and correct errors before filling and bedding beneath bases and carrying out other adjacent work.

#### 441 Mortar filling/ bedding of column bases

---

1. **Bedding thickness range:** 25 - 40 mm
2. **Bolt pockets:** Completely filled with neat cement slurry.
3. **Spaces beneath base plates:** Completely filled as follows:
  - 3.1. **Spaces 0-25 mm deep:** Neat Portland cement, CEM 1.
  - 3.2. **Spaces 25-50 mm deep:** 1:1 cement:fine aggregate mortar, just fluid enough to pour. Tamped well as filling proceeds.
  - 3.3. **Spaces 50 mm and above:** 1:2 cement:fine aggregate mortar, just damp, tamped well against properly fixed supports as filling proceeds.
4. **Cement:** Portland cement BS EN 197-1 - CEM I 42.5 or 52.5.
5. **Fine aggregate:** To BS EN 12620, grade 0/4 or 0/2 (MP).
6. **Additives:** NA

### Protective coatings

#### 535 Inspection of coating work

---

1. **Work in progress:** Permit coating manufacturer to inspect and take samples of products.
2. **Notice:** Give notice of dates for:
  - 2.1. Start of surface preparation and coating.
  - 2.2. Coating members or components leaving the works.
  - 2.3. **Period of notice (minimum):** 5 working days.

### Protective coating systems

#### 643 Protective painting

---

1. **Description:** To all proposed steelwork
2. **Paint manufacturer:** Submit proposals
3. **Shop preparation:**
  - 3.1. **Generally:** Blast cleaning to BS EN ISO 8501-1, preparation grade: Sa 2½
  - 3.2. **Welds/ edges/ areas with surface imperfections:** To BS EN ISO 8501-3, preparation grade: P1
4. **Corrosion protection:**

- 4.1. **Standard:** to BS EN ISO12944-1.
- 4.2. **Corrosive category:** C2.
- 4.3. **Durability:** H.
- 5. **System number:** Contractor's choice.
- 6. **Other requirements:** Apply all coats in shop.

#### 644 Protective painting

---

- 1. **Description:** To all existing steelwork
- 2. **Paint manufacturer:** Submit proposals
- 3. **Site preparation:**
  - 3.1. Wire brush to remove corrosion.
- 4. **Corrosion protection:**
  - 4.1. **Standard:** to BS EN ISO12944-1.
  - 4.2. **Corrosive category:** C2.
  - 4.3. **Durability:** H.
- 5. **System number:** Contractor's choice.
- 6. **Other requirements:** Apply all coats in shop.

### Preparation for painting

#### 710 Offsite preparation and painting

---

- 1. **Working area:** Covered and properly lit, heated and ventilated.
- 2. **Sequence of working:** Select from the following and submit proposals:
  - 2.1. Fabricate, blast clean, prime.
  - 2.2. Blast clean, fabricate, remove flash rust with a light overall sweep blast, prime.
  - 2.3. Blast clean, apply weldable prefabrication primer, fabricate, prime.
- 3. **Prefabrication primer (option 3):** Type recommended by manufacturer of post fabrication primer.
  - 3.1. **Thickness of post fabrication primer coat:** May be reduced if and as recommended by manufacturer.
- 4. **Surfaces inaccessible after assembly:** Apply full treatment and coating system including, if necessary, local application of site coatings.

#### 725 Manual cleaning of new steelwork

---

- 1. **Preparation:** Remove fins, burrs, sharp edges, weld spatter, loose rust and loose scale.
- 2. **Surface finish:** Clean but unpolished to BS EN ISO 8501-1, grade St 2.
- 3. **Finishing:** Thoroughly degrease and clean down. Remove any consequent rusting back to grade St 2. Prime without delay.

#### 730 Preparation for site welding of shop painted steelwork

---

- 1. **Method:** Select from the following:
  - 1.1. Mask weld areas immediately after blast cleaning and before coating steelwork. If paint system comprises more than one coat, step each coat 30 mm back from edge of preceding coat and away from masked areas. Remove masking immediately before welding.
  - 4.1. Prepare and paint steelwork including weld areas. Grind off to bare steel around each weld area immediately before welding.

### 735 Treatment of site welded joints in painted steelwork

---

1. **Preparation:** After welding, and without delay, remove scale and weld spatter from weld
2. areas. Remove traces of rust. Wash with clean water and allow to dry. Prime without delay.
3. **Protective/ Decorative coatings:** Apply to weld areas to match surrounding painted areas.

### 736 Treatment of site welded joints in galvanized steelwork

---

1. **Preparation:** After welding, and without delay, remove scale and weld spatter from weld
2. areas. Remove traces of rust. Wash with clean water and allow to dry.
3. **Coating:** Reinstate using one of the methods given in BS EN ISO 1461, clause 6.3.

### 740 Bolted joints (other than friction grip joints)

---

1. **Steelwork to be shop painted:** Apply full shop specification to joint faces.
2. **Steelwork to be erected with mill finish then site painted:** Before erection, prepare and
3. prime joint faces and allow to dry.
4. **Bolted joints in externally exposed steelwork:**
  - 4.1. Immediately before assembling, apply a further coat of primer and bring surfaces
  5. together while still wet.
  - 5.1. After assembling and before applying site coatings, seal crevices to bolts and joint
  6. perimeters with a compatible sealant.

### 745 Faying surfaces of friction grip joints

---

1. **Protection:** Immediately after blast cleaning and before coating surrounding areas, mask
2. faying surfaces to protect from contamination and deterioration.
  - 2.1. **Paint systems comprising more than one coat:** Step each coat 30 mm back from edge of
  3. preceding coat and away from masked areas.
4. **Removal of protection:** Immediately before bolting, remove masking. Check faying surfaces
5. are free from adhesive. Clean with solvent if necessary.

### 750 Friction grip joints in shop painted steelwork

---

1. **Post assembly treatment of bolts and surrounding areas:** After final tightening of bolts and
2. **inspection of joints:**
  - 2.1. Thoroughly degrease and clean uncoated areas including bolts.
  - 2.2. Prime without delay.
  - 2.3. Apply full shop coating specification.
3. **Direct tension indicators:** Seal measuring gap to prevent ingress of moisture.

### 755 Uncoated fasteners

---

1. **Treatment:** After steelwork erection and before applying site coatings, thoroughly degrease and clean. Without delay, coat to match adjacent shop painted areas.

### 760 Galvanized fasteners

---

1. **Treatment:** After steelwork erection and before applying site coatings, thoroughly degrease and clean. Etch prime.

### 765 Site preparation of shop painted steelwork

---

1. **Preparation:** Touch in shop coats, as necessary, and allow to dry. Before applying site
2. coats (when specified), abrade surfaces or wash down or both, as recommended by paint
3. manufacturer.

### 770 Site preparation of galvanized surfaces for painting

---

1. **Preparation:** Thoroughly degrease. Remove white corrosion products. Wash off and allow
2. to dry before applying etching wash or primer.

## Painting

### 810 Environmental conditions

---

1. **General requirements prior to starting coating work:**
  - 1.1. **Surfaces:** unaffected by moisture or frost.
  - 1.2. **Steel temperature:** At least 3°C above dew point, with conditions stable or improving, and not high enough to cause blistering or wrinkling of the coating.
  - 1.3. **Relative humidity:** Below 85%;

### 815 Coatings

---

1. **Surfaces to be coated:** Clean, dust free and suitably dry. Previous coats to be adequately cured.
2. **Multiple coats of same material:** Use different tints to assist checking of complete coverage.
3. **Penultimate coat:** Colour recommended by paint manufacturer to suit top coat colour.
4. **Finish required:** Smooth and even, of uniform thickness and colour, free from defects.

### 820 Film thickness

---

1. **Wet film thickness:** During application, check thickness of each coat with a wheel or comb
2. gauge used in accordance with BS EN ISO 2808.
3. **Accumulated dry film thickness:** After each coat has dried, check total accumulated film
4. thickness.
  - 4.1. **Method:** Magnetic or electromagnetic meter.
  - 4.2. **Number and position of measurements:** As directed.
  - 4.3. **Validation:** Measurements to be independently witnessed.
  - 4.4. **Meter calibration:** Check against standard shims and recalibrate regularly against a
5. smooth steel reference plate.
6. **Average dry film thickness:**
  - 6.1. At least specified thickness over any square metre.
  - 6.2. No reading to be less than 75% of specified thickness.
7. **Top coat dry film thickness:** Sufficient to give an even, solid, opaque appearance.

Ω End of Section

## G20: Carpentry / timber framing / first fixing

### General

#### 105 Timber procurement

---

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

#### 160 Grading and marking of softwood

---

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

### Products

#### 210 Structural softwood (graded direct to strength class)

---

1. **Description:** For structural use generally
2. **Grading standard:** To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
3. **Strength class to BS EN 338:** as Structural Engineers requirements
4. Treatment
  - 4.1. **Preservative treatment:** Where stated on the drawings
    - 4.1.1. **Design service life:** 30 years
  - 4.2. **Fire retardant treatment:** None required

#### 211 Structural softwood (graded direct to strength class)

---

1. **Description:** Studs
2. **Grading standard:** To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
3. **Strength class to BS EN 338:** C16
4. Treatment
  - 4.1. **Preservative treatment:** Where stated on the drawings
    - 4.1.1. **Design service life:** 30 years
  - 4.2. **Fire retardant treatment:** None required

#### 220 Structural softwood

---

1. **Description:** Framing
2. **Type:** To Canadian Lumber Standards, or other national equivalent and so marked.

3. Treatment
  - 3.1. **Preservative treatment:** Where stated on the drawings
    - 3.1.1. **Design service life:** 30 years
  - 3.2. **Fire retardant treatment:** None required

#### 270B Ungraded softwood

---

1. **Description:** Generally
2. **Quality of timber:** Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.
3. **Type:** To Canadian Lumber Standards, or other national equivalent and so marked.
4. **Surface finish:** as stated on the drawings
5. Treatment
  - 5.1. **Preservative treatment:** where stated on the drawings
    - 5.1.1. **Design service life:** 30 years
  - 5.2. **Fire retardant treatment:** none

#### 311 Non-structural plywood

---

1. **Description:** Generally
2. **Standard:** To an approved national standard.
3. **Thickness:** as stated on the drawings
4. **Appearance class to BS EN 635:** I for visible facings
5. **Use class to BS EN 335:** Sub class 3.1
6. **Bond quality to BS EN 314-2:** Class 2
7. **Finish:** Sanded to all visible faces
8. **Edges:** Square
9. Treatment
  - 9.1. **Preservative treatment:** None required
    - 9.1.1. **Design service life:** Not applicable
  - 9.2. **Fire retardant treatment:** None required

### Workmanship generally

#### 401 Cross-section dimensions of structural softwood and hardwood

---

1. **Dimensions:** Dimensions in this specification and shown on drawings are target sizes as defined in BS EN 336.
2. **Tolerances:** The tolerance indicators (T1) and (T2) specify the maximum permitted deviations from target sizes as stated in BS EN 336, clause 4.3:
  - 2.1. Tolerance class 1 (T1) for sawn surfaces.
  - 2.2. Tolerance class 2 (T2) for further processed surfaces.

#### 402 Cross-section dimensions of non-structural softwood

---

1. **Dimensions:** Dimensions in this specification and shown on drawings are finished sizes.
2. **Maximum permitted deviations from finished sizes:** As stated in BS EN 1313-1:
  - 2.1. Clause 6 for sawn sections.

#### 430 Selection and use of timber

---

1. **Timber members damaged, crushed or split beyond the limits permitted by their grading:** Do not use.

#### 435 Notches, holes and joints in timber

---

1. Notches and holes
  - 1.1. **General:** Avoid if possible.
  - 1.2. **Sizes:** Minimum needed to accommodate services.
  - 1.3. **Position:** Do not locate near knots or other defects.
  - 1.4. **In same joist:** Minimum 100 mm apart horizontally.
  - 1.5. Notches in joists
    - 1.5.1. **Position:** Locate at top. Form by sawing down to a drilled hole.
    - 1.5.2. **Depth (maximum):** 0.15 x joist depth.
    - 1.5.3. **Distance from supports:** Between 0.1 and 0.2 x span.
  - 1.6. Holes in joists
    - 1.6.1. **Position:** Locate on neutral axis.
    - 1.6.2. **Diameter (maximum):** 0.25 x joist depth.
    - 1.6.3. **Centres (minimum):** 3 x diameter of largest hole.
    - 1.6.4. **Distance from supports:** Between 0.25 and 0.4 of span.
  - 1.7. **Notches in roof rafters, struts and truss members:** Not permitted.
  - 1.8. **Holes in struts and columns:** Locate on neutral axis.
    - 1.8.1. **Diameter (maximum):** 0.25 x minimum width of member.
    - 1.8.2. **Centres (minimum):** 3 x diameter of largest hole.
    - 1.8.3. **Distance from ends:** Between 0.25 and 0.4 of span.
2. **Scarf joints, finger joints and splice plates:** Do not use without approval.

#### 440 Processing treated timber

---

1. **Cutting and machining:** Carry out as much as possible before treatment.
2. **Extensively processed timber:** Retreat timber sawn lengthways, thickness, planed, ploughed, etc.
3. **Surfaces exposed by minor cutting/ drilling:** Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

#### 450 Moisture content

---

1. **Moisture content of wood and wood based products at time of installation:** Not more than:
  - 1.1. Covered in generally unheated spaces: 24%.
  - 1.2. Covered in generally heated spaces: 20%.
  - 1.3. Internal in continuously heated spaces: 20%.

#### 510 Protection

---

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

#### 530A Painted finishes

---

1. **Structural timber to be painted:** Primed as specified before fixing.

#### 540A Clear finishes

---

1. **Structural timber to be clear finished:** Keep clean and apply first coat of specified finish before fixing.

#### 550 Exposed timber

---

1. **Planed structural timber exposed to view in completed work:** Prevent damage to and marking of surfaces and arrises.

### Jointing timber

#### 570 Jointing/ Fixing generally

---

1. **Generally:** Where not specified precisely, select methods of jointing and fixing and types, sizes and spacings of fasteners in compliance with section Z20.

#### 580 Framing anchors

---

1. **Manufacturer:** Contractor's choice
  - 1.1. **Product reference:** Contractor's choice
2. **Material/ finish:** Galvanized low carbon steel
3. **Fasteners:** Galvanized or sherardized square twist nails.
  - 3.1. **Size:** Not less than size recommended by anchor manufacturer.
4. **Fixing:** Secure using not less than the number of nails recommended by anchor manufacturer.

#### 615A Bolt/ screw assemblies

---

1. **Description:** Generally
2. **Type:** As shown on drawings
3. **Size:** As shown on drawings
4. **Coating applied by manufacturer:** As stated on drawings
5. **Nuts and washers:** Material grade and finish to suit bolts.
6. **Washer dimensions:** Diameter/ side length of washers in contact with timber faces to be minimum 3 times bolt diameter, with a thickness not less than 0.3 times bolt diameter.

#### 630 Bolted joints

---

1. **Bolt spacings (minimum):** To BS EN 1995-1-1, section 8.5.
2. **Holes for bolts:** Located accurately and drilled to diameters as close as practical to the nominal bolt diameter and not more than 2 mm larger.
3. **Washers:** Placed under bolt heads and nuts that would otherwise bear directly on timber. Use spring washers in locations which will be hidden or inaccessible in the completed building.
4. **Bolt tightening:** So that washers just bite the surface of the timber. Ensure that at least one complete thread protrudes from the nut.
  - 4.1. **Checking:** At agreed regular intervals up to Completion. Tighten as necessary.

#### 670 Anti-corrosion finishes for fasteners

---

1. **Galvanizing:** To BS 7371-6, with internal threads tapped and lightly oiled following treatment.
2. **Sherardizing:** To BS 7371-8, Class 1.
3. **Zinc plating:** To BS EN ISO 4042 and passivated.

## Erection and installation

### 721 Expansion anchors

---

1. **Manufacturer:** Contractor's choice
  - 1.1. **Product reference:** Contractor's choice
2. **Size:** as stated on the drawings
3. **Material/ finish:** as clause 670
4. **Spacing/ edge distance (minimum):** as stated on the drawings
  - 4.1. Obtain instructions if specified spacing or edge distance cannot be achieved.
5. **Installation holes:** Drilled to diameter and depth recommended by manufacturer. Clean and free from dust.
6. **Installation/ tightening:** To manufacturer's instructions.

### 725A Hammer-in fasteners

---

1. **Manufacturer:** Contractor's choice
  - 1.1. **Product reference:** Contractor's choice
2. **Spacing/ edge distance (minimum):** as stated on the drawings
  - 2.1. Obtain instructions if specified spacing or edge distance cannot be achieved.
3. **Installation holes:** Drilled to diameter and depth recommended by manufacturer. Clean and free from dust.

### 770 Additional supports

---

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

### 780 Wall plates

---

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

### 784 Joists generally

---

1. **Centres:** Equal, and not exceeding designed spacing.
2. **Bowed joists:** Installed with positive camber.
3. **End joists:** Positioned approximately 50 mm from masonry walls.

### 786 Joists on hangers

---

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

### 791 Proprietary joist hangers

---

1. **Description:** Generally
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice

3. **Material/ finish:** Hot dip galvanized steel plate
4. **Size:** To suit joist, design load and crushing strength of supporting construction.

#### 795 Trimming openings

---

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

#### 820 Vertical restraint straps

---

1. **Type:** Flat, bent or twisted as required
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Material/ finish:** Galvanized steel
4. **Size**
  - 4.1. **Cross section: Not less than:** 30 x 5 mm
  - 4.2. **Length:** Overall length 1100 mm: end of strap 900 mm below underside of wall plate; bent over top of wall plate and 100 mm down far side.
5. **Centres:** Not more than 1.2 m.
6. **Fixing**
  - 6.1. To timber members with not less than 30 x 3.5 mm galvanized square twist nails.
  - 6.2. To masonry with not less than five 50 mm x 12 gauge sherardized screws evenly spaced, with at least one screw located within 150 mm of the bottom end of each strap.

#### 830 Lateral restraint straps

---

1. **Manufacturer:** Contractor's choice
  - 1.1. **Product reference:** Contractor's choice
2. **Material/ finish:** Galvanized steel
3. **Size:** Not less than 30 x 5 mm cross section, 150 mm cranked end and 1500 mm long.
4. **Fixing:** To top of joists/ rafters/ ties at not more than 1.2 m centres and as shown on drawings.
  - 4.1. Ensure that cranked end is in tight contact with cavity face of wall inner leaf and is not pointing upwards.
5. **Straps spanning joists/ rafters/ ties running parallel to wall:** Fix noggings and packs tightly beneath straps.
  - 5.1. **Size of noggings and packs:** Not less than three quarters of joist/ rafter/ tie depth and not less than 38 mm thick.
  - 5.2. **Notching:** Notch joists so that straps fit flush with surface. Do not notch rafters/ ties.
6. **Fasteners:** Not less than four 50mm x 8 gauge sherardised countersunk screws per strap, evenly spread

#### 840 Strutting to floor joists

---

1. **Type:** One of the following:
  - 1.1. **Herringbone strutting:** At least 38 x 38 mm softwood.
  - 1.2. **Solid strutting:** At least 38 mm thick softwood and at least three quarters of joist depth.
  - 1.3. **Proprietary metal strutting:** Contractors choice
2. **Fixing:** Between joists as follows:
  - 2.1. **Joist spans of 2.5 to 4.5 m:** One row at centre span.
  - 2.2. **Joist spans over 4.5 m:** Two rows equally spaced.
  - 2.3. Strutting must not project beyond top and bottom edges of joists.
3. **Outer joists:** Blocked solidly to perimeter walls.

**950A Combined fascias/ soffits**

---

1. To rear lobby floor
2. **Manufacturer:** Alumasc Exterior Building Products Ltd.
  - 2.1. **Web:** [www.alumasc-exterior.co.uk](http://www.alumasc-exterior.co.uk).
  - 2.2. **Email:** [info@alumasc-exterior.co.uk](mailto:info@alumasc-exterior.co.uk).
  - 2.3. **Product reference:** Skyline Designer combined fascia and soffit system.
3. **Support:** [Preservative treated SW framing].
  - 3.1. Provide additional support at joints.
4. **Fixings:** Secret, as recommended by the manufacturer.
5. **Aluminium thickness:** 3 mm
6. **Finish:** Polyester powder coated to BS 6496
  - 6.1. **Colour:** RAL 7024M Graphite Grey
7. **Nominal depth:** edge profile and details : As drawings
8. **Other requirements:**
  - 8.1. Detailed working drawings for the CA's approval prior to manufacture.
  - 8.2. **Installer:** A contractor approved by the system manufacturer.

Ω End of Section

## H10: Patent glazing

### Types of patent glazing

#### 115 Patent glazing

---

1. **Description:** To rear roof
2. **Supporting structure:** As drawings
3. **Patent glazing system:** To BS 5516-1.
  - 3.1. **Manufacturer:** Contractor's choice
    - 3.1.1. **Product reference:** Contractor's choice
  - 3.2. **Type:** Box section bars with thermal break, four edge supported, double glazed
4. **Glazing bar:**
  - 4.1. **Material:** Extruded aluminium alloy bars and caps
  - 4.2. **Finish:** Powder coating as section Z31
  - 4.3. **Colour/ texture:** to be agreed
  - 4.4. **Minimum film thickness:** 30 micrometres
  - 4.5. **Spacing:** 750 mm maximum
  - 4.6. **Slope:** to match adjacent roof slopes
  - 4.7. **Bottom overhang/ lap:** 100 mm
5. **Pane/ infilling materials:** Double glazed units, clear float glass outer pane, clear laminated glass inner pane to BS 6206, Class A
6. **Incorporated components:**
  - 6.1. **Openings:** None
  - 6.2. **Accessories:** Preformed flashings to eaves, verge and ridge to match glazing bars generally

### Design / performance requirements

#### 210 Completion of design

---

1. **Description:** For patent glazing
2. **Description:** As Preliminaries section A13
3. **Requirement:** Complete the detailed design to satisfy specified performance criteria and coordinate with the detailed design of related and adjacent work.
  - 3.1. **Design standards:**
    - 3.1.1. **Patent glazing:** In accordance with BS 5516-1 and -2.
    - 3.1.2. **Access and openings:** In accordance with BS 8213-1.
4. **Structural requirements:** As section B50.
5. **Additional requirements:** None
6. **Design and production information:** As Preliminaries section A31
7. **Timing of submissions:** As Preliminaries section A31

#### 311 Requirements generally

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1. **Extent of compliance:** Entire patent glazing assembly, including flashings and junctions with adjacent parts of the building.
2. **Deflections and other movements:** Make full allowance.

**352 Reaction to fire**

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1. **Standard:** To BS EN 13501-1.
- 1.1. **Class:** B-s3, d2 or better

**361 Water penetration**

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

**401 Thermal safety**

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

**Fabrication and installation****510 Workmanship generally**

---

1. **Standard:** To BS 5516-1 and 2.
2. **Fixings:** Concealed unless otherwise indicated on detailed drawings.
  - 2.1. **General requirements:** As section Z20.
  - 2.2. **Material:** Compatible with building component and substrate.
  - 2.3. **Metals:** Isolate dissimilar metals to avoid electrolytic corrosion.
3. **Allowance for thermal and building movement:** Where appropriate.
  - 3.1. **Movement joints:** Do not bridge.
4. **Fabrication:** Machine cut and drill components in the workshop wherever possible.
5. **Installation:** Submit proposals before cutting and drilling into structure in positions other than shown on detailed design drawings.

**520 Glass**

---

1. **Standards and product labels:** To BS 952 and the relevant parts of:
  - 1.1. BS EN 572 for basic soda lime silicate glass.
  - 1.2. BS EN 1096 for coated glass.
  - 1.3. BS EN 1863 for heat strengthened soda lime silicate glass.
  - 1.4. BS EN 12150 for thermally toughened soda lime silicate glass.
  - 1.5. BS EN13024 for thermally toughened borosilicate glass.
  - 1.6. BS EN ISO 12543 for laminated glass.
2. **Pane dimensions:** Within  $\pm 2$  mm of nominal size.
3. **Glass quality:** Clean and free from obvious scratches, bubbles, cracks, rippling, dimples and other defects.
4. **Glass edges:** Generally undamaged. Shells and chips not more than 2 mm deep and extending not more than 5 mm across surface are acceptable if ground out.

**540 Insulating glass units**

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1. **Standard and labels for hermetically sealed units:** To BS EN 1279
2. **Label:** Each individually panel labelled.
3. **Colour of aluminium perimeter spacers:** Black
4. **Perimeter seals:** Resistant to UV light degradation on exposed edges.
  - 4.1. **Standard:** Edge seal strength to BS EN 1279-4.
5. **Perimeter taping:** Not to be used.
6. **Assembly and weather sealants:** Compatible with perimeter seals.

**550 Plastics glazing**

---

1. **Standard:** To BS 5516-2, Annex A.
2. **Sheets:** Accurately sized with clean, undisfigured and undamaged edges and surfaces.
3. **Glazing bar edge cover to sheets:** Adequate to prevent displacement due to thermal movement and flexing under load.
4. **Sealing and glazing materials:** Compatible with sheets.

Ω End of Section

# H1: Curtain walling

## Clauses

2 To be read with preliminaries/ general conditions.

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## Tendering

### 10 Information to be provided with tender

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1. **Submit the following curtain walling particulars:**
  - 1.1. Typical plan, section and elevation drawings at suitable scales.
  - 1.2. **Typical detailed drawings at large scales, including:** Jamb, Head, Intermediate rails, louvered vents and spandrel panels
  - 1.3. **Technical information and certification demonstrating compliance with specification of proposed incorporated products and finishes, including:** n/a
  - 1.4. Certification, reports and calculations demonstrating compliance with specification of proposed curtain walling.
  - 1.5. Proposals for connections to and support from the building structure and building components.
  - 1.6. Proposals for amendments to primary supporting structure and for secondary supporting structure additional to that shown on preliminary design drawings.
  - 1.7. Schedule of builder's work, special provisions and special attendance by others.
  - 1.8. Examples of standard documentation from which project quality plan will be prepared.
  - 1.9. Preliminary fabrication and installation method statements and programme.
  - 1.10. 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.
  - 1.11. Proposals for replacing damaged or failed products.
  - 1.12. Areas of non-compliance with the specification.

## Types of curtain walling

### 110 Curtain walling

---

1. **Description:** Generally
2. **Supporting structure:** EXISTING SLAB/ NEW STEEL STRUCTURE
3. **Curtain walling system:**
  - 3.1. **Manufacturer:** Contractor's choice
    - 3.1.1. **Product reference:** Submit proposals
  - 3.2. **Type:** Contractors choice
4. **Internal framing member:**
  - 4.1. **Material:** Aluminium
  - 4.2. **Finish:** Powder coating
    - 4.2.1. **Colour/ texture:** RAL 7061 / matt
    - 4.2.2. **Minimum film thickness:** Not applicable
5. **External cover cap:**
  - 5.1. **Material:** Aluminium
  - 5.2. **Finish:** Powder coating
    - 5.2.1. **Colour/ texture:** RAL 7061/ matt

**5.2.2. Minimum film thickness:** Not applicable

6. **Glazing:** Insulating glass units
  - 6.1. **Inner pane:** Contractors choice to BS 6262 and BS EN 12600
  - 6.2. **Outer pane:** Contractors choice to BS 6262 and BS EN 12600
7. **Glazing system:** Gaskets, cover plate fixed
8. **Panel/ facing type:** Composite facings, mechanically fixed to secondary framing
  - 8.1. **External material:** Toughened and heat soaked spandrel Glass mid grey with 60 mm insulation
  - 8.2. **External finish:** Not required
  - 8.3. **Internal material:** 12.5 mm plasterboard dry lining
  - 8.4. **Internal finish:** Finished as Section M60
  - 8.5. **Core insulation:** Mineral wool board to BS EN 13162.
9. **Accessories:** Perimeter flashings
10. **Incorporated components:** Sun screens as clause 130A, Louvered vents as clause 140 and Spandrel panels all as shown on the drawings, Doors
11. **Other requirements:** N/a

**130A Sun screens**

---

1. **Description:** To curtain walling
2. **Manufacturer:** ArGeTon.
  - 2.1. **Address:** Oldenburger Allee 26, D-30659 Hanover, Germany.
    - 2.1.1. Manufacturer's UK agent: Telling Architectural Limited.
  - 2.2. **Address:** Unit 7 The Dell, Four Ashes, Wolverhampton, WV10 7DF.
  - 2.3. **Tel:** 01902 797700.
    - 2.3.1. Distributor: Taylor Maxwell Limited.
  - 2.4. **Address:** Taylor Maxwell House, The Promenade, Clifton, Bristol, Avon, BS8 3NW.
  - 2.5. **Tel:** 0117 973 7888.
3. **Terracotta Baguette:**
4. **Product reference:** ArGeTon® façade system.
  - 4.1. **Type:** ArGeTon - .
  - 4.2. **Material:** Terracotta clay.
  - 4.3. **Thickness:** 50 mm, hollow profiles.
  - 4.4. **Panel Size:** 50 x 50 mm Baguettes in 1500mm maximum lengths.
  - 4.5. **Finish:** Smooth.
  - 4.6. **Colour:** Colour to match sample provided by clients representatives.
5. **Frame system:**
6. **Vertical Base Substructure:**
  - 6.1. Aluminium wall cleats attached to substrate, spaced at appropriate centres to ensure structural stability.
  - 6.2. Aluminium carrier profiles.
7. **Horizontal Rail Support:**
  - 7.1. Argeton horizontal aluminium carrier rails fixed to Curtain walling.
  - 7.2. **Material:** Manufactured from aluminium grade 6063 T6.
  - 7.3. **Accessories:** Aluminium corner profiles
  - 7.4. **Fasteners:** Polyester powder coated aluminium Barro clips.

- 7.5. **Number and location:** Each baguette is to be supported using a Barro Aluminium support profile held in place by an ArGeTon Barro support clip assembly, thus ensuring each baguette is held in place securely at each end. Each baguette profile is mechanically fixedback to the vertically spanning aluminium support profiles] .
- 7.6. **Vertical joint type:** [Open] .
- 7.7. **Vertical joint width:** [0mm] .
- 7.8. **Horizontal joint type:** [Open and as the Architects details] .
- 7.9. **Horizontal spacing:** 50mm space between each terracotta baguette.
8. **Secondary support/framing system:** Vertically spanning, pre-punched, aluminium profiles of either Box section or Angle sections with aluminium cleats back to the substrate .
  - 8.1. **Manufacturer:** As designed and approved by Telling Architectural Limited.
  - 8.2. **Material:** [Aluminium] .
  - 8.3. **Fasteners:** To be determined by Telling Architectural Limited, and dependant on secondary support system/background utilised.
    - 8.3.1. Number and location: To be determined by Telling Architectural Limited.
9. **Backing wall:** Curtain wall as H11.110.
10. Other requirements; It should be noted that the sun screen is to be designed to follow roof slope in certain locations, as clause 131 & 132.

### 131 Information to be provided during detailed design

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1. **Description:** Sun screen
2. **Submit the following cladding particulars:**
  - 2.1. A schedule of detailed drawings and dates for submission for comment.
  - 2.2. A schedule of loads that will be transmitted from the sunscreen to the structure.
  - 2.3. Proposed fixing details and systems relevant to the structural design and construction with methods of adjustment and tolerances.
  - 2.4. A schedule of fabrication tolerances/ size tolerances.
  - 2.5. A detailed testing programme in compliance with the Main Contract master programme.
  - 2.6. A detailed fabrication and installation programme in compliance with the Main Contract master programme.
  - 2.7. A quality plan in compliance with the CWCT 'Guide to good practice for facades', Section 6.
  - 2.8. Proposals to support outstanding applications for Building Regulation consents or relaxations

### 132 Information to be provided before commencement of testing or manufacture of

---

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

### 140 Louvres

---

1. **Description:** Within curtain wall system
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Submit Proposals

3. **Material:** Aluminium
4. **Finish:** Powder coating
  - 4.1. **Colour/ texture:** RAL 7061/ Matt
  - 4.2. **Minimum film thickness:** Not applicable
5. **Fixing:** to Curtain wall manufacturers recommendations
6. **Other requirements:** Performance criteria as specified by M&E engineer

## General requirements/ preparatory work

### 210 Design

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1. **Curtain walling and associated features:** Complete the detailed design. Submit before commencement of fabrication.
2. **Related works:** Coordinate in the detailed design.

### 215 Design proposals

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

### 220 Specification

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

### 235 Information to be provided before commencement of testing or fabrication of curtain walling

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

## Design/ performance requirements

### 305 CWCT 'standard for systemised building envelopes'

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

8. **Project performance requirements specified in this subsection:** Read in conjunction with CWCT performance criteria.

### 313 Integrity

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1. **Requirement:** The curtain walling must resist wind loads, dead loads and design live loads, and accommodate deflections and movements without damage.
2. **Design wind pressure: Calculate in accordance with:** BS EN 1991-1-4 and National Annex
3. **Hard body impact loads:** To CWCT TN75:
  - 3.1. **Location and category:** Category A
4. **Soft body impact loads - curtain walling to BS EN 14019:**
  - 4.1. **Location and classification:** Class E1
5. **Soft body impact loads - glass to BS EN 12600:**
  - 5.1. **Location and classification:** (A) 1
6. **Permanent imposed loads:** Sun Screen as clause 130A
7. **Temporary imposed loads:** N/A

### 332 Appearance and fit

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1. **Requirement:** Design curtain walling system:
  - 1.1. To ensure position and alignment of all parts and features as shown on preliminary design drawings.
  - 1.2. To accommodate deviations in the primary support structure.
2. **Primary support structure:** Before commencing installation of curtain walling system, carry out survey sufficient to verify that required accuracy of erection can be achieved.
  - 2.1. **Give notice:** If the structure will not allow the required accuracy or security of erection.
  - 2.2. **Design tolerances:** +10
3. **Curtain wall envelope zone tolerances:**
  - 3.1. **Width:** +10
    - 3.1.1. **Critical reference location:** Brick Jambs and intermediate Floor plates
4. **Maximum permitted component and installation tolerances:** +10

### 350 Water penetration

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1. **Watertightness class to BS EN 12154:** R7
  - 1.1. **Peak test pressure:** 600 Pa
2. **Additional requirements:** n/a

### 370 Thermal properties

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1. **Method of calculating the thermal transmittance (U-value) of curtain walling/ each zone of curtain walling:** Weighted U-value.
2. **Average U-value of curtain walling:** 1.6
3. **Curtain wall zone interfaces:** Co-ordinate to achieve required average U-value.
4. **Method for assessing thermal transmittance (U-value) of assemblies:** Hot box in accordance with BS EN ISO 8990

### 385 Thermal stress in glazing

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

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**390 Avoidance of condensation**

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1. **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:
  - 1.1. Notional outdoor psychrometric conditions as BS 6229, table A1.
  - 1.2. **Notional indoor psychrometric conditions:**
    - 1.2.1. **Temperature:** 20°C
    - 1.2.2. **Relative humidity:** 40%
    - 1.2.3. **Vapour pressure:** 0.93 kPa

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**420 Fire resistance of curtain walling**

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1. **Standard:** To BS EN 13501-2.
  - 1.1. **Minimum periods and criteria:** Class EW 60

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**425 Internal surface spread of flame of curtain walling**

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1. **Standard:** To BS 476-7.
  - 1.1. **Class:** 0

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**426 Reaction to fire of curtain walling**

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1. **Standard:** To BS EN 13501-1.
  - 1.1. **Class:** B-s3, d2 or better

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**440 Durability**

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1. **Relevant agents or degradation mechanisms:** N/A
2. **Design life of the curtain walling system:** Not less than 30 years
3. **Secondary components:** Submit details together with required maintenance regime, replacement periods and methods of replacement.

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**450 Safety**

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

## Testing

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**510 Comparison (type) testing**

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

## Products

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**710 Aluminium alloy framing sections**

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

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**730 Mechanical fixings**

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1. **Stainless steel:** To BS EN ISO 3506, grade A2 generally, grade A4 when used in severely corrosive environments.

2. **Carbon steel:** To BS 4190 and suitable for galvanizing or other protective coating.
3. **Aluminium brackets, rivets and shear pins:** To relevant parts of BS EN 755.

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**732 Adhesives**

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1. **General:** Not degradable by moisture or water vapour.

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**735 Fixing anchors**

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

---

**737 Glass generally**

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1. **Standards:** To BS 952 and relevant parts of:
  - 1.1. BS EN 572 for basic soda lime silicate glass.
  - 1.2. BS EN 1096 for coated glass.
  - 1.3. BS EN 1748 for borosilicate glass.
  - 1.4. BS EN 1863 for heat strengthened soda lime silicate glass.
  - 1.5. BS EN 12150 for thermally toughened soda lime silicate glass.
  - 1.6. BS EN 13024 for thermally toughened borosilicate glass.
  - 1.7. BS EN ISO 12543 for laminated glass.
2. Selection of glass type and thickness in accordance with recommendations of CIRIA publication 'Guidance on glazing at height'.
3. **Glass quality:** Clean and free from obvious scratches, bubbles, cracks, ripples, dimples and other defects.
4. **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.

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**741 Distortional tolerances on glass**

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1. **Description:** Generally
2. **Measurement of tolerances:** After any thermal toughening/ heat strengthening.
3. **Maximum bow:** 0.2% of pane dimension.
4. **Maximum roller wave:**
  - 4.1. **For 3 to 5 mm thick glass:** 0.5 mm.
  - 4.2. **For 6 to 10 mm thick glass:** 0.3 mm.
  - 4.3. **For 12 mm and thicker glass:** 0.15 mm.
5. **Maximum edge dip:**
  - 5.1. **For 3 to 5 mm thick glass:** 0.8 mm.
  - 5.2. **For 6 to 10 mm thick glass:** 0.5 mm.
  - 5.3. **For 12 mm and thicker glass:** 0.25 mm.

---

**742 Heat soaked thermally toughened glass**

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1. **Standard:** To BS EN 14179.
  - 1.1. **Holding period:** 2 hours
2. **Locations of heat soaked glass:** ALL

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**745 Insulating glass units**

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

---

**750 Infill panels/ facings**

---

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

---

**770 General sealants**

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

---

**772 Curtain walling joint assembly sealants**

---

1. **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.
2. **Manufacturer:** Contractors choice
  - 2.1. **Product reference:** Contractor choice

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**780 Thermal insulation**

---

1. **Material:** Mineral wool boards
  - 1.1. **Recycled content:** 50% (minimum) to BS EN ISO 14021
  - 1.2. **Properties:** Durable, rot and vermin proof and not degradable by moisture or water vapour.
2. **Fixing:** Attached to or supported within the curtain walling so as not to bulge, sag, delaminate or detach during installation or in situ during the life of the curtain walling.

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**785 Vapour control layers**

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

## Finishes

### 830 Powder coating

---

1. **Requirement:** As section Z31.

## Fabrication and installation

### 910 Generally

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

### 915 Glazing

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

### 917 Fixings/ adhesives application

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

### 920 Sealant application

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

### 930 Assembly

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1. **General:** Carry out as much assembly as possible in the workshop.
2. **Joints (other than movement joints):** Rigidly secured, reinforced where necessary and fixed with hairline abutments.
3. **Displacement of components in assembled units:** Submit proposals for reassembly on site.

### 955 Fixing anchor installation

---

1. **Site drilling or cutting into structure:** Submit proposals for positions other than shown on detailed drawings.
2. **Concrete supporting structure:**
  - 2.1. **Cast-in inserts:** Provide detailed locational information. Protect cavities in inserts from entry of concrete.
  - 2.2. **Edge fixing distances:** Not less than recommended by fixing anchor manufacturers.
3. **Corrective fabrication:** Minimize. Where necessary, submit proposals.

### 970 Curtain walling installation

---

1. **Securing to fixing anchors:** Through holes formed during fabrication only.
2. **Tightening mechanical fasteners:** To manufacturer's recommended torque figures. Do not overtighten fasteners intended to permit differential movement.
3. **Protective coverings:** Remove only where necessary to facilitate installation and from surfaces that will be inaccessible on completion.

**980 Interfaces**

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1. **Flashings, closers, etc:** Locate and form correctly to provide weathertight junctions with the curtain walling.

**985 Maintenance**

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

Ω End of Section

## H62: Natural slating

### Types of slating

#### 105A Roof slating

---

1. **Description:** Generally
2. **Substrate:** Sarking board as clause P19.150A over existing rafters
3. **Pitch:** to match existing
4. **Underlay: Not Required:** Taped using Pavatape as sarking board manufacturers recommendations
  - 4.1. **Recycled content:** Contractor's choice
  - 4.2. **Direction:** Parallel to eaves.
  - 4.3. **Head-lap (minimum):** 150 mm
5. **Battens:** Fixed into counter battens
  - 5.1. **Size:** 50 x 25 mm
  - 5.2. **Fixing:** 65 x 3.35 mm galvanized annular ring shank nails
6. **Counter Battens:** Fixed through sarking into rafter below.
  - 6.1. **Size:** [50 x 25 mm].
  - 6.2. **Fixing:** [Helifix InSkew600, Size and Quantity as as recommended by manufacturer].
7. **Slates:**
  - 7.1. **Supplier:** Contractor's choice
    - 7.1.1. **Product reference:** Contractor's choice
  - 7.2. **Type:** heather-grey
  - 7.3. **Size:** Contractors Choice
  - 7.4. **Head-lap (minimum):** 98 mm
  - 7.5. **Fixing:** Two nails each slate.
8. **Accessories:** Access anchorage points as section N25, continuous ventilation to eaves as clause 355A.

### Slating generally

#### 210 Basic workmanship

---

1. **General:** Fix slating and accessories to make the whole sound and weathertight at earliest opportunity.
2. **Setting out:** To true lines and regular appearance, with neat fit at edges, junctions and features.
3. **Fixings for slating accessories:** As recommended by manufacturer.
4. **Gutters and pipes:** Keep free of debris. Clean out at completion.

#### 235 Vapour permeable underlay

---

1. **Manufacturer:** Contractor's choice
  - 1.1. **Product reference:** Contractor's choice
2. **Standard:** To BS EN 13859-1
  - 2.1. **Reaction to fire:** Manufacturer's standard
  - 2.2. **Water vapour transmission (minimum):** Manufacturer's standard
  - 2.3. **Resistance to water penetration:** Class W1
  - 2.4. **Tensile strength (minimum):** Manufacturer's standard

- 2.5. **Tear resistance (minimum):** Manufacturer's standard
- 2.6. **Other BS EN 13859 characteristics:** None
- 3. **Weight (mass per unit area):** 160 g/m<sup>2</sup>
- 4. **Resistance to wind uplift:** Greater than 2350 N/m<sup>2</sup>

#### 240A Underlay

---

- 1. At eaves
- 2. Use an external grade (UV resistant) underlay taped to sarking board using Pavatape, to board manufacturers approved details.
- 3. **Handling:** Do not tear or puncture.
- 4. **Laying:** Maintain consistent tautness.
- 5. **Vertical laps (minimum):** 100 mm wide, coinciding with supports and securely fixed.
- 6. **Fixing:** Galvanized steel, copper or aluminium 20 x 3 mm extra large clout head nails.
- 7. **Ventilation paths:** Do not obstruct.

#### 245 Battens/ counterbattens - treated

---

- 1. **Timber:** Sawn softwood.
  - 1.1. **Species:** In accordance with BS 5534, clause 4.11.1.
  - 1.2. **Permissible characteristics and defects:** Not to exceed limits in BS 5534, Annex D.
  - 1.3. **Grading:** Contractor's choice
  - 1.4. **Moisture content at time of fixing and covering (maximum):** 22%.
- 2. **Preservative treatment:** As section Z12 and Wood Protection Association Commodity Specification C8.
  - 2.1. **Type:** Contractor's choice

#### 265 Batten fixing

---

- 1. **Setting out:** Align parallel to ridge in straight horizontal lines to gauge of slates. Align on adjacent areas.
- 2. **Batten length (minimum):** Sufficient to span over three supports.
- 3. **Joints in length:** Square cut. Butt centrally on supports. Joints must not occur more than once in any group of four battens on one support.
- 4. **Additional battens:** Provide where unsupported laps in underlay occur between battens.
- 5. **Fixing:** Each batten to each support. Splay fix at joints in length.

#### 275 Slate fixing

---

- 1. **Setting out:** Lay slates with an even overall appearance with slightly open (maximum 5 mm) butt joints. Align tails.
- 2. **Slate thickness:** Consistent in any one course. Lay with thicker end as tail.
- 3. **Ends of courses:** Use extra wide slates to maintain bond and to ensure that cut slates are as large as possible. Do not use slates less than 150 mm wide.
- 4. **Top course:** Head-nail short course to maintain gauge.
- 5. **Fixing:** Centre nail each slate twice through countersunk holes 20-25 mm from side edges.
  - 5.1. **Nails:** Copper clout to BS 1202-2 or aluminium clout to BS 1202-3.
  - 5.2. **Nail dimensions:** Determine in accordance with BS 5534 to suit site exposure, withdrawal resistance and slate supplier's recommendations.

## Roof slating edges/ junctions/ features

### 305 Generally

---

1. **Fittings and accessories:** As recommended by slate supplier, do not improvise.
  - 1.1. **Exposed fittings and accessories:** To match slate colour and finish.
2. **Cut slates:** Cut only where necessary, to give straight, clean edges.
3. **Flashings:** Fix with or immediately after slating. Form neatly.

### 325 Fire separating walls

---

1. **Separating walls:** Completely fill space between top of wall and underside of slates with mineral wool quilt to provide fire stopping.
2. **Boxed eaves:** Completely seal air paths in plane of separating wall with wire reinforced mineral wool, not less than 50 mm thick, fixed to rafters and carefully cut to shape to provide fire stopping.

### 355A Fascia grilles

---

1. **Manufacturer:** Alumasc Timloc Building Products.
  - 1.1. **Web:** [www.timloc.co.uk](http://www.timloc.co.uk).
  - 1.2. **Email:** [sales@timloc.co.uk](mailto:sales@timloc.co.uk).
  - 1.3. **Product reference:** Over Fascia Vent 3011
2. **Colour:** Black

### 615 Metal valleys

---

1. **Underlay:** Cut to rake. Dress over tilting fillets to lap onto metal valley. Do not lay under metal.
2. **Roof slates:** Cut extra wide slates adjacent to valley to fit neatly.
  - 2.1. **Valley width between slates:** 100 mm

### 660 Side abutments

---

1. **Underlay:** Turn up not less than 100 mm at abutments.
2. **Abutment slates:** Cut as necessary. Fix close to abutments.
3. **Soakers:** Interleave with abutment slates. Fix by turning down over head of abutment slates.

### 670 Top edge abutments

---

1. **Underlay:** Turn up not less than 100 mm at abutments.
2. **Top slate courses:** Fix close to abutments.

### 740A Mortar bedded ridge tiles

---

1. **Underlay:** Lay courses over ridge.
  - 1.1. **Overlap (minimum):** 150 mm.
2. **Ridge tiles:**
  - 2.1. **Manufacturer:** Contractor's choice
    - 2.1.1. **Type:** Angular capped ridge tile
    - 2.1.2. **Colour:** [Buff].
    - 2.1.3. **Length:** 457 mm.
  - 2.2. **Bedding:** On mortar, continuous to edges and solid to joints.
  - 2.3. **Mortar mix:** 1:3 (NHL5: well graded aggregate)

### 841 Weathering slates

---

1. **Ventilator slates:**

- 1.1. **Manufacturer:** Contractor's choice
  - 1.1.1. **Product reference:** Purpose made welded Lead slate
- 1.2. **Requirement:** Code 4 lead with bases of 450mm x 450mm, with minimum rear upstands of 150mm. Angle to match roof pitch, To accommodate ventilation outlet pipe refer to M&E engineers information
- 1.3. **Fixing as:** Lead Sheet Association Approved details.
- 1.4. **Positions:** as shown on the drawings

#### 850 Roof slope terminals

---

- 1. **Ventilator slates:** to match slating generally
  - 1.1. **Manufacturer:** Contractor's choice
    - 1.1.1. **Product reference:** Contractor's choice
  - 1.2. **Connect to:** as shown on the drawings

### Vertical slating edges/ junctions

#### 910 Bottom edges

---

- 1. **Slating substrate work:** Fix timber tilting fillet to support bottom course of slates in correct vertical plane. Fix flashing to tilting fillet.
- 2. **Underlay:** Dress over flashing.
- 3. **Undercourse and bottom course slates:** Fix with tails neatly aligned.

#### 920 Top edges

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- 1. **Top slate courses:** Fix under abutment and make weathertight with flashings dressed down not less than 150 mm.

#### 930 Side abutments

---

- 1. **Slating substrate work:** Chase abutment wall and insert stepped flashing.
  - 1.1. **Flashing:** Return not less than 75 mm behind slating, overlapping underlay and battens. Turn back to form a vertical welt.
- 2. **Abutment slates:** Cut and fix neatly.

Ω End of Section

## H71: Lead sheet coverings / flashings

### Types of leadwork

#### 110 Roofing

---

1. **Description:** To traditional dormers
2. **Substrate:** Plywood on firrings
  - 2.1. **Preparation:** Not required
3. **Underlay:** Building paper
4. **Type of lead:** Rolled to BS EN 12588
  - 4.1. **Thickness:** 2.50 or 2.65 mm (Code 6)
5. **Pretreatment:** Apply thin coating of patination oil to underside of lead and allow to dry before laying
6. **Joints in direction of fall:** Wood cored rolls with splashlap
  - 6.1. **Spacing:** 650 mm
7. **Eaves detail:** Cut off roll with welted apron
8. **Cross joints:** 55mm Drips with splash laps
  - 8.1. **Spacing:** As drawings
  - 8.2. **Alignment:** In line with adjacent bays
9. **Intermediate fixings:** Brass cup and screw with die-cast lead dome
10. **Ridge/ Hip detail:** Capped roll
11. **Accessories:** Ventilators - at eaves and junction with Patent glazing

#### 200 Gutter lining

---

1. **Substrate:** Class 3 Plywood on treated softwood framing at 450 mm centres
  - 1.1. **Preparation:** Not required
2. **Underlay:** Building paper
3. **Type of lead:** Rolled to BS EN 12588
  - 3.1. **Thickness:** 2.50 or 2.65 mm (Code 6)
4. **Pretreatment:** Apply thin coating of patination oil to underside of lead and allow to dry before laying
5. **Joints in direction of fall:** N/A
  - 5.1. **Spacing:** N/A
6. **Cross joints:** 55mm Drips
  - 6.1. **Spacing:** 2250 mm max
7. **Outlets:** Leadwelded flashing to internal rainwater pipe

#### 230 Valley gutter lining to slate/ tile roofs

---

1. **Underlay:** Building paper
2. **Type of lead:** Rolled to BS EN 12588
  - 2.1. **Thickness:** 1.75 or 1.80 mm (Code 4)
3. **Pretreatment:** Apply coating of patination oil to underside of lead and allow to dry before laying
4. **Laying:** Over and beyond tilting fillets.
5. **Lengths: Not more than:** 1500 mm
  - 5.1. **Cross joints: Lapped not less than:** 200 mm
6. **Fixing:** Welt edges. Nail top edge of each sheet. Dress bottom end neatly into eaves gutter.

---

**250 Weathering to**

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1. **Description:** Cornices, parapets, etc
2. **Substrate:** terracotta
3. **Underlay:** Building paper
4. **Type of lead:** Rolled to BS EN 12588
  - 4.1. **Thickness:** 2.50 or 2.65 mm (Code 6)
5. **Joints:** Weltered
  - 5.1. **Spacing:** to be agreed to suit each condition
6. **Edge details:** Weltered drip at front, upstand at rear with tuck in
7. **Fixing:** Lead clips at 500 centres
8. **Accessories:** see drawings, as required to suit each condition

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**410 Apron flashings**

---

1. **Description:** Generally
2. **Lead:**
  - 2.1. **Thickness:** 2.00 or 2.24 mm (Code 5)
3. **Dimensions:**
  - 3.1. **Lengths: Not more than:** 1500 mm
  - 3.2. **End to end joints:** Laps of not less than 100 mm.
  - 3.3. **Upstand:** Not less than 75 mm.
  - 3.4. **Cover to abutment: Not less than:** 220 mm
4. **Fixing:** Lead wedges into bed joint, clips to bottom edge at laps and 500 mm centres

---

**430 Cover flashings**

---

1. **Description:** Generally
2. **Lead:**
  - 2.1. **Thickness:** 2.00 or 2.24 mm (Code 5)
3. **Dimensions:**
  - 3.1. **Lengths: Not more than:** 1500 mm
  - 3.2. **End to end joints:** Laps of not less than 100 mm.
  - 3.3. **Overlap to upstand:** Not less than 50 mm.
  - 3.4. **Cover to roof:** Not less than 75 mm.
4. **Fixing:** Lead wedges into bed joint, clips to lead upstand at laps and 500 mm centres

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**440 Soakers and step flashings**

---

1. **Description:** Generally
2. **Lead soakers:**
  - 2.1. **Thickness:** 1.75 or 1.80 mm (Code 4)
  - 2.2. **Dimensions:**
    - 2.2.1. **Length:** Slate/ tile gauge + lap+ 25 mm.
    - 2.2.2. **Upstand:** Not less than 75 mm.
    - 2.2.3. **Underlap:** Not less than 100 mm.
  - 2.3. **Fixing:** By roofer.
3. **Lead step flashings:**
  - 3.1. **Thickness:** 2.00 or 2.24 mm (Code 5)
  - 3.2. **Dimensions:**

3.2.1. **Lengths: Not more than:** 1500 mm

3.2.2. **End to end joints:** Laps of not less than 100 mm.

3.2.3. **Cover:** Overlap to soaker upstands of not less than 65 mm.

3.3. **Fixing:** Lead wedges at every course.

#### 470 Flashings

---

1. **Description:** Not stated elsewhere

2. **Lead:**

2.1. **Thickness:** 2.00 or 2.24 mm (Code 5)

3. **Dimensions:**

3.1. **Lengths: Not more than:** 1500 mm

4. **Fixing:** Fixing: Nail top edge at 150 mm centres and welt edge. Clip bottom edge at laps and 500 mm centres.

#### 472 Chimney flashings to slate/ plain tile roofs

---

1. **Lead front apron:**

1.1. **Thickness:** 2.00 or 2.24 mm (Code 5)

1.2. **Dimensions:**

1.2.1. **Length:** Width of chimney plus not less than 150 mm underlap to each side flashing.

1.2.2. **Upstand:** Not less than 75 mm.

1.2.3. **Cover to roof: Not less than:** 220 mm

1.3. **Fixing:** Lead wedges into bed joint.

2. **Lead soakers:**

2.1. **Thickness:** 1.25 or 1.32 mm (code 3).

2.2. **Dimensions:**

2.2.1. **Length:** Slate/ tile gauge + lap + 25 mm.

2.2.2. **Upstand:** Not less than 75 mm.

2.2.3. **Underlap:** Not less than 100 mm.

3. **Lead step flashings:**

3.1. **Thickness:** 2.00 or 2.24 mm (Code 5)

3.2. **Dimensions:**

3.2.1. **Lengths:** Not more than 1500 mm.

3.2.2. **End to end joints:** Laps of not less than 100 mm.

3.2.3. **Front end:** Turn 75 mm around chimney over apron.

3.2.4. **Cover:** Overlap to soaker upstands of not less than 65 mm.

3.3. **Fixing:** Lead wedges at every course.

4. **Lead back gutter:**

4.1. **Thickness:** 2.00 or 2.24 mm (Code 5)

4.2. **Dimensions:**

4.2.1. **Length:** Width of chimney plus not less than 100 mm overlap to each side flashing.

4.2.2. **Upstand:** Not less than 100 mm.

4.2.3. **Gutter sole:** Not less than 150 mm.

4.2.4. **Cover up roof:** Not less than 225 mm.

5. **Lead back gutter cover flashing:**

5.1. **Thickness:** 2.00 or 2.24 mm (Code 5)

5.2. **Dimensions:**

5.2.1. **Length:** Width of chimney plus not less than 100 mm overlap to each side flashing.

5.2.2. **Cover:** Overlap to back gutter upstand of not less than 75 mm.

5.3. **Fixing:** Lead wedges into bed joint.

#### 476 Chimney damp proof course

---

1. **Position: Level with:** Top edge of front apron
2. **Lead:**
  - 2.1. **Thickness:** 2.50 or 2.65 mm (Code 6)
3. **Protection:** Fully coated with high build bitumen based paint on surfaces to be embedded.
4. **Dimensions:**
  - 4.1. **Plan area of chimney plus laps on perimeters:** turned up 50 mm against stack in roof void, turned down 50mm over stack externally, through flue lining and turned up 25 mm all round internally.
5. **Laying:** On a thin even bed of wet mortar.
  - 5.1. **Next layer of overlying construction:** Bed on mortar without delay and finish joint neatly.

#### 476B Chimney damp proof course

---

1. **Position: Level with:** Top edge of front apron
2. **Lead:**
  - 2.1. **Thickness:** 2.50 or 2.65 mm (Code 6)
3. **Protection:** Fully coated with high build bitumen based paint on surfaces to be embedded.
4. **Dimensions:**
  - 4.1. **Plan area of chimney plus laps on perimeters:** turned up 50 mm against stack in roof void, turned down 50mm over stack externally, through flue lining and turned up 25 mm all round internally.
5. **Laying:** On a thin even bed of wet mortar. Form weep holes over DPC to allow free passage of water.
  - 5.1. **Next layer of overlying construction:** Bed on mortar without delay and finish joint neatly.

#### 480 Lead slates

---

1. **Manufacturer:** Contractor's choice
2. **Lead:**
  - 2.1. **Thickness:** 2.00 or 2.24 mm (Code 5)
3. **Dimensions:**
  - 3.1. **Base:** Not less than 400 x 400 mm.
  - 3.2. **Upstand:** Not less than 150 mm, to fit pipe and at angle to suit roof pitch.

### General requirements/ preparatory work

#### 510 Workmanship generally

---

1. **Standard:** To BS 6915 and latest edition of 'Rolled lead sheet. The complete manual' published by the Lead Sheet Association.
2. **Fabrication and fixing:** To provide a secure, free draining and completely weathertight installation.
3. **Operatives:** Trained in the application of lead coverings/ flashings. Submit records of experience on request.
4. **Preforming:** Measure, mark, cut and form lead prior to assembly wherever possible.
5. **Marking out:** With pencil, chalk or crayon. Do not use scribes or other sharp instruments without approval.

6. **Bossing and forming:** Straight and regular bends, leaving sheets free from ripples, kinks, buckling and cracks.
7. **Solder:** Use only where specified.
8. **Sharp metal edges:** Fold under or remove as work proceeds.
9. **Finished work:** Fully supported, adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress.
  - 9.1. **Protection:** Prevent staining, discolouration and damage by subsequent works.

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#### 516 Leadwelding

1. **In situ welding:** Is permitted, subject to completion of a 'hot work permit' form and compliance with its requirements.

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#### 520 Lead sheet

1. **Production method:**
  - 1.1. Rolled, to BS EN 12588, or
  - 1.2. Machine cast and BBA certified, or
  - 1.3. Sand cast, from lead free from bitumen, solder, other impurities, inclusions, laminations, cracks, air, pinholes and blowholes; to code thicknesses but with a tolerance (by weight) of  $\pm 10\%$ .
2. **Identification:** Labelled to show thickness/ code, weight and type.

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#### 610 Suitability of substrates

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

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#### 640 Timber for use with leadwork

1. **Quality:** Planed, free from wane, pitch pockets, decay and insect attack (ambrosia beetle excepted).
2. **Moisture content:** Not more than 22% at time of fixing and covering. Give notice if greater than 16%.
3. **Preservative treatment:** Organic solvent as section Z12 and Wood Protection Association Commodity Specification C8.

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#### 650 Laying underlay

1. **Handling:** Prevent tears and punctures.
2. **Laying:** Butt or overlap jointed onto a dry substrate.
  - 2.1. **Fixing edges:** With copper or stainless steel staples or clout nails.
  - 2.2. Do not lay over roof edges but do turn up at abutments.
3. **Wood core rolls:** Fixed over underlay.
4. **Protection:** Keep dry and cover with lead at the earliest opportunity.

### Fixing lead

---

#### 705 Head fixing lead sheet

1. **Top edge:** Secured with two rows of fixings, 25 mm and 50 mm from top edge of sheet, at 75 mm centres in each row, evenly spaced and staggered.
2. **Sheets less than 500 mm deep:** May be secured with one row of fixings, 25 mm from top edge of sheet and evenly spaced at 50 mm centres.

## 710 Fixings

---

1. **Nails to timber substrates:** Copper clout nails to BS 1202-2, or stainless steel (austenitic) clout nails to BS 1202-1.
  - 1.1. **Shank type:** Annular ringed, helical threaded or serrated.
  - 1.2. **Shank diameter:** Not less than 2.65 mm for light duty or 3.35 mm for heavy duty.
  - 1.3. **Length:** Not less than 20 mm or equal to substrate thickness.
2. **Screws to concrete or masonry substrates:** Brass or stainless steel to BS 1210, tables 3 or 4.
  - 2.1. **Diameter:** Not less than 3.35 mm.
  - 2.2. **Length:** Not less than 19 mm.
  - 2.3. **Washers and plastic plugs:** Compatible with screws and lead.
3. **Screws to composite metal decks:** Self tapping as recommended by the deck and lead manufacturer/ supplier for clips.

## 715A Clips

---

1. **Manufacturer:** Contractor's choice
2. **Material:**
  - 2.1. **Lead clips:** Cut from sheets of same thickness/ code as sheet being secured.
3. **Dimensions:**
  - 3.1. **Width:** 50 mm where not continuous.
  - 3.2. **Length:** To suit detail.
4. **Fixing clips:** Secure each to substrate with either two screw or three nail fixings not more than 50 mm from edge of lead sheet. Use additional fixings where lead downstands exceed 75 mm.
5. **Fixing lead sheet:** Welt clips around edges and turn over 25 mm.

## 770 Wedge fixing into joints/ chases

---

1. **Joint/ chase:** Rake out to a depth of not less than 25 mm.
2. **Lead:** Dress into joint/ chase.
  - 2.1. **Fixing:** Lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead.
3. **Sealant:** Contractor's choice
  - 3.1. **Application:** As section Z22.

## 780 Wedge fixing into damp proof course joints

---

1. **Joint:** Rake/ cut out under damp proof course to a depth of not less than 25 mm.
2. **Lead:** Dress lead into joint.
  - 2.1. **Fixing:** Lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead.
3. **Sealant:** Contractor's choice
  - 3.1. **Application:** As section Z22.

## Jointing lead

### 810 Forming details

---

1. **Method:** Bossing or leadwelding except where bossing is specifically required.
2. **Leadwelded seams:** Neatly and consistently formed.
  - 2.1. **Seams:** Do not undercut or reduce sheet thickness.
  - 2.2. **Filler strips:** Of the same composition as the sheets being joined.

- 2.3. **Butt joints:** Formed to a thickness one third more than the sheets being joined.
- 2.4. **Lap joints:** Formed with 25 mm laps and two loadings to the edge of the overlap.
- 3. **Bossing:** Carried out without thinning, cutting or otherwise splitting the lead sheet.
  - 3.1. **Details where bossing must be used:** to be agreed

---

**880 Welled joints**

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- 1. **Joint allowance:** 50 mm overlap and 25 mm underlap.
- 2. **Copper or stainless steel clips:** Fix to substrate at not more than 450 mm centres.
- 3. **Overlap:** Welled around underlap and clips and lightly dress down.

---

**970A Patination oil**

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- 1. **Manufacturer:** Contractor's choice
  - 1.1. **Product reference:** Contractor's choice
- 2. **Location:** to all surfaces of all lead
- 3. **Application:** As soon as practical, apply 3 coats evenly in one direction and in dry conditions.

Ω End of Section

## H74: Zinc strip / sheet coverings / flashings

### Clauses

#### 1 Zinc strip/ sheet coverings/ flashings

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### Types of zinc work

#### 151 Standing seam cladding

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1. Lift tower
2. **Material:** [Zinc ].
3. **Substrate:** [Plywood on 38x50mm treated softwood counter battens fixed through sheathing insulation as P10.190A and into studs behind].
4. **Underlay:** [Building paper]
5. **Manufacturer:** VMZINC UK.
  - 5.1. **Web:** [www.vmzinc.co.uk](http://www.vmzinc.co.uk).
  - 5.2. **Email:** [vmzinc.uk@vmbuildingsolutions.com](mailto:vmzinc.uk@vmbuildingsolutions.com).
  - 5.3. **Tel:** +44 (0)203 445 5640.
  - 5.4. **Product reference:** VMZ Standing Seam
6. **Type:** Standing seam
7. **Width:** 600 mm
8. **Length:** As Drawings
9. **Zinc thickness:** 0.8
10. **Finish:** ANTHRA-ZINC
11. **Special requirements:** [Continuous strip ventilators to be incorporated to top and bottom edges to ensure ventilation of the void behind and Coping to wall to match standing seam zinc. As Details]
12. **Manufacturer:** Alumasc Timloc Building Products.
  - 12.1. **Web:** [www.timloc.co.uk](http://www.timloc.co.uk).
  - 12.2. **Email:** [sales@timloc.co.uk](mailto:sales@timloc.co.uk).
  - 12.3. **Product reference:** [Over Fascia Vent 3011].
13. **Colour:** [Black].

#### 152 Zinc fascia

---

1. Modern dormer
2. **Material:** [Zinc].
3. **Substrate:** [Plywood fixed to studwork].
4. **Underlay:** [Building paper]
5. **Manufacturer:** VMZINC UK.
  - 5.1. **Web:** [www.vmzinc.co.uk](http://www.vmzinc.co.uk).
  - 5.2. **Email:** [vmzinc.uk@vmbuildingsolutions.com](mailto:vmzinc.uk@vmbuildingsolutions.com).
  - 5.3. **Tel:** +44 (0)203 445 5640.
  - 5.4. **Product reference:** **VMZINC:** Flat lock cladding
6. **Width:** 600 mm
7. **Length:** As Drawings
8. **Zinc thickness:** 0.8

9. **Finish:** ANTHRA-ZINC
10. **Special requirements:** [Zinc to be wrapped around plywood and secret fixed back to structure behind]

#### 470 Miscellaneous flashings

---

1. **Description:** To dormer cladding
2. **Zinc:** Soft temper alloy
  - 2.1. **Finish:** Natural
  - 2.2. **Thickness:** 0.8 mm
3. **Dimensions:**
  - 3.1. **Lengths:** Not more than: 3 m
4. **Fixing:** Secret, with welted joints over

### General requirements/ preparatory work

#### 510 Workmanship generally

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1. **Standard:** Generally to CP 143-5.
2. **Fabrication and fixing:** To provide a secure, free draining and completely weathertight installation.
3. **Operatives:** Trained in the application of zinc coverings/ flashings. Submit records of experience on request.
4. **Preforming:** Measure, mark, cut and form zinc prior to assembly wherever possible.
5. **Metal temperature:** Do not form zinc when the metal temperature is below the minimum recommended for working by the manufacturer.
6. **Marking out:** With pencil, chalk or crayon. Do not use scribes or other sharp instruments without approval.
7. **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.
8. **Sharp metal edges:** Fold under or remove as work proceeds.
9. **Sealants:** Do not use in joints to attain waterproofing.
10. **Solder:** Use only where specified.
11. **Finished zinc work:** Fully supported, adequately fixed to resist wind uplift and able to accommodate thermal movement without distortion or stress.
  - 11.1. **Protection:** Prevent staining, discolouration and damage by subsequent works.

#### 516 Soldering and naked flame preheating

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1. **In situ soldering and naked flame preheating:** Permitted, subject to completion of a 'hot work permit' form and compliance with its requirements.

#### 525 Zinc strip - soft temper alloy

---

1. **Zinc-titanium-copper:**
  - 1.1. To BS EN 501 and BS EN 988.
  - 1.2. Stamped or labelled with type, finish and thickness.
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice

#### 610 Suitability of substrates

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

**640 Timber for use with zinc work**

---

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

**655 Laying underlay**

---

1. **Handling:** Prevent tears, punctures and removal of sanded finish.
2. **Laying:** Overlap jointed, parallel to eaves, onto a dry substrate.
  - 2.1. **Fixing edges:** With galvanized, sherardized or stainless steel clout nails at close centres.
3. **Protection:** Keep dry and cover with zinc at the earliest opportunity.

**Fixing zinc****710 Fixings for clips**

---

1. **Nails to timber substrates:** Galvanized or sherardized steel to BS 1202-1 for zinc clips. Stainless steel (austenitic) for stainless steel clips.
  - 1.1. **Shank type:** Annular ringed, helical threaded or serrated.
  - 1.2. **Shank diameter:** Not less than 2.65 mm.
  - 1.3. **Head:** Flat.
  - 1.4. **Length:** Not less than 25 mm or equal to substrate thickness.
2. **Screws to concrete/ masonry substrates:** Sherardized or zinc plated steel to BS EN 14592 for zinc clips. Stainless steel (austenitic) to BS EN 14592 for stainless steel clips.
  - 2.1. **Diameter:** Not less than 3.35 mm.
  - 2.2. **Length:** Not less than 25 mm.
  - 2.3. **Washers and plastic plugs:** Compatible with screws.
3. **Screws to composite metal decks:** Self tapping as recommended by the deck and zinc manufacturer for zinc or stainless steel clips.

**715 Zinc clips**

---

1. **General:** Cut from strip/ sheet with clip lengths in direction of rolling.

**750 Clips for flashings/ cross joints**

---

1. **Material:** Zinc of same thickness as that being secured.
2. **Dimensions:**
  - 2.1. **Width:** Not less than 50 mm.
  - 2.2. **Length:** To suit detail.
3. **Fixing:** Secure each clip to substrate with two fixings not more than 50 mm from edge of strip/ sheet being fixed. Clips folded around edges of strip/ sheet to be turned over 25 mm.

**Jointing zinc****815 Free edge details**

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1. **Visible feature edges: Finish with:** 15 mm welts

**825 Soldering details**

---

1. **Solder (not less than 40% tin content) and flux:** As recommended by the zinc manufacturer.

2. **Flux residues:** Wash away as work proceeds.
3. **Seams:** Neat and consistent with an overlap of clean zinc as recommended for the particular joint by the zinc manufacturer.

---

**860 Drip/ step joints**

---

1. **Strip/ Sheet from below step:** Fold up full height of upstand and fix to top edge.
2. **Form zinc underlap/ continuous clip:**
  - 2.1. **Cover to roof slope:** Not less than 100 mm with anticapillary welt at top edge.
  - 2.2. **Projection:** 25 mm for forming into drip welt.
  - 2.3. **Downstand:** Not less than 40 mm with welt at bottom edge
3. **Fixing:** To roof slope at 100 mm centres, avoiding through fixings at joints in direction of fall positions.
4. **Strip/ Sheet from above step:** Fold around underlap projection and single welt to form a drip.

---

**885 Single lock welt with check welt joints**

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1. **Underlap:** Fold 30 mm anticapillary welt at top edge of and secure with clips, two per bay.
2. **Overlap:** Welt bottom edge of overlap 30 mm and lay 250 mm over underlap.
  - 2.1. **Fixing:** Secure overlap welt with continuous clip, 60 mm wide, soldered to underlap.

Ω End of Section

## J40: Flexible sheet waterproofing / damp proofing

**To be read with preliminaries/ general conditions.**

### 110 Soft blinding to hardcore beds

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

### Types of tanking/ damp proofing

#### 120A Loose laid polyethylene damp proofing

---

1. **Substrate:** Soft blinded hardcore
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice to PIFA Standard 6/83A or Agrément certified
3. **Thickness/ Gauge:** 300 micrometres (1200 gauge)
4. **Recycled content:** Contractor's choice
5. **Joints:**
  - 5.1. **Surface to be joined:** Clean and dry beyond full width of joint.
  - 5.2. **Laps (minimum):** End and side, 150 mm
  - 5.3. **Sealing:** Double sided jointing tape, as recommended by the manufacturer

#### 191 Self adhesive damp proofing and waterproofing membrane

---

1. To existing masonry
2. **Manufacturer:** RIW.
  - 2.1. **Web:** [www.riw.co.uk](http://www.riw.co.uk).
  - 2.2. **Email:** [technical@riw.co.uk](mailto:technical@riw.co.uk).
  - 2.3. **Tel:** +44 (0)1344 397777.
  - 2.4. **Product reference:** RIW Sheetseal 226
3. **Primer:** RIW Sheetseal Primer

#### 290A High density polyethylene/ polypropylene studded cavity drain membrane

---

1. **Manufacturer:**
  - 1.1. **Web:** [www.deltamembranes.com](http://www.deltamembranes.com).
  - 1.2. **Email:** [info@deltamembranes.com](mailto:info@deltamembranes.com).
  - 1.3. **Product reference:**
2. **Colour:** Clear
3. **Fixing:** to manufacturers recommendations.
4. **Joint sealant:** Delta-Rope to studded joints

### Workmanship

#### 310 Workmanship generally

---

1. **Condition of substrate:**
  - 1.1. Clean and even textured, free from voids and sharp protrusions.
  - 1.2. **Moisture content:** Compatible with damp proofing/ tanking.

2. **Air and surface temperature:** Do not apply sheets if below minimum recommended by membrane manufacturer.
3. **Condition of membrane at completion:**
  - 3.1. Neat, smooth and fully supported, dressed well into abutments and around intrusions.
  - 3.2. Completely impervious and continuous.
  - 3.3. Undamaged. Prevent puncturing during following work.
4. **Permanent overlying construction:** Cover membrane as soon as possible.

#### **350 Angles in bonded damp proofing/ tanking**

---

1. **Preformed rot proof fillet to internal angles:**
  - 1.1. **Size (minimum):** 50 x 50 mm, splay faced.
  - 1.2. **Bedding:** Bitumen mastic or bonding compound.
2. **Reinforcing strip to all angles:**
  - 2.1. **Material:** As damp proofing/ tanking.
  - 2.2. **Width (minimum):** 300 mm.
  - 2.3. **Timing:** Apply before main sheeting.
3. **Dressing of main sheeting onto adjacent surfaces (minimum):** 100 mm.

Ω End of Section

## J42: Single layer polymeric sheet roof coverings

### Types of roof covering

#### 112 Warm deck roof covering

---

1. **Manufacturer:** BMI Icopal.
  - 1.1. **Web:** [www.icopal.co.uk](http://www.icopal.co.uk).
  - 1.2. **Email:** [sales.admin@bmigroup.com](mailto:sales.admin@bmigroup.com).
  - 1.3. **Tel:** +44 (0)843 224 7400.
  - 1.4. **Product reference:** Sureplan FPO Warm Deck Roofing System
2. **Substrate:** [18mm Plywood deck on treated softwood Firrings forming 1:60 fall].
3. **Preparation:** Anderson HT125 Taping Strip
4. **Primer:** Not required
5. **Vapour control layer:** Micoral NB vapour control layer
6. **Insulation:**
  - 6.1. **Type:** Thermazone Foilboard 160mm
  - 6.2. **Fixing:** Mechanically fastened, with fixings as clause 355
7. **Waterproof membrane:**
  - 7.1. **Type:** Sureplan FPO
  - 7.2. **Fixing:** Mechanically fastened, with fixings as clause 355
  - 7.3. **Colour:** Dark Grey
8. **Surface Protection:** Not required
9. **Accessories:** Sureplan FPO Outlet & Sureplan FPO Parapet Outle

#### 131 Single layer cold deck roof covering

---

1. **Substrate:** [18mm Plywood deck on treated softwood Firrings forming 1:60 fall].
2. **Manufacturer:** BMI Icopal.
  - 2.1. **Web:** [www.icopal.co.uk](http://www.icopal.co.uk).
  - 2.2. **Email:** [sales.admin@bmigroup.com](mailto:sales.admin@bmigroup.com).
  - 2.3. **Tel:** +44 (0)843 224 7400.
  - 2.4. **Product reference:** Monarplan Roofing System
3. **Preparation:** Clean and make good
4. **Waterproof membrane:**
  - 4.1. **Type:** Monarplan GF
  - 4.2. **Fixing:** Adhered with Icopal Single Ply Fleeceback Adhesive
  - 4.3. **Colour:** Anthracite [RAL 7015]
5. **Ballast:** Not required
6. **Accessories:** None

### Products

#### 330 Timber trims, etc

---

1. **Quality:** Planed. Free from wane, pitch pockets, decay and insect attack except ambrosia beetle damage.
2. **Moisture content at time of covering (maximum):** 22%.
3. **Preservative treatment:** To WPA Commodity Specification C8

**345 Perimeter trims**

---

1. **Type:** 0.6 mm galvanized steel with 0.5 mm unreinforced membrane laminate
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Colour:** to match roof covering
4. **Size:** As drawings

**355 Mechanical fasteners, washers, pressure plates, etc**

---

1. **Type:** Point fasteners
  - 1.1. **Material:** As membrane manufacturer's/ supplier's recommendations
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Submit proposals

**360A Plywood substrate**

---

1. To single layer roof covering
2. **Standard:** To BS EN 636, section 8 (plywood for use in humid conditions).
  - 2.1. **Quality:** Naturally durable timber, free from preservatives.
3. **Thickness:** 18 mm

**Execution generally****510 Adverse weather**

---

1. **General:** Do not lay membrane at temperatures below 5°C or in wet or damp conditions unless effective temporary cover is provided over working area.
2. **Unfinished areas of roof:** Keep dry and protect edges of laid membrane from wind action.

**Substrates/ vapour control layers/ warm deck roof insulation****610 Suitability of substrates**

---

1. **Surfaces to be covered:** Secure, clean, dry, smooth, free from frost, contaminants, voids and protrusions.
2. **Preliminary work:** Complete, including:
  - 2.1. Grading to correct falls.
  - 2.2. Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
  - 2.3. Fixing of battens, fillets and anchoring plugs/ strips.
3. **Moisture content and stability of substrate:** Must not impair integrity of roof.

**640 Fixing timber trims**

---

1. **Fasteners:** Sherardized steel screws
2. **Fixing centres (maximum):** 600 mm

**660 Joints in rigid board substrates**

---

1. **Cover strip:** Lay centrally over substrate joints before laying vapour control layers or coverings. Adhere to substrate with bonding compound along edges only.

**670 Laying vapour control layer**

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1. **Laying:** Loose laid, flat and smooth

2. **Side and head laps:** Seal using double-sided tape in accordance with membrane manufacturer's/ supplier's recommendations
3. **Upstands, kerbs and other penetrations:** Enclose edges of insulation. Fully seal at abutment by bonding or taping.

#### 680 Laying warm deck roof insulation

---

1. **Setting out:**
  - 1.1. **Long edges: Fully supported and running at right angles to:** side laps in single ply membrane
  - 1.2. **End edges:** Adequately supported.
  - 1.3. **Joints:** Butted together.
  - 1.4. **End joints:** Staggered.
2. **Attachment:** Full bed of cold bitumen bonding compound
3. **Mechanical fixing:** Not required
4. **Completion:** Boards must be in good condition, well fitting and secure.

### Waterproof membranes/ accessories

#### 710 Mechanical fixing of waterproof membrane

---

1. **Setting out:** Perpendicular to the deck direction
2. **Laying:** Loose, do not wrinkle or stretch.
3. **Installing fasteners:**
  - 3.1. Use manufacturer's/ supplier's recommended methods and equipment.
  - 3.2. **Insertion:** Correct and consistent.
4. **Washers/ Pressure plates/ Bars:**
  - 4.1. **Distance from fixed edge (minimum):** 10 mm.
  - 4.2. **Fixing:** Flush with membrane.
5. **Sheet overlaps: Extend beyond washers/ pressure plates by minimum:** 50 mm
6. **Surface condition at completion:** Fully sealed, smooth, weatherproof and free draining.

#### 730 Welded jointing of waterproof membrane

---

1. **Side and end joints:**
  - 1.1. **Laps (minimum):** as manufacturers recommendations
  - 1.2. **Preparation:** Clean and dry surfaces beyond full width of joint.
  - 1.3. **Sealing:** Weld together.
2. **Seam sealant:** Not required
3. **Condition at completion:** Fully sealed, smooth, weatherproof and free draining.

#### 760 Perimeter of membrane

---

1. **General:** Secure membrane at roof edge conditions, changes of plane, curb flashings, upstands to roof lights, etc. with mechanical fasteners.

#### 765 Perimeter details for thermoplastic membranes

---

1. **Upstands, edge trims, drips, kerbs, etc:** Secure preformed metal sections to roof structure with mechanical fasteners.
2. **Roof membrane: Dress over perimeter profile. Overlap beyond fasteners by minimum:** 50 mm
  - 2.1. **Sealing:** Weld together.

### 780 Roof penetrations through thermoplastic membranes

---

1. **Roof membrane:** Cut around penetrations and secure to deck.
2. **Flanged sleeve:**
  - 2.1. **Type:** Preformed flanged sleeve
  - 2.2. **Installation:** Dress over and around penetration.
  - 2.3. **Roof membrane overlap to flange (minimum):** 50 mm beyond fasteners.
  - 2.4. **Sealing:** Weld flange to roof membrane.
  - 2.5. **Protection to top edge of sleeve:** Flashing or weathering cravat.

## Surfacing

### 850 Laying membrane walkways

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1. **Attachment:** As manufacturers recommendations

## Completion

### 920 Electronic roof integrity test

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1. **Testing authority:** The roofing contractor
2. **Timing of test:** Prior to, and on completion of access by other trades
3. **Condition of roof prior to testing:**
  - 3.1. Waterproof membrane complete to a stage where integrity can be tested.
  - 3.2. **Surface:** Clean.
4. **Test results and warranty:** Submit on completion of testing

### 940A Completion

---

1. **Roof areas:** Clean.
  - 1.1. **Outlets:** Clear.
2. **Work necessary to provide a weathertight finish:** Complete.
3. **Storage of materials on finished surface:** Not permitted.
4. **Completion:** Provide an Icopal insurance backed guarantee, the work therefore being undertaken by a
5. 'Monarplan' approved and registered contractor.
  - 5.1. **Form of warranty:** 'Icopal insurance backed' warranty covering the complete system (materials, labour and
6. insolvency cover) for a period of fifteen years is required. This must clearly therefore be agreed with the
7. manufacturer prior to commencement of this element.
  - 7.1. An electronic leak detection test must consequently be carried out at completion, as clause 920.

Ω End of Section

## K10: Gypsum board dry linings / partitions / ceilings

### Clauses

2 To be read with preliminaries/ general conditions.

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### Installation

#### 305 Gypsum boards generally

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1. **Standard:**
  - 1.1. Gypsum plasterboard to BS EN 520.
  - 1.2. Fibre reinforced gypsum board to BS EN 15283-2.
  - 1.3. **Evidence of compliance:** All sheets to be CE marked. Submit Declaration of Performance (DoP).

#### 335 Additional supports

---

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

#### 375 New wet laid bases

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

#### 435 Dry linings generally

---

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

#### 445 Ceilings

---

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

#### 455 Metal framing for partitions/ wall linings

---

1. **Setting out:** Accurately aligned and plumb.
  - 1.1. **Frame/ Stud positions:** Equal centres to suit specified linings, maintaining sequence across openings.
  - 1.2. **Additional studs:** To support vertical edges of boards.
2. **Fixing centres at perimeters (maximum):** 600 mm.

3. **Openings:** Form accurately.
  - 3.1. **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.
  - 3.2. **Services penetrations:** Allow for associated fire stopping.

---

#### 475 Metal furrings for wall linings

---

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

---

#### 505 Installing mineral wool insulation

---

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

---

#### 510 Sealing gaps and air paths

---

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

---

#### 530 Cavity fire barriers within partitions/ wall linings

---

1. **Metal framed systems:**
  - 1.1. **Material:** Plasterboard 12.5 mm thick
  - 1.2. **Installation:** Form accurately and fix securely with no gaps to provide a complete barrier to smoke and flame.
2. **Adhesive fixed wall lining systems:**
  - 2.1. **Material:** Adhesive compound.
  - 2.2. **Installation:** Form in a continuous line with no gaps to provide a complete barrier to smoke and flame.

---

#### 545 Cavity fire barriers within suspended ceilings

---

1. **Type:** As recommended by board manufacturer to meet specified performance
2. **Fire resistance:** To BS 476-20, 60/30 minutes (Integrity/ Insulation)
3. **Ceiling void subdivision: Fix barriers:** on line of partitions and not more than 40 m apart in any direction
4. **Fixing at perimeters and joints:** Secure, stable and continuous with no gaps, to provide a complete barrier to smoke and flame.
5. **Service penetrations:** Cut and pack to maintain barrier integrity. Sleeve flexible materials. Adequately support services passing through barrier.

6. **Ceiling systems for fire protection:** Do not impair fire resisting performance of ceiling system.

---

**555 Fire stopping at perimeters of dry lining systems**

---

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

---

**560 Joints between boards**

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

---

**565 Vertical joints**

---

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

---

**570 Horizontal joints**

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

---

**580 Insulation backed plasterboard**

---

1. **General:** Do not damage or cut away insulation to accommodate services.
2. **Installation at corners:** Carefully cut back insulation or plasterboard as appropriate along edges of boards to give a continuous plasterboard face, with no gaps in insulation.

---

**590 Fixing gypsum board to metal framing/ furrings**

---

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

---

**610 Fixing gypsum board to timber**

---

1. **Fixing to timber:** Securely at the following centres (maximum):
  - 1.1. **Nails:** 150 mm.
  - 1.2. **Screws to partitions/ wall linings:** 300 mm. Reduce to 200 mm at external angles.
  - 1.3. **Screws to ceilings:** 230 mm.
2. **Position of nails/ screws from edges of boards (minimum):**
  - 2.1. **Bound edges:** 10 mm.
  - 2.2. **Cut/ unbound edges:** 13 mm.
3. **Position of nails/ screws from edges of timber supports (minimum):** 6 mm.

**620 Fixing gypsum board with adhesive dabs**

---

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

|                       |            |                  |
|-----------------------|------------|------------------|
| 3.2.1. Thickness (mm) | Width (mm) | Dab centres (mm) |
| 3.2.2. 9.5            | 1200       | 400              |
| 3.2.3. 9.5/12.5       | 900        | 450              |
| 3.2.4. 12.5           | 1200       | 600              |
4. **Adhesive dab dimensions (width x length):** At least 50-75 mm x 250 mm.
  - 4.1. **Position of dabs from edges/ ends of boards (minimum):** 25 mm.

**Finishing****650 Level of dry lining across joints**

---

1. **Sudden irregularities:** Not permitted.
2. **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.
  - 2.1. **Tapered edge joints:**
    - 2.1.1. **Permissible deviation (maximum) across joints when measured with feet resting on boards:** 3 mm.
  - 2.2. **External angles:**
    - 2.2.1. **Permissible deviation (maximum) for both faces:** 4 mm.
  - 2.3. **Internal angles:**
    - 2.3.1. **Permissible deviation (maximum) for both faces:** 5 mm.

**680 Skim coat plaster finish**

---

1. **Plaster type:** As recommended by board manufacturer.
  - 1.1. **Thickness:** 2-3 mm.
2. **Joints:** Fill and tape except where coincident with metal beads.
3. **Finish:** Tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.

**695 Installing beads/ stops**

---

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

**Types of dry lining****126 Metal stud partition system**

---

1. **Manufacturer:** British Gypsum.
  - 1.1. **Web:** [www.british-gypsum.com](http://www.british-gypsum.com).
  - 1.2. **Email:** [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com).

- 1.3. **Tel:** +44 (0)844 800 1991.
- 1.4. **Product reference:** GypWall Classic
2. **Studs:**
  - 2.1. **Type:** 70 mm Gypframe 70 S 50 'C' studs
  - 2.2. **Centres:** 600 mm
3. **Head condition:**
  - 3.1. **Type:** Gypframe 72 C 50 Floor and Ceiling Channels, fixed to u/s of floor structure
  - 3.2. **Deflection allowance:** As Required
4. **Insulation:**
  - 4.1. **Type:** Stone mineral wool where shown on drawings as clause P10.221 fitted to manufacturers recommendations to conform with BS 8233:2014
  - 4.2. **Thickness:** 50 mm
5. **Linings:**
  - 5.1. **Type:** 1 x 15 mm Gyproc FireLine to each side
  - 5.2. **Edge:** Square edged
6. **Finishing:**
  - 6.1. **Type:** Skim coat plaster finish
  - 6.2. **Primer/ Sealer:** One coat of Gyproc Drywall Prime
7. **Accessories:** Rigid beads/ stops
8. **Other requirements:** None

#### 127 Metal stud partition system

---

1. **Manufacturer:** British Gypsum.
  - 1.1. **Web:** [www.british-gypsum.com](http://www.british-gypsum.com).
  - 1.2. **Email:** [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com).
  - 1.3. **Tel:** +44 (0)844 800 1991.
  - 1.4. **Product reference:** GypWall Classic
2. **Studs:**
  - 2.1. **Type:** 92 mm Gypframe 92 S 50 'C' studs
  - 2.2. **Centres:** 600 mm
3. **Head condition:**
  - 3.1. **Type:** Gypframe 94 C 50 Floor and Ceiling Channels, fixed to existing structure
  - 3.2. **Deflection allowance:** As Required
4. **Insulation:**
  - 4.1. **Type:** Stone mineral wool where shown on drawings as clause P10.221 fitted to manufacturers recommendations to conform with BS 8233:2014
  - 4.2. **Thickness:** 60 mm
5. **Linings:**
  - 5.1. **Type:** 1 x 15 mm Gyproc FireLine to each side
  - 5.2. **Edge:** Square edged
6. **Finishing:**
  - 6.1. **Type:** Skim coat plaster finish
  - 6.2. **Primer/ Sealer:** One coat of Gyproc Drywall Prime
7. **Accessories:** Rigid beads/ stops
8. **Other requirements:** None

---

**186 Wall lining system**

---

1. Plaster board with adhesive dabs
2. **Manufacturer:** British Gypsum.
  - 2.1. **Web:** [www.british-gypsum.com](http://www.british-gypsum.com).
  - 2.2. **Email:** [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com).
  - 2.3. **Tel:** +44 (0)844 800 1991.
  - 2.4. **Product reference:** DriLyner BASIC
3. **Parge coat:** Not required
4. **Adhesive method:** Dabs, as clause 620
5. **Linings:** 1 x 12.5 mm Gyproc WallBoard
6. **Finishing:**
  - 6.1. **Type:** Skim coat plaster finish
  - 6.2. **Primer/ Sealer:** One coat of Gyproc Drywall Primer
  - 6.3. **Accessories:** Rigid beads/ stops

---

**206 Lining on timber**

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1. Generally
2. **Manufacturer:** British Gypsum.
  - 2.1. **Web:** [www.british-gypsum.com](http://www.british-gypsum.com).
  - 2.2. **Email:** [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com).
  - 2.3. **Tel:** +44 (0)844 800 1991.
  - 2.4. **Product reference:** Timber frame
3. **Insulation:**
  - 3.1. **Type:** Isover Acoustic Partition Roll (APR 1200) as shown on drawing].
  - 3.2. **Thickness:** 90 mm
4. **Linings:**
  - 4.1. **Type:** 1 x 12.5 mm Gyproc WallBoard to each side (or as shown on drawing)
  - 4.2. **Fixing:** Gyproc drywall timber screws
5. **Finishing:**
  - 5.1. **Type:** Skim coat plaster finish
  - 5.2. **Primer/ Sealer:** One coat of Gyproc Drywall Primer
  - 5.3. **Accessories:** Rigid beads/ stops
6. **Other requirements:** n/a

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**207 Lining on timber**

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1. Stud walls
2. **Manufacturer:** British Gypsum.
  - 2.1. **Web:** [www.british-gypsum.com](http://www.british-gypsum.com).
  - 2.2. **Email:** [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com).
  - 2.3. **Tel:** +44 (0)844 800 1991.
  - 2.4. **Product reference:** Timber Stud load bearing
3. **Background:** Timber for the framework in section G20. Studs at 600 mm centres.
4. **Linings:**
  - 4.1. **Type:** 1 x 15 mm Gyproc WallBoard DUPLEX
  - 4.2. **Fixing:** Gyproc drywall timber screws

- 4.3. **Fixing Method:** to manufacturers approved details.
- 5. **Finishing:**
  - 5.1. **Type:** Skim coat plaster finish
  - 5.2. **Primer/ Sealer:** Two coats of Gyproc Drywall Sealer
  - 5.3. **Accessories:** Rigid beads/ stops
- 6. **Other requirements:** None

## 221 Proprietary suspended ceiling system

---

- 1. **Manufacturer:** British Gypsum.
  - 1.1. **Web:** [www.british-gypsum.com](http://www.british-gypsum.com).
  - 1.2. **Email:** [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com).
  - 1.3. **Tel:** +44 (0)844 800 1991.
  - 1.4. **Product reference:** CasoLine MF suspended ceiling system
- 2. **Suspension system:**
  - 2.1. **Hanger type:** Gypframe MF8 strap hangers
    - 2.1.1. **Top fixings:** Gypframe MF12 soffit cleats fixed to concrete soffit, fixing contractors choice to structural engineers approval
  - 2.2. **Primary grid centres:** 1200 mm
    - 2.2.1. **Hanger centres:** 1200 mm
  - 2.3. **Secondary grid centres:** 450 mm
- 3. **Linings:** 1 x 12.5 mm Gyproc WallBoard
- 4. **Insulation:** None
- 5. **Access Units:** Gyproc Profilex access panels
- 6. **Finishing:** Skim coat plaster finish
- 7. **Primer/ Sealer:**
  - 7.1. **Type:** One coat of Gyproc Drywall Primer
- 8. **Accessories :** Gyproc Styletrim BGM 119 Edge Stop

## 221A Proprietary suspended ceiling system

---

- 1. **Manufacturer:** British Gypsum.
  - 1.1. **Web:** [www.british-gypsum.com](http://www.british-gypsum.com).
  - 1.2. **Email:** [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com).
  - 1.3. **Tel:** +44 (0)844 800 1991.
  - 1.4. **Product reference:** CasoLine MF suspended ceiling system
- 2. **Suspension system:**
  - 2.1. **Hanger type:** Gypframe MF8 strap hangers
    - 2.1.1. **Top fixings:** Hangers twice screwed to sides of timber joists, using Gyproc Drywall Screws
  - 2.2. **Primary grid centres:** 1200 mm
    - 2.2.1. **Hanger centres:** 1200 mm
  - 2.3. **Secondary grid centres:** 450 mm
- 3. **Linings:** 1 x 12.5 mm Gyproc WallBoard
- 4. **Insulation:** None
- 5. **Access Units:** Not required
- 6. **Finishing:** Skim coat plaster finish
- 7. **Primer/ Sealer:**

7.1. **Type:** One coat of Gyproc Drywall Primer

8. **Accessories :** Gyproc Styletrim BGM 119 Edge Stop

#### 246 Ceiling lining on timber

---

1. To under side of third floor
2. **Manufacturer:** British Gypsum.
  - 2.1. **Web:** [www.british-gypsum.com](http://www.british-gypsum.com).
  - 2.2. **Email:** [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com).
  - 2.3. **Tel:** +44 (0)844 800 1991.
  - 2.4. **Product reference:** Timber joist ceilings
3. **Metal resilient (acoustic) bars:** Gypframe RB2 Surefix bars, fixed to underside of joists at 450 mm centres
4. **Linings:**
  - 4.1. **Type:** 2 x 12.5 mm Gyproc FireLine - screw fixed
  - 4.2. **Fixings:** 50mm British Gypsum Drywall Screws
5. **Insulation:** 100 mm Isover Acoustic Partition Roll (APR 1200)
6. **Finishing:**
  - 6.1. **Type:** Skim coat plaster finish
  - 6.2. **Primer/ Sealer:** One coat of Gyproc Drywall Primer
7. **Accessories:** None
8. **Other requirements:** -

#### 247 Insulated plasterboard

---

1. To under side of traditional dormers
2. **Manufacturer:** Proctor.
  - 2.1. **Web:** [www.proctorgroup.com](http://www.proctorgroup.com)
  - 2.2. **Email:** [technical@proctorgroup.co.uk](mailto:technical@proctorgroup.co.uk).
  - 2.3. **Tel:** +44 (0)1250 872261
  - 2.4. **Product reference:** 32.5mm Spacetherm WallBoard
3. **Type:** PL3050
  - 3.1. **Fixings:** [As board manufacturers recommendations].
4. **Finishing:**
  - 4.1. **Type:** [Skim coat plaster finish].
  - 4.2. **Primer/ Sealer:** [One coat of Gyproc Drywall Primer].
5. **Accessories:** [None].
6. **Other requirements:** [-].

#### 250 Ceiling lining on timber

---

1. To rafters
2. **Background:** [Fixed into softwood battens].
3. **Manufacturer:**
  - 3.1. **Web:** [www.british-gypsum.com](http://www.british-gypsum.com).
  - 3.2. **Email:** [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com).
  - 3.3. **Tel:** +44 (0)844 800 1991.
4. **Linings:**
  - 4.1. **Type:** 1 x 15 mm Gyproc WallBoard - screw fixed

- 4.2. **Fixings:** 50mm British Gypsum Drywall Screws
- 5. **Finishing:**
  - 5.1. **Type:** Skim coat plaster finish
  - 5.2. **Primer/ Sealer:** One coat of Gyproc Drywall Primer
- 6. **Accessories:** None
- 7. **Other requirements:** -

Ω End of Section

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

### Types of flooring/ sheathing/ decking /sarking/ linings/ casings

#### 110 Wood-based sheets generally

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1. **Standard:** To BS EN 13986.
  - 1.1. **Evidence of compliance:** All sheets to be CE marked. Submit Declaration of Performance (DoP).

#### 315A Plywood flooring

---

1. **Description:** Bathrooms
2. **Substrate:** SOFT WOOD JOISTS.
  - 2.1. **Preparation:** [Removal of existing finishes and levelling screed as clause M10/130A.
3. **Flooring:** Plywood to an approved national standard.
  - 3.1. **Bonding quality to BS EN 314-2:** [Class 3]
  - 3.2. **Appearance class to BS EN 635:** Class [II].
  - 3.3. **Finish:** Sanded.
  - 3.4. **Thickness:** [22mm].
  - 3.5. **Edges:** Tongued and grooved all edges.
  - 3.6. **Other requirements:** Trimming around and rebating to accommodate drainage channels, access panels as clause 990.
4. **Setting out:** Long edges running across joists. End joints central over joists and staggered.
5. **Fixing to joists:**
  - 5.1. **Fasteners:** 50 mm x 8 gauge wood screws into pilot holes
  - 5.2. **Fixing centres (maximum):**
    - 5.2.1. **Around floor perimeter and along short edges of each board:** 150 mm.
    - 5.2.2. **Along intermediate supports:** 300 mm.
  - 5.3. **Fixing distance from edges:** 25 mm from long edges and minimum 10 mm from short edges.
6. **Joint treatment:** Bonded with PVA adhesive to BS EN 201, Class D3
7. **Expansion provision:**
  - 7.1. **Clear expansion gap around perimeter of floor area and upstands:** 1 mm per metre run of floor, with a minimum gap of 10 mm
  - 7.2. **Intermediate expansion/ movement joints:** As recommended by flooring manufacturer.

#### 325A Particleboard flooring

---

1. **Description:** Generally
2. **Substrate:** SW joists
  - 2.1. **Additional supports:** as clause 930
3. **Flooring:** Particleboard to BS EN 312, Type P5.
  - 3.1. **Thickness:** 22 mm
  - 3.2. **Edges:** Tongued and grooved all edges.
  - 3.3. **Recycled content:** Contractor's choice
4. **Setting out:** Long edges running across joists. End joints central over joists and staggered.
5. **Fixing to joists:**

- 5.1. **Fasteners:** 50 mm x 8 gauge wood screws into pilot holes
- 5.2. **Fixing centres (maximum):**
  - 5.2.1. **Around floor perimeter and along short edges of each board:** 200 mm.
  - 5.2.2. **Along intermediate supports:** 400 mm.
- 5.3. **Fixing distance from edges:** 25 mm from long edges and minimum 10 mm from short edges.
- 6. **Joint treatment:** bonded with PVA to BS EN 204, class D3
- 7. **Expansion provision:**
  - 7.1. **Clear expansion gap around floor perimeter of floor area and any upstands:** 1 mm per metre run of floor, with a minimum gap of 10 mm
  - 7.2. **Intermediate expansion/ movement joints:** As recommended by flooring manufacturer.

#### 515B Plywood roof decking

---

- 1. To flat roofs
- 2. **Substrate:** Joists as section G20
  - 2.1. **Additional supports:** As clause 930
- 3. **Decking:** Plywood manufactured to the relevant standards and quality control procedures specified in BS EN 636, and so marked.
  - 3.1. **Type:** Contractors choice
  - 3.2. **Bonding quality to BS EN 314-2:** [Class 3]
  - 3.3. **Appearance class to BS EN 635:** Class [II].
  - 3.4. **Nominal thickness/ number of plies:** 18mm
  - 3.5. **Edges:** Tongued and grooved all edges.
  - 3.6. **Other requirements:** None
- 4. **Setting out:** Long edges running across supports. End joints central over joists and staggered.
- 5. **Fixing:**
  - 5.1. **Fasteners:** 50 mm x 8 gauge wood screws into pilot holes
  - 5.2. **Fixing centres:**
    - 5.2.1. **Along each support: 25 mm from each long edge and at maximum:** 150 mm centres between.
    - 5.2.2. **Around perimeter of roof area: Maximum:** 150 mm centres.
- 6. **Expansion provision:**
  - 6.1. **Clear expansion gap around perimeter of roof area and upstands:** 10 mm.
  - 6.2. **Intermediate expansion/ movement joints:** As recommended by decking manufacturer.

#### 815A Plywood

---

- 1. **Description:** Linings, casings, etc
- 2. **Substrate:** Varies
  - 2.1. **Additional supports:** As clause 930
- 3. **Plywood:** Manufactured to an approved national standard.
  - 3.1. **Manufacturer/ Supplier:** Contractor's choice
  - 3.2. **Finish:** Sanded
  - 3.3. **Other requirements:** As per drawings
- 4. **Setting out: Long edges running:** along supports
  - 4.1. **Gap between adjacent boards:** 2 mm
- 5. **Fixing to supports:**
  - 5.1. **Fasteners:** 50 mm x 8 gauge wood screws into pilot holes

- 5.2. **Fixing centres (maximum):**
  - 5.2.1. **Around board edges:** 150 mm.
  - 5.2.2. **Along intermediate supports:** 300 mm.
- 5.3. **Fixing distance from edges (minimum):** 10 mm.
- 6. **Joint treatment:** Bonded with PVA adhesive to BS EN 204, class D3
- 7. **Accessories:** As per drawings

---

#### 875A Medium density fibreboard

- 1. **Description:** Linings, casings, cills, etc.
- 2. **Substrate:** Varies
  - 2.1. **Additional supports:** As clause 930
- 3. **Medium density fibreboard: To BS EN 622-5, Type: MDF.LA**
  - 3.1. **Other requirements:** As per drawings
- 4. **Setting out: Long edges running:** along supports
  - 4.1. **Gap between adjacent boards:** 2 mm
- 5. **Fixing to supports:**
  - 5.1. **Fasteners:** 35 x 3.5 mm countersunk woodscrews
  - 5.2. **Fixing centres (maximum):**
    - 5.2.1. **Around board edges:** 150 mm
    - 5.2.2. **Along intermediate supports:** 300 mm
  - 5.3. **Fixing distance from edges (minimum):** 12 mm.
- 6. **Joint treatment:** Bonded with PVA adhesive to BS EN 204, class D3
- 7. **Accessories:** As per drawings

## Workmanship

---

### 910 Installation generally

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

---

### 915 Dryness of concrete/ screed substrates for floating floors

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

---

### 925 Battens for floating floors

- 1. **Timber quality:** Free from decay, insect attack (except ambrosia beetle damage) and with no knots wider than half the width of the section.
- 2. **Preservative treatment:** As section Z12 and Wood Protection Association Commodity Specification C8.
  - 2.1. **Type/ Desired service life:** Boron/ 30 years
- 3. **Moisture content at time of laying (maximum):** 16%.

---

**930 Additional supports**

---

1. **Additional studs, noggings/ dwangs (Scot) and battens:**
  - 1.1. **Provision:** In accordance with board manufacturer's recommendations and as follows:
    - 1.1.1. **Tongue and groove jointed rigid board areas:** To all unsupported perimeter edges.
    - 1.1.2. **Butt jointed rigid board areas:** To all unsupported edges.
  - 1.2. **Size:** Not less than 50 mm wide and of adequate thickness.
  - 1.3. **Quality of timber:** As for adjacent timber supports.
  - 1.4. **Treatment (where required):** As for adjacent timber supports.

---

**940 Board moisture content and conditioning**

---

1. **Moisture content of boards at time of fixing:** Appropriate to end use.
2. **Conditioning regime:** Submit proposals.

---

**960 Fixing generally**

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1. **Boards/ sheets:** Fixed securely to each support without distortion and true to line and level.
2. **Fasteners:** Evenly spaced in straight lines and, unless otherwise recommended by board manufacturer, in pairs across joints.
  - 2.1. **Distance from edge of board/ sheet:** Sufficient to prevent damage.
3. **Surplus adhesive:** Removed as the work proceeds.

---

**980 Open joints**

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1. **Perimeter joints, expansion joints and joints between boards:** Free from plaster, mortar droppings and other debris.
2. **Temporary wedges and packings:** Removed on completion of board fixing.

---

**990 Access panels**

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1. **Size and position:** Agree before boards are fixed.
2. **Additional noggings/ dwangs (Scot), battens, etc:** Provide and fix as necessary.

Ω End of Section

## K13: Rigid sheet fine linings and panelling

### Types of lining and panelling

#### 130A Laminated plastics veneered panel lining

---

1. **Description:** Duct access covers
2. **Substrate:** Masonry
3. **Battens:** Softwood free from decay and active insect attack and with no knots wider than half the width of the section.
  - 3.1. **Finished size:** Ex 50 x 63mm (PSE)
  - 3.2. **Moisture content at time of fixing (maximum):** 18%.
  - 3.3. **Spacing (centres):** to perimeter of opening and 1200mm vertically
  - 3.4. **Method of fixing:** Plugged and screwed to perimeter masonry generally
4. Panels
  - 4.1. **Core material:** Manufacturers standard
    - 4.1.1. **Thickness:** as recommended by manufacturer
    - 4.1.2. **Fire retardant impregnation treatment:** Manufacturers standard
  - 4.2. **Facing sheet:** Decorative high pressure laminate
    - 4.2.1. **Manufacturer:** Thrislington Cubicles Ltd, Pribe William Avenue, Sandycroft, Deeside, Flintshire, CH5 2QZ
    - 4.2.2. **Product reference:** Sentry
    - 4.2.3. **Thickness:** manufacturers standard
    - 4.2.4. **Fire rating:** Class 0
    - 4.2.5. **Colour/ pattern/ finish:** To be agreed
  - 4.3. Backing sheet
    - 4.3.1. **Durability/ Fire rating:** As for facing sheet.
    - 4.3.2. **Colour/ pattern/ finish:** Submit proposals.
  - 4.4. **Edge treatment:** Veneered strip to match front panels
  - 4.5. **Fabrication:** As section Z10.
    - 4.5.1. **Adhesive:** To match durability class of core material.
    - 4.5.2. **Moisture content at time of fixing:** As recommended by fabricator to suit environmental conditions.
  - 4.6. **Moisture content at time of fixing:**
5. Installation
  - 5.1. **Method of fixing panels:** Hidden as manufacturers standard
  - 5.2. **Joint treatment:** Perimeter battens to be painted
6. **Included features:** Skirting, as manufacturers standard
7. **Other requirements:** Manufacturers survey and design drawings for CA's approval prior to manufacture

### General requirements

#### 260 Environmental conditions

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

## **Fabrication/ fixing/ finishing**

### **310 Accuracy of fabrication**

---

1. **Site dimensions:** Take as necessary before starting fabrication.
  - 1.1. **Discrepancies with drawings:** Report without delay and obtain instructions before proceeding.
2. Permissible deviations for panels
  - 2.1. **Length:**  $\pm 1.5$  mm.
  - 2.2. **Width:**  $\pm 1.5$  mm.
  - 2.3. **Squareness (taking the longer of 2 sides at a corner as a baseline and measuring the deviation of the shorter side from the baseline perpendicular):**  $\pm 1.5$  mm in 1 m.
  - 2.4. **Flatness (of panels with a core thickness of 12 mm and over, as delivered to site):**  $\pm 1$  mm under a 600 mm straightedge.

### **350 Fixing linings and panelling**

---

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

### **480 Clear finishes**

---

1. **Nail holes:** Filled with stopping coloured to match wood.
2. **Prepared surface:** Smooth, closed and free from sanding marks.
3. **Finish:** Smooth free from brush marks, nibs, sags, runs and other defects.

Ω End of Section

## K21: Wood strip / board fine flooring / linings

### Types of flooring/ lining

#### 110B Engineered wood flooring

---

1. **Substrate:** Existing concrete floor slab.
  - 1.1. **Preparation:** Existing finishes to be removed, self-levelling screed as clause M10/130A.
2. **Manufacturer:** Havwoods Ltd.
  - 2.1. **Web:** www.havwoods.co.uk.
  - 2.2. **Email:** info@havwoods.co.uk.
  - 2.3. **Product reference:** Venture Plank - Avelo (HW955).
  - 2.4. **Finished face width:** 2400 x 180 mm.
  - 2.5. **Finished thickness:** 20 mm.
  - 2.6. **Edges:** tongue & groove.
  - 2.7. **Moisture content at time of fixing:** 6-9%.
  - 2.8. **Method of fixing/ joining:** Floating on underlay.
  - 2.9. **Underlay:** Contractors choice, in accord with manufacturer's recommendations.
3. **Finish:** As clause 370A.
4. **Accessories:** Jointing strip as clause M50/740A at junction with adjacent different finishes.

#### 110C Wood parquet flooring

---

1. **Description:** Refer to room data sheets
2. **Substrate:** Existing concrete floor slab
  - 2.1. **Preparation:** Existing finishes to be removed, self-levelling screed as clause (M10.130A)
3. **Manufacturer:** Contractors choice
  - 3.1. **Material:** To match existing.
  - 3.2. **Finished face width:** 250 x 55 mm (fin)
  - 3.3. **Finished thickness:** 23 mm (fin)
  - 3.4. **Edges:** tongue & groove
  - 3.5. **Moisture content at time of fixing:** 6-9%
  - 3.6. **Method of fixing/ joining:** Fully bonded
4. **Finish:** As clause 370A
5. **Accessories:** Jointing strip at junction with adjacent different finishes
6. **Other requirements:** 3 widths of 'stretcher' bond to perimeter of each room

### General/ preparation

#### 220 Environmental conditions

---

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

#### 260 Dryness of concrete/ screed substrates for flooring

---

1. **Relative humidity above substrate when tested with a hygrometer to BS 8201, Appendix A (maximum):** 75%.
  - 1.1. **Test points:** All corners, around perimeter, and random points over area being tested.

2. **Drying aids:** Turned off for not less than four days before testing.

## Fixing/ finishing

### 350A Fixing strips/ boards

---

1. **Strips/ Boards:** Fixed securely to each support with flat, true surfaces free from undulations, splits, hammer marks, scratches and protruding fastenings.
2. **Movement of timber:** Allowed for when positioning strips/ boards and fastenings to prevent cupping, springing, opening of joints or other defects.
3. **Heading joints (where permitted):** End matched, butted and, where applicable, positioned centrally over supports and distributed across the flooring to achieve a random effect.

### 360 Expansion provision

---

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

### 370A Finish to flooring

---

1. **Strips/ Boards:** Sanded to give a clean, smooth and flush surface free from score marks.
2. **Finish:** As clause M60/160B

Ω End of Section

## K32: Panel cubicles / duct and wall linings / screens

To be read with preliminaries/general conditions.

### 120A Panel cubicles

---

1. **Description:** To mezzanine wc's
2. **Manufacturer:** [Thrislington Cubicles Ltd, Prince William Avenue, Sandycroft, Deeside, Flintshire, CH5 2QZ].
  - 2.1. **Product reference:** [Flow].
3. **Dividers:**
  - 3.1. **Height (overall):** 2700 mm
  - 3.2. **Floor clearance:** Manufacturer's standard
  - 3.3. **Core material:** Manufacturer's standard
    - 3.3.1. **Thickness:** Manufacturer's standard
  - 3.4. **Facings:** Decorative high pressure laminate (HPL)
    - 3.4.1. **Colour/ Pattern/ Species:** To be agreed
  - 3.5. **Edge treatment:** The divider to be located in a stainless steel floor channell
  - 3.6. **Wall support:** Manufacturer's standard
4. **Doors:**
  - 4.1. **Height:** 2700 mm
  - 4.2. **Core material:** Manufacturer's standard
    - 4.2.1. **Thickness:** Manufacturer's standard
  - 4.3. **Facings:** Decorative high pressure laminate (HPL)
    - 4.3.1. **Colour/ Pattern/ Species:** To be agreed
  - 4.4. **Edge treatment:** Manufacturer's standard
  - 4.5. **Ironmongery:** Manufacturer's standard
5. **Framework:**
  - 5.1. **Headrails:** Manufacturer's standard
  - 5.2. **Frame:** Manufacturer's standard
6. **Accessories:** Fittings as manufacturer's standard.
7. **Other requirements:** Manufacturer's survey and design drawings for CA's approval prior to manufacture.

### 150A Duct/ wall linings – panels and proprietary frames

---

1. **Description:** To wc's
2. **Manufacturer:** Thrislington Cubicles Ltd, Prince William Avenue, Sandycroft, Deeside, Flintshire, CH5 2QZ
  - 2.1. **Product reference:** Sentry
3. **Panels:**
  - 3.1. **Type:** Plain, full height with access panels
    - 3.1.1. **Width (coordinating):** As drawings
  - 3.2. **Core material:** Moisture resistant particleboard
    - 3.2.1. **Thickness:** Manufacturer's standard
  - 3.3. **Facings:** Decorative high pressure laminate (HPL)
    - 3.3.1. **Colour/ Pattern/ Species:** To be agreed
  - 3.4. **Edge treatment:** Manufacturer's standard

- 3.5. **Reaction to fire (minimum classification, finished panel):** Manufacturer's standard
- 3.6. **Accessories:** Panels to be cut to accommodate sanitaryware and associated fittings.
- 4. **Fasteners:** Manufacturer's standard
- 5. **Framing/ Support:**
  - 5.1. **Duct panels:** Manufacturer's standard
  - 5.2. **Wall panels:** Manufacturer's standard
- 6. **Flashgap panels:** Manufacturer's standard
- 7. **Skirting:** Manufacturer's standard
- 8. **Other requirements:** Manufacturer's survey and design drawings for CA's approval prior to manufacture.

#### 180A Duct/wall linings – site fabricated softwood support framing

---

- 1. **Description:** To service riser
- 2. **Panels:**
  - 2.1. **Manufacturer:** [Thrislington Cubicles Ltd, Prince William Avenue, Sandycroft, Deeside, Flintshire, CH5 2QZ].
  - 2.2. **Product reference:** [Sentry].
  - 2.3. **Type:** [Plain, full height with access panels].
    - 2.3.1. **Width:** [To suit existing opening].
  - 2.4. **Core material:** [Moisture resistant particleboard].
    - 2.4.1. **Thickness:** [Manufacturer's standard].
  - 2.5. **Facings:** [Decorative high pressure laminate (HPL)].
    - 2.5.1. **Colour/ Pattern/ Species:** [To be agreed].
  - 2.6. **Edge treatment:** [Manufacturer's standard].
  - 2.7. **Reaction to fire (minimum classification, finished panel):** [Manufacturer's standard].
- 3. **Fasteners:** [Manufacturer's standard].
- 4. **Framing:** Softwood, free from decay and active insect attack and with no knots wider than half the width of the section.
  - 4.1. **Finished size:** ex 50 x 75\* mm PSE
  - 4.2. **Moisture content at time of fixing (maximum):** 18%.
  - 4.3. **Spacing (centres):** As panel manufacturer's recommendations
  - 4.4. **Method of fixing:** Plugged and screwed to wall.
  - 4.5. **Finish:** As M60/----.
- 5. **Other requirements:** Manufacturer's survey and design drawings for CA's approval prior to manufacture.

#### 250 Installation

---

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

Ω End of Section

## K40: Demountable suspended ceilings

### Execution

#### 305 Setting out

---

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

#### 315 Protection

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

#### 325 Installing hangers

---

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

#### 335 Installing perimeter trims

---

1. **Jointing:** Neat and accurate, without lipping or twisting.
2. **External and internal corners: Mitre joints generally. Overlap joints at internal corners are acceptable**
  - 2.1. **Intermediate butt joints:** Minimize. Use longest available lengths of trim. Align adjacent lengths.
3. **Fixing:** Fix firmly to perimeter wall, edge battens or other building structure.
  - 3.1. **Fasteners:** as manufacturers recommendations
  - 3.2. **Fixing centres:** 600 mm

#### 390 Openings in ceiling materials

---

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

### 395 Integrated services

---

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

### 401 Ceiling-mounted luminaires

---

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

### 411 Mechanical services

---

1. **Fan coil units:**
  - 1.1. **Inlet and outlet grilles:** Trim ceiling grid and infill units to suit.
  - 1.2. **Space beneath:** Sufficient for ceiling system components.
  - 1.3. **Suspension and connections:** Permit accurate setting out and levelling of fan coil units.
2. **Air grilles and diffusers:**
  - 2.1. **Setting out:** Accurate and level.
  - 2.2. **Linear air diffusers:** Retain in place with lateral restraint. Provide flanges for support of grid and infill units.
  - 2.3. **Grille/ diffuser ceiling joints:** Provide smudge rings and edge seals.
3. **Smoke detectors and PA speakers:**
  - 3.1. **Ceiling infill units:** Scribe and trim to suit.
  - 3.2. **Independent suspension:** Required
  - 3.3. **Flexible connections:** Required.
4. **Sprinkler heads:** Carefully set out and level.

### 415 Installing insulation

---

1. **Fitting:** Fit accurately and firmly with butted joints and no gaps.
2. **Insulation within individual infill units:** Fit closely. Secure to prevent displacement when infill units are installed or subsequently lifted.
  - 2.1. **Dustproof sleeving:** Reseal, if cut.
3. **Width:** Lay insulation in the widest practical widths to suit grid member spacings.

4. **Services:** Do not cover electrical cables that have not been sized accordingly. Cut insulation carefully around electrical fittings, etc. Do not lay insulation over luminaires.
5. **Sloping and vertical areas of ceiling system:** Fasten insulation to prevent displacement.

## Completion

### 505 Tools

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1. **Access tools: At Completion supply one set of the following:** 1500 mm long operating poles for access panels

### 530 Spares

---

1. **General: At Practical Completion supply the following:** 25 tiles for ceiling system K40/115

## Types of ceiling system

### 115A Ceiling tiles

---

1. Square
2. **Manufacturer:** Armstrong Ceilings Ltd.
  - 2.1. **Web:** [www.armstrong-ceilings.co.uk](http://www.armstrong-ceilings.co.uk).
  - 2.2. **Email:** [sales-support@armstrong.com](mailto:sales-support@armstrong.com).
  - 2.3. **Product reference:** Dune Max Mineral Tile
3. **Grid:** Prelude XL2
4. **Tiles:**
  - 4.1. **Modular size:** 600 x 600 mm
  - 4.2. **Edge profile:** MicroLook
5. **Compatible fittings by others:** Luminaires to M & E Engineers requirements
6. **Special Requirements:**
  - 6.1. Layout of each room to be agreed with CA prior to installation].
  - 6.2. Shadow gap edge detail to perimeter.

### 115B Unit/ modular suspended ceiling system

---

1. Plank
2. **Manufacturer:** Armstrong Ceilings Ltd.
  - 2.1. **Web:** [www.armstrong-ceilings.co.uk](http://www.armstrong-ceilings.co.uk).
  - 2.2. **Email:** [sales-support@armstrong.com](mailto:sales-support@armstrong.com).
  - 2.3. **Product reference:** Ultima+ Mineral Plank.
3. **Modular size:** [300 x 1800 mm].
4. **Edge profile:** [SL2].
5. **Special Requirements:**
  - 5.1. Layout of each room to be agreed with CA prior to installation].
  - 5.2. Shadow gap edge detail to perimeter.

Ω End of Section

## L10: Windows / rooflights / screens / louvres

### General

#### 115A Timber procurement

---

1. **Timber (including timber for wood based products):** Obtained from well managed forests and/or plantations in accordance with:
  - 1.1. The laws governing forest management in the producer country or countries.
  - 1.2. International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
2. **Documentation (If requested):** Provide either:
  - 2.1. Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
  - 2.2. Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.
3. **Certification scheme:** UK Timber Procurement Policy Category A evidence certification scheme
  - 3.1. **Other evidence:** UK Timber procurement policy Category B evidence: Completed supply chain information within attached proforma

#### 120 Site dimensions

---

1. **Procedure:** Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
2. **Designated items:** Existing metal windows, Replacement timber windows and Glazed screens to fit within existing openings

### Products

#### 250A Wood windows

---

1. (Types 1 - 21)
2. **Standard:** To BS 644.
3. **Manufacturer:** A firm currently registered under a third party quality assurance scheme.
4. **Exposure category to BS 6375-1/ Design wind load:** 2000 Pa
5. **Operation and strength characteristics:** To BS 6375-2.
6. **Timber:** Generally to BS EN 942.
  - 6.1. **Species:** European redwood
  - 6.2. **Appearance class:** J10 for glazing beads, drip mouldings and the like. J40 or better for all other members.
  - 6.3. **Moisture content on delivery:** 12-19%.
7. **Preservative treatment:** Organic solvent as section Z12 and WPA Commodity Specification C5; Desired service life 30 years
8. **Finish as delivered:** Prepared and primed as section M60
9. **Thermal performance (U-value maximum):** 1.6 W/m<sup>2</sup>K
10. **Glazing details:** Refer to L40/210A)
11. **Ironmongery/ Accessories:** see schedule
12. **Fixing:** Screwed to timber sub-framing as clause 780
13. **Other requirements:** Manufacturer's survey and design drawings for CA's approval prior to manufacture. Obscure glazing required to toilet/shower windows.

**315A Existing steel windows**

---

1. (Types 15 - 17)
2. **Standard:** To BS 6510.
  - 2.1. **Material:** To be taken out, shotblasted and restored to original appearance
3. **Window Section:** Existing
4. **Exposure category to BS 6375-1/ Design wind load:** 2000 Pa
5. **Operation and strength characteristics:** To BS 6375-2.
6. **Finish as delivered:** Galvanized
7. **Thermal performance (U-value maximum):** 1.5 W/m<sup>2</sup>K
8. **Glazing details:** Refer to L40/205.
9. **Ironmongery/ Accessories:** Retain or replicate existing
10. **Fixing:** Screwed to timber sub-framing as clause 781

**340 Aluminium windows**

---

1. (Types 22 - 30)
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Finish as delivered:** Polyester powder coating to BS 6496
4. **Thermal performance (U-value maximum):** 1.4 W/m<sup>2</sup>K
5. **Glazing details:** Insulated glazing units to meet maximum u-value
  - 5.1. **Beadings:** External
6. **Ironmongery/ Accessories:** See schedule
7. **Fixing:** Screwed to reveal as clause 782
8. **Other requirements:** Manufacturer's survey and design drawings for CA's approval prior to manufacture. Obscure glazing to toilet/shower windows.

**420A Wood subframes**

---

1. **Timber:** To BS EN 942.
  - 1.1. **Species:** Hardwood as table NA.2
  - 1.2. **Appearance class:** J30
  - 1.3. **Moisture content on delivery:** 12-19%.
2. **Assembly adhesive:** PVAC to BS EN 204, class D4
3. **Finish:** all hidden surfaces to be primed and undercoated prior to fixing.
4. **Joinery workmanship:** As section Z10.
5. **Fixing:** to masonry reveal as clause 780

**460A Access rooflight**

---

1. To lead roofs
2. **Manufacturer:** Glazing Vision Ltd.
  - 2.1. **Web:** [www.glazingvision.co.uk](http://www.glazingvision.co.uk).
  - 2.2. **Email:** [sales@glazingvision.co.uk](mailto:sales@glazingvision.co.uk).
  - 2.3. **Product reference:** GV VisionVent Solo Manual Access Hatch Rooflight
3. **Size:** 900 mm x 900 mm
4. **Glazing:** Double glazed, Manufacturers standard.
5. **Colour/ finish:** Polyester powder coated, RAL Dual Colour RAL 7015 Grey Outer / RAL9010 White Inner as standard

6. **Kerb:** As manufacturers drawing - Kerb to be finished in Lead as roof covering
7. **Other requirements:** Manufacturer's survey and design drawings for CA's approval prior to manufacture.

#### 481 Frameless rooflight

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1. **Manufacturer:** The Rooflight Company.
  - 1.1. **Web:** www.therooflightcompany.co.uk.
  - 1.2. **Email:** info@therooflightcompany.co.uk.
  - 1.3. **Tel:** +44 (0)1993 833108.
  - 1.4. **Product reference:** neo™ Rooflight (Steel)
2. **Size (clear viewable sizes):** neo™-S7
3. **Frame colour:** Umber Grey (RAL 7022)
4. **Glazing details:** 4 mm SGG PLANITHERM® TOTAL + (Low E) toughened inner, 16 mm argon cavity, 4 mm SGG BIOCLEAR® (self clean only) toughened outer
5. **Operation:** Manual handle
6. **Blind:**
  - 6.1. **Type:** Dual Pleated Blind
  - 6.2. **Operation:** Rod
7. **Other requirements:** Manufacturers standard rooflight winder and include for manufacturers standard coupling detail where shown on drawings.

#### 560A Glazed screen system

---

1. (Types 31 - 33)
2. **Manufacturer:** DEKO partitions Ltd (01236453000)
  - 2.1. **Product reference:** DEKO FG fully glazed partitions
3. **Screen height:** As Drawing no. A 303
4. **Fire resistance rating of complete system:** 60 minutes. (See L40/510A)
5. **Sound insulation rating:** Rw 40 dB
6. **Materials:**
  - 6.1. **Frames:** Aluminium sections
    - 6.1.1. **Finish:** Manufacturer's standard grey
  - 6.2. **Panels:** 25 - 41 mm fire rated glazing
7. **Glazing details:** Vertical joints with black silicone strip
8. **Fixing:** To masonry reveals as clause 782
9. **Other requirements:** Manufacturer's survey and design drawings for CA's approval prior to manufacture.

### Execution

#### 710 Protection of components

---

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

#### 730 Priming/ sealing

---

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

## 740 Corrosion protection

---

1. **Surfaces to be protected:** Aluminium alloy components in contact with preservative treated timber, concrete, mortar and/or plasters
2. **Protective coating:** Two coats of bitumen solution to BS 6949 or an approved mastic impregnated tape.
  - 2.1. **Timing of application:** Before fixing components.

## 765A Window installation generally

---

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

## 780 Fixing of wood frames

---

1. **Standard:** As section Z20.
2. **Fasteners:** contractors choice
  - 2.1. **Spacing:** When not predrilled or specified otherwise, position fasteners not more than 150 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 450 mm centres.

## 781 Fixing of steel frames

---

1. **Standard:** As section Z20.
2. **Fasteners:** contractors choice
  - 2.1. **Spacing:** When not predrilled or specified otherwise, position fasteners not less than 50 mm and not more than 190 mm from ends of each jamb, adjacent to each hanging point of opening lights and at maximum 900 mm centres.

## 782 Fixing of aluminium frames

---

1. **Standard:** As section Z20.
2. **Fasteners:** contractors choice
  - 2.1. **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.

## 790 Fire resisting frames

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1. **Gap between back of frame and reveal: Completely fill with:** intumescent mastic or tape

## 800A Backfilling of steel frame sections

---

1. **Windows fixed direct into openings:** After fixing, fill back of steel frame with expanding polyurethane foam filler.

## 810 Sealant joints

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1. **Sealant:**
  - 1.1. **Manufacturer:** Contractor's choice
    - 1.1.1. **Product reference:** Contractor's choice
  - 1.2. **Colour:** varies to suit different locations, to be agreed
  - 1.3. **Application:** As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.

**820 Ironmongery**

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1. **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.
2. **Checking/ Adjusting/ Lubricating:** Carry out at completion and ensure correct functioning.

Ω End of Section

## L20: Doors / shutters / hatches

### General

#### 112 Timber procurement

---

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

#### 115 Fire resisting doors/ door assemblies/ doorsets

---

1. **Door products:** As defined in BS EN 12519.
2. **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.
3. Components and assemblies will be marked to the relevant product standard and/ or third party certification rating.

#### 150 Site dimensions

---

1. **Procedure:** Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
2. **Designated items:** main stair fire doorsets

### Products

#### 250 Wood panelled doors

---

1. **Description:** Door type 03
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Not Applicable
3. **Wood species:** Hardwood
4. **Preservative treatment:** Not required
5. **Finish as delivered:** Prepared and primed, as section M60
6. **Glazing/ Infill details:** Clear double glazing. L40.370A
  - 6.1. **Manifestation:** Not required
  - 6.2. **Beading:** Putty
7. **Thermal performance (U-value maximum):** Manufacturer's standard
8. **Other requirements:** Detail as drawing A700

## 251 Wood panelled doors

---

1. **Description:** Door type 12
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Not Applicable
3. **Wood species:** Hardwood
4. **Preservative treatment:** Not required
5. **Finish as delivered:** Prepared and primed, as section M60
6. **Glazing/ Infill details:** Clear single glazing safety glass
  - 6.1. **Manifestation:** Not required
  - 6.2. **Beading:** hardwood bead
7. **Thermal performance (U-value maximum):** Manufacturer's standard
8. **Other requirements:** Detail as drawing A710

## 280B Aluminium louvered doors

---

1. **Description:** Door type 13
2. **Manufacturer:** Contractor's choice
3. **Product Reference:** [Submit Proposals].
4. **Screen height:** [As drawings and schedule].
5. **Configuration:** Refer to drawing A\_710
6. **Door material:** Aluminium
7. **Frame material:** Aluminium
8. **Finish:**
  - 8.1. **Type:** [Powder coated matt, colour RAL 7016].
9. **Transom light Glazing:** [Double glazed ].
10. **Hardware:** [Manufacturers standard, Internal stainless steel thumbturn cylinder and stainless steel handle and hinges].
11. **Accessories/ Other requirements:** [None].

## 281 Aluminium entrance doors

---

1. Door type 02
2. **Manufacturer:** Technal.
  - 2.1. **Web:** [www.technal.co.uk](http://www.technal.co.uk).
  - 2.2. **Email:** [info.uk@technal.com](mailto:info.uk@technal.com).
  - 2.3. **Tel:** +44 (0)1924 232323.
  - 2.4. **Product reference:** PY55
3. **Screen height:** [As drawings and schedule].
4. **Configuration:** Double
5. **Materials:**
  - 5.1. **Frame:** Extruded aluminium
6. **Finish:**
  - 6.1. **Type:** [Powder coated matt, colour RAL 7016].
  - 6.2. **Panels:** [Glazing].
7. **Glazing:** [As section L40].
8. **Hardware:** [Internal thumbturn cylinder, DDA compliant closer with adjustable opening and closing forces and Anti finger-trap pivot hinge stiles].
9. **Accessories/ Other requirements:** [None].

**282 Aluminium entrance doors**

---

1. Door type 01
2. **Manufacturer:** Technal.
  - 2.1. **Web:** www.technal.co.uk.
  - 2.2. **Email:** info.uk@technal.com.
  - 2.3. **Tel:** +44 (0)1924 232323.
  - 2.4. **Product reference:** PY55
3. **Screen height:** [As drawings and schedule].
4. **Configuration:** Single
5. **Materials:**
  - 5.1. **Frame:** Extruded aluminium
6. **Finish:**
  - 6.1. **Type:** [Powder coated matt, colour RAL 7016].
  - 6.2. **Panels:** [Glazing].
7. **Glazing:** [As section L40].
8. **Hardware:** [Internal thumbturn cylinder, DDA compliant closer with adjustable opening and closing force].
9. **Accessories/ Other requirements:** [None].

**283A Doors**

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1. Aluminium entrance door - door type 17
2. **Manufacturer:** Technal.
  - 2.1. **Web:** www.technal.co.uk.
  - 2.2. **Email:** info.uk@technal.com.
  - 2.3. **Tel:** +44 (0)1924 232323.
  - 2.4. **Product reference:** PY55
3. **Screen height:** [As drawings and schedule].
4. **Configuration:** Single with transom window over.
5. **Materials:**
  - 5.1. **Frame:** Extruded aluminium
6. **Finish:**
  - 6.1. **Type:** [Powder coated matt, colour RAL 7016].
  - 6.2. **Panels:** [Glazing].
7. **Glazing:** [As section L40].
8. **Hardware:** [Internal thumbturn cylinder, DDA compliant closer with adjustable opening and closing forces and Anti finger-trap pivot hinge stile].
9. **Accessories/ Other requirements:** [None].

**285A Framless fire rated glazed doors**

---

1. **Description:** Type 14
2. **Manufacturer:** IQ Glass UKI
  - 2.1. **Product reference:** Frameless glazed single door pivot
  - 2.2. **Frame**
3. **Glazing/ Infill details:** Manufacturers standard compliance BS 6262-4
4. **Fire rating:** FD 30S

5. **Ironmongery:** Non hold open pivot steel floor spring 285 (l) x 82mm (d) x 50mm (h) and pivot point and K Series handle
6. **Other Requirements:** None

### 310A Wood door frames

---

1. **Description:** Door type 01, 02 & 03
2. **Manufacturer:** A firm currently registered under a third party quality assurance scheme
  - 2.1. **Materials:** Generally to BS EN 942.
  - 2.2. **Species:** [Hardwood as table NA2].
  - 2.3. **Appearance class:** [J30].
3. **Preservative treatment:** Organic solvent as section Z12 and WPA Commodity Specification C5; Desired service life: 30 years
4. **Finish as delivered:** Prepared and primed, as section M60
5. **Perimeter seals:** EPDM weatherseal
6. **Thermal performance:** Unrated
7. **Fixing:** Plugged and screwed as section Z20

### 330A Wood door frames

---

1. **Description:** Door type 12)
2. **Materials:** Generally to BS EN 942.
  - 2.1. **Species:** Hardwood as table NA2
  - 2.2. **Appearance class:** J20
3. **Assembly:**
  - 3.1. **Adhesive:** contractors choice
  - 3.2. **Joinery workmanship:** As section Z10.
4. **Moisture content on delivery:** 9-13%
5. **Finish as delivered:** Prepared and primed, as section M60
6. **Fixing:** Plugged and screwed as section Z20
7. **Other requirements:** Manufacturer's survey and design drawings for CA's approval prior to manufacture.

### 411 Wood doorsets

---

1. **Description:** Door type 08
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Submit proposals
  - 2.2. **Configuration:** Single
3. **Door leaf:**
  - 3.1. **Facings:** Hardboard
  - 3.2. **Lippings:** Unlipped
  - 3.3. **Finish as delivered:** Prepared and primed, as section M60
4. **Frame and architraves:**
  - 4.1. **Wood species:** Softwood
  - 4.2. **Finish as delivered:** Prepared and primed, as section M60
5. **Preservative treatment:** Not required
6. **Glazing/ Infill details:** Not applicable
  - 6.1. **Manifestation:** Not required
  - 6.2. **Beading:** Not applicable

7. **Ironmongery:** 3no. Stainless steel hinges, With lockable mortice lock and Stainless steel handles
8. **Fire rating:** FD30s
9. **Perimeter seals:** Fire and smoke seal where shown on door schedule
10. **Thermal performance (U-value maximum):** Manufacturer's standard
11. **Other requirements:** None
12. **Fixing:** Plugged and screwed

---

#### 412 Wood doorsets

---

1. **Description:** Door type 09
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Submit proposals
  - 2.2. **Configuration:** Double
3. **Door leaf:** Flush
  - 3.1. **Facings:** Hardboard
  - 3.2. **Lippings:** Unlipped
  - 3.3. **Finish as delivered:** Prepared and primed, as section M60
4. **Frame and architraves:**
  - 4.1. **Wood species:** Softwood
  - 4.2. **Finish as delivered:** Prepared and primed, as section M60
5. **Preservative treatment:** Not required
6. **Glazing/ Infill details:** Not applicable
  - 6.1. **Manifestation:** Not required
  - 6.2. **Beading:** Not applicable
7. **Ironmongery:** 3no. Stainless steel hinges (per leaf), With lockable mortice lock and Stainless steel handles
8. **Fire rating:** FD30s
9. **Perimeter seals:** Fire and smoke seal
10. **Thermal performance (U-value maximum):** Manufacturer's standard
11. **Other requirements:** None
12. **Fixing:** Plugged and screwed

---

#### 415 Wood doorsets

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1. **Description:** Door type 10
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Submit proposals
  - 2.2. **Configuration:** As shown on door schedule and drawing A\_710.
3. **Door leaf:**
4. **Type:** Flush
  - 4.1. **Facings:** HGS grade gloss laminate
  - 4.2. **Colour:** - **Colour:** 3no. colours. Colours to be agreed.
  - 4.3. **Lippings:** Concealed lippings to long edges
  - 4.4. **Finish as delivered:** Full factory finish
5. **Frame and architraves:**
  - 5.1. **Wood species:** hardwood
  - 5.2. **Finish as delivered:** Prepared and primed, as section M60
6. **Preservative treatment:** Not required

7. **Glazing/ Infill details:** None
  - 7.1. **Manifestation:** Not required
  - 7.2. **Beading:** Not applicable
8. **Ironmongery:** Dormer RTS hold open floor spring, Stainless steel push plates and stainless steel flush recessed handles
9. **Fire rating:** FD30s (Door to close in event of fire)
10. **Perimeter seals:** Fire and smoke seal
11. **Thermal performance (U-value maximum):** Manufacturer's standard
12. **Other requirements:** None
13. **Fixing:** Plugged and screwed

#### 416A Wood doorsets

---

1. **Description:** Door type 7&15
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Submit proposals
  - 2.2. **Configuration:** As shown on door schedule and drawing A\_710.
3. **Door leaf:**
4. **Type:** Flush
  - 4.1. **Facings:** HGS grade gloss laminate
  - 4.2. **Colour:** - Colours to be agreed.
  - 4.3. **Lippings:** Concealed lippings to long edges
  - 4.4. **Finish as delivered:** Full factory finish
5. **Frame and architraves:**
  - 5.1. **Wood species:** hardwood
  - 5.2. **Finish as delivered:** Prepared and primed, as section M60
6. **Preservative treatment:** Not required
7. **Glazing/ Infill details:** Clear single safety glass vision panel (Door type 7 only)
  - 7.1. **Manifestation:** Not required
  - 7.2. **Beading:** Not applicable
8. **Ironmongery:** Manufacturers standard, Stainless steel push plates and stainless steel handles
9. **Fire rating:** Refer to Door schedule
10. **Perimeter seals:** Fire and smoke seal where required
11. **Thermal performance (U-value maximum):** Manufacturer's standard
12. **Other requirements:** None
13. **Fixing:** Plugged and screwed

#### 481 Doorsets

---

1. **Description:** Internal - type 04, 05, 06
2. **Manufacturer:** Komfort
  - 2.1. **Contact:** headoffice@komfort.com
  - 2.2. **Telephone:** +44 (0)1213 322560
  - 2.3. **Product reference:** Specialist Internal Glazing & Firescreens
  - 2.4. **Configuration:** Refer to Drawing A\_710 and drawing schedule.
3. **Door leaf:** Glazed
  - 3.1. **Finish as delivered:** Factory applied primer
4. **Frame and architraves:** Aluminium frame and Softwood Architraves

- 4.1. **Finish as delivered:** Powder coat finish to manufacturers standard (Frame), Factory applied primer (architraves)
- 5. **Glazing/ Infill details:** Clear fire-resisting glazing as clause L40.510A
  - 5.1. **Manifestation:** As drawing A-710
  - 5.2. **Beading:** Not required
- 6. **Ironmongery:** Refer to schedule
- 7. **Fire Rating:** FD 30s.
- 8. **Perimeter seals:** Fire and smoke seal
- 9. **Thermal performance (U-value maximum):** Manufacturer's standard
- 10. **Other requirements:** Paint finish as Section M60
- 11. **Fixing:** Plugged and screwed

#### 483 Doorsets

---

- 1. **Description:** Internal - type 10
- 2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Submit proposals
  - 2.2. **Configuration:** Double door
- 3. **Door leaf:** Flush
  - 3.1. **Finish as delivered:** Factory applied primer
- 4. **Frame and architraves:** Softwood
  - 4.1. **Finish as delivered:** Factory applied primer
- 5. **Glazing/ Infill details:** Not applicable
  - 5.1. **Manifestation:** Not applicable
  - 5.2. **Beading:** Not required
- 6. **Ironmongery:** 3no. Stainless steel hinges, With lockable mortice lock and Stainless steel handles
- 7. **Fire Rating:** Refer to door schedule.
- 8. **Perimeter seals:** Fire and smoke seal
- 9. **Thermal performance (U-value maximum):** Manufacturer's standard
- 10. **Other requirements:** Paint finish as Section M60
- 11. **Fixing:** Plugged and screwed

#### 610 Roller shutters/ curtains

---

- 1. **Description:** To ground floor facade windows
- 2. **Manufacturer:** Roché Systems Ltd
  - 2.1. **Product reference:** V77 Elite Aluminium Security Shutter
- 3. **Performance:** Punched slats with 41% see-through vision, 9.0 kg/m<sup>2</sup> (without infill).
- 4. **Arrangement:** Vertical, Internal face fix
- 5. **Shutter/ Curtain material:** Extruded aluminium
  - 5.1. **Finish as delivered:** White
- 6. **Frame/ Guides:** Extruded aluminium
  - 6.1. **Finish as delivered:** White
- 7. **Operation:** Single phase tubular motor with internal rocker
- 8. **Ironmongery:** NA
- 9. **Other requirements:** NA

## 620 Collapsible gates/ grilles

---

1. **Description:** To ground floor facade entrances
2. **Manufacturer:** Roche
  - 2.1. **Product reference:** Vulcan X2 - Retractable security grille
3. **Performance:** Independently tested by the LPCB to LPS1175 Security Rating 2
4. **Arrangement:** Double grid
  - 4.1. **Track system:** Hinged and lift out bottom track for doorways
5. **Operation:** Manual
6. **Other requirements:** Locking post at both ends

## Execution

### 710 Protection of components

---

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

### 730 Priming/ sealing

---

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

### 760 Building in

---

1. **General:** Not permitted unless indicated on drawings.

### 790 Fixing of wood frames

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

### 809 Fire resisting/ smoke control doors/ doorsets/ roller shutters/ curtains

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1. **Installation:** By a firm currently registered under a third party accredited fire door installer scheme in accordance with instructions supplied with the product conformity certificate, test report or engineering assessment.

### 810 Fire resisting/ smoke control doors/ doorsets/ roller shutters/ curtains

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1. **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

---

1. **Sealant:**
  - 1.1. **Manufacturer:** Contractor's choice
    - 1.1.1. **Product reference:** Contractor's choice
  - 1.2. **Colour:** varies depending upon location, to be agreed.
  - 1.3. **Application:** As section Z22 to prepared joints. Triangular fillets finished to a flat or slightly convex profile.

### 830 Fixing ironmongery generally

---

1. **Fasteners:** Supplied by ironmongery manufacturer.
  - 1.1. **Finish/ Corrosion resistance:** To match ironmongery.
2. **Holes for components:** No larger than required for satisfactory fit/ operation.

3. **Adjacent surfaces:** Undamaged.
4. **Moving parts:** Adjusted, lubricated and functioning correctly at completion.

---

**840 Fixing ironmongery to fire resisting door assemblies**

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1. **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.
2. **Holes for through fixings and components:** Accurately cut.
  - 2.1. **Clearances:** Not more than 8 mm unless protected by intumescent paste or similar.
  - 2.2. **Lock/ Latch cases for fire 60 doors requiring:  $\geq 60$  minutes integrity performance:** Coated with intumescent paint or paste before installation.

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**850 Location of hinges**

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1. **Primary hinges:** Where not specified otherwise, positioned with centre lines 250 mm from top and bottom of door leaf.
2. **Third hinge: Where specified, positioned:** with centre line 250 mm below centre line of top hinge
3. **Hinges for fire resisting doors:** Positioned in accordance with door leaf manufacturer's recommendations.

Ω End of Section

## L30: Stairs / ladders / walkways / handrails / balustrades

### Preliminary information/ requirements

#### 107A Completion of design

---

1. **Description:** Of timber stairs
2. **Requirement:** Complete the detailed design to satisfy specified performance criteria and to match drawings submit for approval.
  - 2.1. **Standard:** Straight stairs to BS 5395-1 and To Building Regulations (Eng) Approved Documents K and M
3. **Structural requirements:** To Structural Engineers approval.
4. **Additional requirements:** None
5. **Design and production information:** As Preliminaries section A31
6. **Timing of submissions:** As Preliminaries section A31

#### 130 Site dimensions

---

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

### Components

#### 270A Stairs

---

1. **Description:** To top floor
2. **Component material, grade, finish as delivered:**
  - 2.1. **Treads:** ex 38mm HW
  - 2.2. **Risers:** ex 32mm HW
  - 2.3. **Strings:** ex 32mm HW
3. **Workmanship:**
  - 3.1. **Joinery:** to Section Z10
4. **Other requirements:** Nosing contrast LRV to BS 8493: 30 (minimum) as clause M50.750

#### 270B Stairs

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1. **Description:** To upper ground mezzanine
2. **Component material, grade, finish as delivered:**
  - 2.1. **Treads:** [ex 32mm HW].
  - 2.2. **Risers:** [ex 25mm HW].
  - 2.3. **Strings:** [ex 25mm HW].
3. **Workmanship:**
  - 3.1. **Joinery:** [to Section Z10].
4. **Other requirements:** [Nosing contrast LRV to BS 8493: 30 (minimum) as clause M50.750].

#### 271 Stairs

---

1. **Description:** Ground to lift lobby
2. **Component material, grade, finish as delivered:**
  - 2.1. **Treads:** [ex 32mm HW].
  - 2.2. **Risers:** [ex 25mm HW].

- 2.3. **Strings:** [ex 25mm HW].
- 3. **Workmanship:**
  - 3.1. **Joinery:** [to Section Z10].
- 4. **Other requirements:** [**Nosing contrast LRV to BS 8493:** 30 (minimum) as clause M50.750].

#### 460 Walkways

---

- 1. **Description:** To new rear entrance
- 2. **Component material, grade and finish as delivered:**
  - 2.1. **Flooring:** Neaco Neatdek 188
    - 2.1.1. **Slip resistance value of finish - water wet (minimum):** to be confirmed
  - 2.2. **Guarding:** As drawing
  - 2.3. **Edge protection:** As drawing
  - 2.4. **Handrails:** As
    - 2.4.1. **Lower handrail:** to be confirmed
- 3. **Workmanship:** Not applicable
  - 3.1. **Joinery:** Not applicable
  - 3.2. **Metalwork:** to be confirmed
- 4. **Other requirements:** Joints welded and ground smooth

#### 560A Annealed glass

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- 1. Optifloat opal
- 2. **Manufacturer:** Pilkington United Kingdom Ltd.
  - 2.1. **Web:** www.pilkington.co.uk.
  - 2.2. **Email:** pilkington@respond.uk.com.
  - 2.3. **Product reference:** Pilkington Optifloat™ Opal Glass
- 3. **Thickness:** 8 mm

#### 570 Purpose made handrails

---

- 1. **Description:** To existing stair
- 2. **Component material, grade and finish as delivered:**
  - 2.1. **Handrails:** Moulded hardwood to match existing
  - 2.2. **Brackets:** Existing, to be cleaned-off, overhauled and refixed
- 3. **Workmanship:**
  - 3.1. **Joinery:** To section Z10
  - 3.2. **Metalwork:** To section Z11
- 4. **Other requirements:** Size, decoration and finish of the handrail to match existing
- 5. **Fixing:** reuse existing fixings, suitably refurbished
  - 5.1. **Centres:** as existing

#### 580A Modular handrail system

---

- 1. To new stairs & existing windows
- 2. **Manufacturer:** Handrail Design Ltd.
  - 2.1. **Product reference:** icon CUBE Handrail
- 3. **Grade of stainless steel components:** 1.4401 (316)
- 4. **Handrails:** Stainless steel
  - 4.1. **Colour:** Not applicable

- 4.2. **Finish:** Factory polished
- 4.3. **Diameter:** 50 mm
- 4.4. **Fixing method:** 1F

## Installation

### 630 Corrosion protection of dissimilar materials

---

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

### 640 Installation generally

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1. **Fasteners and methods of fixing:** To section Z20.
2. **Structural members:** Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
3. **Temporary support:** Do not use stairs, walkways or balustrades as temporary support or strutting for other work.
4. **Applied features (finishes, inserts, nosings and the like):** Substrates to be even, dry, sound and free from contaminants. Make good substrate surfaces and prepare/ prime as applied feature manufacturer's recommendations before application.

Ω End of Section

## L40: General glazing

### General requirements

#### 130A Removal of existing glass

---

1. **Existing glass/ plastics and glazing compound, beads, etc:** Remove carefully, avoiding damage to frame, to leave clean, smooth rebates free from obstructions and debris.
2. **Deterioration of frame/ surround:** Submit report on defects revealed by removal of glazing.
  - 2.1. **Affected areas:** Do not reglaze until instructed.

#### 150 Workmanship and positioning generally

---

1. **Glazing generally:** In accordance with BS 6262 series.
2. **Integrity:** Glazing must be wind and watertight under all conditions with full allowance made for deflections and other movements.
3. **Dimensional tolerances:** Panes/ sheets to be within  $\pm 2$  mm of specified dimensions.
4. **Materials:**
  - 4.1. **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.
  - 4.2. **Protection:** Keep materials dry until fixed. Protect insulating glass units and plastics glazing sheets from the sun and other heat sources.

#### 152 Preparation

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1. **Surrounds, rebates, grooves and beads:** Clean and prepare before installing glazing; ensure compliance with any certified installation requirements.

#### 155 Glass generally

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1. **Standards:** To BS 952 and relevant parts of:
  - 1.1. BS EN 572 for basic soda lime silicate glass.
  - 1.2. BS EN 1096 for coated glass.
  - 1.3. BS EN 1748-1 for borosilicate glass.
  - 1.4. BS EN 1748-2 for ceramic glass.
  - 1.5. BS EN 1863 for heat strengthened soda lime silicate glass.
  - 1.6. BS EN 12150 for thermally toughened soda lime silicate safety glass
  - 1.7. BS EN 12337 for chemically strengthened soda lime silicate glass.
  - 1.8. BS EN 13024 for thermally toughened borosilicate safety glass.
  - 1.9. BS EN ISO 12543 for laminated glass and laminated safety glass.
2. **Panes/ sheets:** Clean and free from obvious scratches, bubbles, cracks, rippling, dimples and other defects.
  - 2.1. **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.

#### 180 Bead fixing with pins

---

1. **Pin spacing:** Regular at maximum 150 mm centres, and within 50 mm of each corner.
2. **Exposed pin heads:** Punched just below wood surface.

## Types of glazing

### 205 Putty fronted single glazing

---

1. **Description:** Metal windows
2. **Manufacturer:** Histoglass Ltd 901423500844)
3. **Pane material:** MONO laminated safety glazing.
4. **Surround:** Steel
  - 4.1. **Sealer:** Paint primer
5. **Type of putty:** Linseed oil
6. **Thermal performance (U-value maximum):** 3.6 W/m<sup>2</sup>K
7. **Glass installation:**
  - 7.1. **Glass:** Located centrally in surround using setting and location blocks and secured with glazing sprigs/ cleats/ clips at 300 mm centres.
  - 7.2. **Finished thickness of back bedding after inserting glazing (minimum):** 1.5 mm.
  - 7.3. **Front putty:** Finished to a smooth, neat triangular profile stopping 2 mm short of sight line. Surface lightly brushed to seal putty to glass and left smooth with no brush marks.
8. **Sealing putty:** Seal as soon as sufficiently hard but not within 7 days of glazing. Within 28 days apply either:
  - 8.1. The full final finish, suitably protected until completion and cleaned down and made good as necessary, or
  - 8.2. **Two coats of:** primer applied locally to the compound, to be followed nearer completion with the full specified finish.
9. **Opening lights:** Keep in closed position until putty has set sufficiently to prevent displacement of glazing when opened.

### 210A Putty fronted double glazing

---

1. **Description:** Timber windows
2. **Manufacturer:** Histoglass Ltd (01423500844)
3. **Pane material:** (D12)LOW-E float glass inner pane with outer 'historic' glass pane, gas filled cavity sealed with aluminium spacer bar (White).
4. **Surround:** Timber/Steel
  - 4.1. **Sealer:** Paint primer
5. **Type of putty:** Linseed oil
6. **Thermal performance (U-value maximum):** 1.5 W/m<sup>2</sup>K
7. **Glass installation:**
  - 7.1. **Glass:** Located centrally in surround using setting and location blocks and secured with glazing sprigs/ cleats/ clips at 300 mm centres.
  - 7.2. **Finished thickness of back bedding after inserting glazing (minimum):** 1.5 mm.
  - 7.3. **Front putty:** Finished to a smooth, neat triangular profile stopping 2 mm short of sight line. Surface lightly brushed to seal putty to glass and left smooth with no brush marks.
8. **Sealing putty:** Seal as soon as sufficiently hard but not within 7 days of glazing. Within 28 days apply either:
  - 8.1. The full final finish, suitably protected until completion and cleaned down and made good as necessary, or
  - 8.2. **Two coats of:** primer applied locally to the compound, to be followed nearer completion with the full specified finish.
9. **Opening lights:** Keep in closed position until putty has set sufficiently to prevent displacement of glazing when opened.

**230A Bead fixed internal glazing**

---

1. **Description:** To internal doors and surrounds
2. **Manufacturer:** KOMFORT
3. **Pane material:** Manufacturers supply of laminated safety glass
4. **Surround/ bead:** Aluminium
5. **Glazing compound:** One-part, low modulus, silicone sealant
6. **Glazing installation:**
  - 6.1. **Glass:** Located centrally in surround using setting and location blocks and distance pieces.
  - 6.2. **Finished thickness of back bedding after inserting glazing (minimum):** 3 mm.
  - 6.3. **Front bedding:** Applied to fill voids.
  - 6.4. **Beads:** Bedded in glazing compound and fixed securely.
  - 6.5. **Visible edge of glazing compound:** Finished internally and externally with a smooth chamfer.

**250A Bead fixed single glazing**

---

1. **Description:** Shop fronts, windows and doors
2. **Pane material:**
  - 2.1. **Manufacturer:** Guardian Glass UK Ltd.
  - 2.2. **Web:** [www.guardianglass.co.uk](http://www.guardianglass.co.uk).
  - 2.3. **Email:** [specifications@guardian.com](mailto:specifications@guardian.com).
  - 2.4. **Tel:** +44 (0)800 032 6322.
  - 2.5. **Product reference:** LamiGlass®
3. **Thickness:** [6.8 mm].
4. **Surround/ bead:** [Hardwood].
  - 4.1. **Preparation:** [Paint primer].
  - 4.2. **Bead location:** [as original details].
  - 4.3. **Bead fixing:** [to be agreed with specialist joinery company and CA].
5. **Glazing system:**
  - 5.1. **Tape:** [Pre-formed butyl strip].
  - 5.2. **Bead bedding sealant:** [to be agreed].
  - 5.3. **Capping sealant:** [to be agreed].
6. **Thermal performance (U-value maximum):** [Unrated].
7. **Glazing installation:**
  - 7.1. **Glass:** Located centrally in surround using setting and location blocks.
  - 7.2. **Glazing tape:** Top edge approximately 6 mm short of sight line on external side of glazing, to allow for capping sealant. Corners butt jointed with no gaps.
  - 7.3. **Thickness of glazing tape bed (minimum):** 3 mm on both sides of glazing after compression.
  - 7.4. **Beads:** Bedded in sealant, pressed firmly into position to compress tape, and fixed securely.
  - 7.5. **Excess tape on internal side:** Carefully trimmed to a smooth chamfer.
  - 7.6. **Capping sealant:** Applied to fill void between bead and glazing and finished to a smooth chamfer.

**381 Bead fixed insulating glass units**

---

1. **Description:** To external aluminium windows and doors
2. **IGU: As clause:** Contractors choice

- 2.1. **Perimeter taping:** Do not use.
- 3. **Surround/ bead:** Aluminium
  - 3.1. **Preparation:** Sealant primer
  - 3.2. **Bead location:** Outside
  - 3.3. **Bead fixing:** Manufacturers standrad
- 4. **Glazing system:**
  - 4.1. **Inner sealant:** Low permeability sealant
  - 4.2. **Outer sealant:** Moisture vapour permeable sealant
- 5. **Thermal performance (U-value maximum):** 1.4 W/m<sup>2</sup>K
- 6. **Glazing installation:**
  - 6.1. **Insulating unit:** Located centrally in surround using setting and location blocks and distance pieces.
  - 6.2. **Outer sealant:** Applied to full height of rebate.
  - 6.3. **Inner sealant:** Applied to fill edge clearance void and space between unit and beads up to sight line.
  - 6.4. **Finished thickness of back and front bedding after inserting glazing (minimum):** 3 mm.
  - 6.5. **Beads:** Bedded on inner sealant and fixed securely.
  - 6.6. **Excess sealant:** Trimmed to a smooth chamfer.

#### 510A Fire resistant glazing to internal screens/doors

---

- 1. **Description:** 60 minutes
- 2. **Manufacturer:** KOMFORT
- 3. **Contact:** +44 (0)1213 322560
- 4. **Fire resistance:**
  - 4.1. **Standard:** To BS 476-22
  - 4.2. **Rating:** 60 minutes integrity and 30 minutes insulation
- 5. **Pane material:** Manufacturers supply of 60 minute fire rated glass)
  - 5.1. **Orientation:** Manufacturers recommendation
- 6. **Frame/ Surround material:** Aluminium
- 7. **Cover strips:** Aluminium
- 8. **Thermal performance (U-value maximum):** Unrated
- 9. **Installation:** By a firm currently registered under a UKAS certified accreditation scheme for the installation of fire resistant glazing, in accordance with glazing manufacturer's recommendations.
- 10. **Certification:** Submit fire test certification for system, including any framing, installation and maintenance requirements or restrictions.

#### 630 Manifestation

---

- 1. **Description:** To glazed screens
- 2. **Design:** To be decided by client
  - 2.1. **Art work:** To be prepared by contractor and submitted for approval
  - 2.2. **Media:** Scale drawings
- 3. **Technique:** Applied film

Ω End of Section

## M10: Cement based levelling / wearing screeds

### Types of screed

#### 115 Cement:sand levelling screeds

---

1. **Description:** Generally
2. **Substrate:** In situ concrete slab
3. **Screed construction:** Partially bonded, as clause 270
  - 3.1. **Reinforcement for crack control:** Not required
4. **Thickness:**
  - 4.1. **Nominal:** 70 mm
  - 4.2. **Minimum:** 50 mm
5. **Mix:**
  - 5.1. **Proportions (cement:sand):** To BS 8204-1
6. **In situ crushing resistance (ISCR) category:** B (4 mm maximum indentation)
  - 6.1. **Mass of test weight:** 4 kg
7. **Flatness/ Surface regularity class:** SR2
8. **Finish:** Smooth floated, as clause 530
  - 8.1. **To receive:** Varies, as Room Data Sheets
9. **Other requirements:** See drawings

#### 130A Proprietary quick drying levelling floor screed

---

1. **Manufacturer:** Fassa UK Ltd.
  - 1.1. **Web:** [www.fassabortolo.com](http://www.fassabortolo.com).
  - 1.2. **Email:** [info.fassauk@fassabortolo.com](mailto:info.fassauk@fassabortolo.com).
  - 1.3. **Tel:** +44 (0)1684 212272.
  - 1.4. **Product reference:** SL 416 Self Leveller
  - 1.5. **Primer:** To manufacturers recommendations.

### Generally/ preparation

#### 210 Suitability of substrates

---

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

#### 270 Partially bonded construction

---

1. **Preparation:** Generally in accordance with BS 8204-1.
2. **Substrate surface:** Brushed finish with no surface laitance.
  - 2.1. **Texture of surface:** Suitable to accept screed and achieve a bond over complete area.
3. **Bonding coat:** Slurry, as clause 275

## Batching/mixing

### 302 Cements

---

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

### 305 Aggregates

---

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

### 330 Mixing

---

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

### 340 Adverse weather

---

1. **Screeds surface temperature:** Maintain above 5°C for a minimum of four days after laying.
2. **Hot weather:** Prevent premature setting or drying out.

## Laying

### 345 Level of screed surfaces

---

1. **Permissible deviation: (allowing for thickness of coverings):** ±5 mm from datum.

### 350 Screeding to falls

---

1. **Minimum screed cover:** Maintain at the lowest point.
2. **Falls:** Gradual and consistent.
  - 2.1. **Gradient (minimum):** to gully position

### 355 Flatness/ surface regularity of floor screeds

---

1. **Standard:** In accordance with BS 8204-1, Table 5.
2. **Test:** In accordance with BS 8204-1, Annex C.
3. **Sudden irregularities:** Not permitted.

### 375 Compaction of screeds

---

1. **General:** Compact thoroughly over entire area.
2. **Screeds over 50 mm thick:** Lay in two layers of approximately equal thickness. Roughen surface of compacted lower layer then immediately lay upper layer.

### 405 Joints in levelling screeds generally

---

1. **Laying screeds:** Lay continuously using 'wet screeds' between strips or bays. Minimize defined joints.

2. **Daywork joints:** Form with vertical edge.

## Finishing/curing

### 510 Finishing generally

---

1. **Timing:** Carry out all finishing operations at optimum times in relation to setting and hardening of screed material.
2. **Prohibited treatments to screed surfaces:**
  - 2.1. Wetting to assist surface working.
  - 2.2. Sprinkling cement.

### 530 Smooth floated finish

---

1. **Finish:** Even texture with no ridges or steps.

### 650 Curing

---

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

Ω End of Section

## M20: Plastered / rendered / roughcast coatings

### Types of coating

#### 200B Gypsum plaster on cement gauged undercoats (render & set)

---

1. To new masonry
2. **Substrate:** Concrete blockwork as section F10
  - 2.1. **Preparation:** Not required
3. **Undercoats:**
  - 3.1. **Mix:** 1:1:5–6 cement:lime:sand
  - 3.2. **Thickness (excluding dubbing out and keys):** 10 mm (maximum) overall
4. **Final coat:** Gypsum plaster to BS EN 13279-1, class B.
  - 4.1. **Manufacturer:** Contractor's choice
    - 4.1.1. **Product reference:** Contractor's choice
  - 4.2. **Thickness:** 3mm
  - 4.3. **Finish:** Smooth
5. **Accessories:** Galvanised steel beads and stops to all external corners

#### 200C Gypsum plaster on cement gauged undercoats (render & set)

---

1. To existing masonry
2. **Substrate:** Existing Masonry
  - 2.1. **Preparation:** Rake out joints for key
3. **Undercoats:**
  - 3.1. **Mix:** 1:1:5–6 cement:lime:sand
  - 3.2. **Thickness (excluding dubbing out and keys):** 10 mm (maximum) overall
4. **Final coat:** Gypsum plaster to BS EN 13279-1, class B.
  - 4.1. **Manufacturer:** Contractor's choice
    - 4.1.1. **Product reference:** Contractor's choice
  - 4.2. **Thickness:** 5mm
  - 4.3. **Finish:** Smooth
5. **Accessories:** Galvanised beads and stops to all external corners

#### 280 Gypsum plaster skim coat on plasterboard

---

1. **Plasterboard:** 12.5 mm
  - 1.1. **Preparation:** Bonding agent recommended by plaster manufacturer
2. **Plaster:** Board finish/ finish plaster to BS EN 13279-1, class B.
  - 2.1. **Manufacturer:** Contractor's choice
    - 2.1.1. **Product reference:** Contractor's choice
  - 2.2. **Thickness:** 3 mm
  - 2.3. **Finish:** Smooth.
3. **Accessories:** Galvanised steel beads and stops to all external corners

#### 310A Hydraulic lime plaster

---

1. **Description:** Internally
2. **Substrate:** Masonry
  - 2.1. **Preparation to existing walls:** Rake out existing joints to a depth of 10mm

3. **Undercoats:** Premixed 'Lime Base Coat Plaster' from Ty-Mawr Lime Ltd, Unit 12 Brecon Enterprise Park, Brecon, Powys. LD3 8BT (t) 01874 611350 (e)tymawr@lime.org.uk
  - 3.1. **Thickness (excluding dubbing out and keys):** First undercoat 8–10 mm. Second undercoat 6–8 mm
  - 3.2. **Additional Requirements:** Hair reinforcement as clause 492A.
4. **Final coat:** Premixed 'Lime Top Coat (Finish) Plaster' from Ty-Mawr Lime Ltd, Unit 12, Brecon Enterprise Park, Brecon, Powys. LD3 8BT (t) 01874 611350 (e)tymawr@lime.org.uk
  - 5.1. **Thickness:** 6 mm nominally
  - 5.2. **Finish:** Plain floated
6. **Other requirements:** Beading to all external corners as clause 630A

### 310B Hydraulic lime plaster

---

1. **Description:** Internally on laths
2. **Substrate:** Metal lathing as section M30
3. **Undercoats:** [Premixed 'Lime Base Coat Plaster' from Ty-Mawr Lime Ltd, Unit 12 Brecon Enterprise Park, Brecon, Powys. LD3 8BT (t) 01874 611350 (e)tymawr@lime.org.uk].
- 4.1. **Thickness (excluding dubbing out and keys):** [First undercoat 8–10 mm. Second undercoat 6–8 mm].
- 4.2. **Additional Requirements:** Hair reinforcement as clause 492A.
5. **Final coat:** Premixed 'Lime Top Coat (Finish) Plaster' from Ty-Mawr Lime Ltd, Unit 12, Brecon Enterprise Park, Brecon, Powys. LD3 8BT (t) 01874 611350 (e)tymawr@lime.org.uk
  - 6.1. **Thickness:** [6 mm nominally].
  - 6.2. **Finish:** [Plain floated].
7. **Other requirements:** [Beading to perimeter as clause 630].

## Materials and making of mortar

### 438 Cements for mortars

---

1. **Cement:** To BS EN 197-1.
  - 1.1. Types: Portland cement, CEM I.
    - 1.1.1. Portland slag cement, CEM II.
    - 1.1.2. Portland fly ash cement, CEM II.
  - 1.2. **Strength class:** 32.5, 42.5 or 52.5.
2. **White cement:** To BS EN 197-1.
  - 2.1. **Type:** Portland cement, CEM 1.
  - 2.2. **Strength class:** 52.5.
3. **Sulfate resisting Portland cement:** To BS EN 197-1.
  - 3.1. **Strength class:** 42.5.
4. **Masonry cement:** To BS EN 998-1 and Kitemarked.

### 440 Sand for cement gauged mortars

---

1. **Standard:** To BS EN 13139.
  - 1.1. **Grading:** 0/2 or 0/4 (CP or MP); category 2 fines.
2. **Colour and texture:** Consistent. Obtain from one source.

**443 Lime for cement gauged mortars**

---

1. **Standard:** To BS EN 459-1.

- 1.1. **Type:** CL 90S.

**478 Hydraulic lime**

---

1. **Standard:** To BS EN 459-1.

- 1.1. **Type:** Natural hydraulic lime (NHL).

**492A Hair reinforcement**

---

1. **Manufacturer/ Supplier:** Contractor's choice
  - 1.1. **Product reference:** Contractor's choice
2. **Proportions (approximate):** 5 kg hair to 1 m<sup>3</sup> of plaster.
3. **Condition:** Clean, free from grease and other impurities. Well teased before adding to the mix.
4. **Distribution:** Evenly throughout with no balling into lumps.
5. **Storage period for haired mortar (maximum):** Four weeks.

**495 Mixing**

---

1. **Render mortars (site-made):**
  - 1.1. **Batching:** By volume. Use clean and accurate gauge boxes or buckets.
  - 1.2. **Mix proportions:** Based on damp sand. Adjust for dry sand.
  - 1.3. **Lime:sand:** Mix thoroughly. Allow to stand, without drying out, for at least 16 hours before using.
2. **Mixes:** Of uniform consistence and free from lumps. Do not retemper or reconstitute mixes.
3. **Contamination:** Prevent intermixing with other materials.

**Preparing substrates****510 Suitability of substrates**

---

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

**541 Bonding agent application**

---

1. **General:** Apply evenly to substrate to achieve effective bond of plaster/ render coat. Protect adjacent surfaces.

**556 Removing defective existing render**

---

1. **Render for removal:** Detached, hollow, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.
2. **Removing defective render:** Cut out to regular rectangular areas with straight edges.
  - 2.1. **Horizontal and vertical edges:** Square cut or slightly undercut.
  - 2.2. **Bottom edges to external render:** Do not undercut.
  - 2.3. **Render with imitation joints:** Cut back to joint lines.
3. **Cracks:**
  - 3.1. **Fine hairline cracking/ crazing:** Leave.

3.2. **Other cracks:** Obtain instructions

4. **Dust and loose material:** Remove from exposed substrates and edges.

#### 566 Removing defective existing plaster

---

1. **Plaster for removal:** Detached, soft, friable, badly cracked, affected by efflorescence or otherwise damaged.

1.1. **Hollow, detached areas:** Obtain instructions

2. **Stained plaster:** Remove

3. Removing defective plaster. Cut back to a square, sound edge.

4. **Faults in background (structural deficiencies, damp, etc.):** Submit proposals.

5. **Cracks:**

5.1. **Fine hairline cracking/ crazing:** Leave.

5.2. **Other cracks:** Obtain instructions

6. **Dust and loose material:** Remove from exposed substrates and edges.

#### 568 Existing damp affected plaster/ render

---

1. **Plaster affected by rising damp:** Remove to a height of 300 mm above highest point reached by damp or 1 m above dpc, whichever is higher.

2. **Perished and salt contaminated masonry:**

2.1. **Mortar joints:** Rake out.

2.2. **Masonry units:** Submit proposals.

3. **Faults in substrate (structural deficiencies, additional sources of damp, etc.):** Submit proposals.

4. **Drying out substrate:** Established drying conditions. Leave walls to dry for as long as possible before plastering.

5. **Dust and loose material:** Remove from exposed substrate and edges.

### Backings/ beads/ joints

#### 605 Gypsum plasterboard backings

---

1. **Type: To BS EN 520:** Type D

1.1. **Core density (minimum):** 650 kg/m<sup>3</sup>.

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

#### 610 Fixing plasterboard backings to timber backgrounds

---

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

2. **Fixing:** At the following centres (maximum):

2.1. **Nails:** 150 mm.

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

2.3. **Screws to ceilings:** 230 mm.

3. **Position of nails/ screws from edges of boards (minimum):**

3.1. **Bound edges:** 10 mm.

3.2. **Cut/ unbound edges:** 13 mm.

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

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

#### 611 Fixing plasterboard backings

---

1. **Description:** To metal furrings

2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Accessories, materials and installation methods:** As recommended by the plasterboard manufacturer.

#### 612 Joints in plasterboard backings

---

1. **Ceilings:**
  - 1.1. **Bound edges:** At right angles to supports and with ends staggered in adjacent rows.
  - 1.2. **Two layer boarding:** Stagger joints between layers.
2. **Partitions/ walls:**
  - 2.1. **Vertical joints:** Centre on studs. Stagger joints on opposite sides of studs.
    - 2.1.1. **Two layer boarding:** Stagger joints between layers.
  - 2.2. **Horizontal joints:**
    - 2.2.1. **Two layer boarding:** Stagger joints between layers by at least 600 mm. Support edges of outer layer.
3. **Joint widths (maximum):** 3 mm.

#### 630 Beads/ stops for internal use

---

1. **Material:** Galvanized steel to BS 13658-1.

#### 630A Beads/ stops for internal use

---

1. With lime plaster
2. **Material:** 10mm diameter HW.
3. **Fixing:** 25mm stainless steel pins into SW grounds inserted into masonry joints.

#### 636 Beads/ stops for external use

---

1. **Material:** Stainless steel to BS EN 10088-1, grade 1.4301

#### 640 Beads/ stops generally

---

1. **Location:** External angles and stop ends, except where specified otherwise.
2. **Corners:** Neat mitres at return angles.
3. **Fixing:** Secure, using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with substrate.
  - 3.1. **Beads/ stops for external render:** Fix mechanically.
4. **Finishing:** After coatings have been applied remove surplus material, while still wet, from surfaces of beads/ stops exposed to view.

#### 646 Crack control at junctions between dissimilar solid substrates

---

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

5.1. **Isolating layer:** 25 mm (minimum) beyond junctions with adjacent substrates.

5.2. **Lathing:** 100 mm (minimum) beyond edges of isolating layer.

#### 659 Plasterboard joints

---

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

### Mouldings/ decorative plasterwork

#### 680 Fibrous plaster mouldings

---

1. **Description:** To first floor office
2. **Type:** Purpose made, to reproduce existing
3. **Noggings, bearers, etc. to support mouldings:** Accurately position and securely fix.
4. **Installation:** True to line and level.
  - 4.1. **Fixing:** Cornices: plugged and screwed. Walls: gypsum based adhesive.
  - 4.2. **Framing, fixing points and joints:** Reinforce.
5. **Finishing:** Smooth, to correct profile and with flush joints.

#### 685 Solid cast plaster

---

1. **Description:** To first floor office
2. **Type:** Purpose made, to match existing
3. **Installation:** Fix securely and accurately.
  - 3.1. **Fixing:** Bed solid in gypsum based adhesive.
4. **Finishing:** Smooth, to correct profile and with flush joints.

### Internal plastering

#### 710 Application generally

---

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

#### 715 Flatness/ surface regularity

---

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

#### 720 Dubbing out

---

1. **General:** Correct substrate inaccuracies.
2. **New smooth, dense concrete and similar surfaces:** Dubbing out prohibited unless total plaster thickness is within range recommended by plaster manufacturer.
3. **Thickness of any one coat (maximum):** 10 mm.
4. **Mix:** As undercoat.

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

---

#### 725 Undercoats generally

---

1. **General:** Rule to an even surface. Cross scratch to provide a key for the next coat.
2. **Undercoats on metal lathing:** Work well into interstices to obtain maximum key.
3. **Undercoats gauged with Portland cement:** Do not apply next coat until drying shrinkage is substantially complete.

---

#### 777 Smooth finish

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

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#### 778 Wood float finish

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

### External rendering

---

#### 810 Application generally

---

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

---

#### 815 Flatness/ surface regularity of rendering to receive ceramic tiles

---

1. **Sudden irregularities:** Not permitted.
2. **Deviation of render surface:** Measure from underside of a 2 m straight edge placed anywhere on surface.
  - 2.1. **Permissible deviation (maximum):** 3 mm.

---

#### 820 Dubbing out for rendering

---

1. **General:** Correct substrate inaccuracies.
2. **Thickness of any one coat (maximum):** 16 mm.
  - 2.1. **Total thickness (maximum):** 20 mm, otherwise obtain instructions.
3. **Mix:** As undercoat.
4. **Application:** Achieve firm bond. Allow each coat to set sufficiently before the next is applied. Comb surface of each coat.

---

#### 840 Undercoats generally

---

1. **General:** Rule to an even surface. Comb to provide a key for the next coat. Do not penetrate the coat.
2. **Undercoats on metal lathing:** Work well into interstices to obtain maximum key.

---

#### 866 Final coat - roughcast (harling) finish

---

1. **Finish:** Left as cast with an even thickness and texture.

**880 Curing and drying**

---

1. **General:** Prevent premature setting and uneven drying of each coat.
2. **Curing coatings:** Keep each coat damp by covering with polyethylene sheet and/ or spraying with water.
  - 2.1. **Curing period (minimum):** As manufacturer's recommendations
  - 2.2. **Final coat:** Hang sheeting clear of the final coat.
3. **Drying:** Allow each coat to dry thoroughly, with drying shrinkage substantially complete before applying next coat.
4. **Protection:** Protect from frost and rain.

**885A Curing and drying of hydraulic lime render/plaster**

---

1. **General:** Prevent premature setting and uneven drying of each coat.
2. **Curing coatings:** Keep each coat damp by covering with sheeting hung clear of coating. Spray with water until sufficiently firm.
  - 2.1. **Sheeting:** Damp hessian inner layer protected with polythene sheeting, a ventilation gap between being maintained at all times
3. **Shrinkage:** Thoroughly consolidate/ scour each coat one or more times as necessary to control shrinkage.

Ω End of Section

## M21: Insulation with rendered finish

### Clauses

2 To be read with preliminaries/ general conditions.

---

### General/ system requirements

#### 120 Survey of structural substrate

---

1. **Timing:** Before starting work covered in this section.
2. **Objective:** To confirm suitability for application of external wall insulation system.
3. **Survey report:** Submit, covering:
  - 3.1. The form and condition of the structural substrate.
  - 3.2. A schedule of repairs and/ or additional works necessary to render the substrate suitable to receive the system.
  - 3.3. A schedule of services, fixtures and fittings requiring removal to facilitate installation of the system.
  - 3.4. Proposals for treatment of cold bridges that may occur as a result of installing the system, e.g. at door and window reveals, concrete floor edges, movement joints.
  - 3.5. Any other relevant information.

#### 160 Remedial work

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1. **Remedial work shown to be necessary by survey:** Forms part of this Contract and is to be covered by a provisional sum

#### 180 Structural substrate

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1. **Description:** Solid brickwork, Min 225 thick
2. **Preparation:** Fungicidal wash, if recommended by insulated render system manufacturer.

#### 212 Mineral fibre external wall insulation

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1. [to north elevation]
2. **Manufacturer:** PermaRock Products Ltd.
  - 2.1. **Web:** [www.permarock.com](http://www.permarock.com).
  - 2.2. **Email:** [enquiries@permарock.com](mailto:enquiries@permарock.com).
  - 2.3. **Tel:** +44 (0)1509 262924.
  - 2.4. **Product reference:** PermaRock Mineral Fibre External Wall Insulation Systems (LR)
3. **Building height:** 11m
4. **Substrate:** Existing brickwork
5. **Preparation:** Not required
6. **Movement joints:** Not required
7. **Fire breaks:** Not required
8. **Insulation:**
  - 8.1. **Type:** PermaRock Mineral Fibre Insulation DD (Dual Density)
  - 8.2. **Thickness:** 130
  - 8.3. **Adhesive:** PermaRock Adhesive
  - 8.4. **Mechanical fixings:** As recommended by insulation manufacturer
9. **Reinforcement layer (render carrier):**

- 9.1. **Basecoat:** PermaRock Bedding Mortar
- 9.2. **Mesh reinforcement:** PermaRock Reinforcing Mesh
- 9.3. **Mesh (corner) patches:** PermaRock Reinforcing Mesh
- 9.4. **Secondary (system) fixings:** As recommended by insulation manufacturer
10. **Render/ Finish:**
  - 10.1. **Primer:** PermaRock K&R Primer
  - 10.2. **Intermediate coat:** PermaRock Dashing Mortar, colour
  - 10.3. **Top (finish) coat:**
    - 10.3.1. **Type:** PermaRock Silicone ULTRA K-Finish stippled render
    - 10.3.2. **Grain size:** K 1.5 mm TBC. Provide sample
    - 10.3.3. **Colour:** Standard colour TBA
    - 10.3.4. **Beads/ Trims/ Profiles:** Full system (EWI) and render-only beads, including verge trims, top trims, starter tracks, full system stop beads, render stop beads, window sealing strips (reveals beads), movement joint beads/ profiles for vertical and horizontal joints. Sealing tapes and expansion joint tapes. All to system manufacturer's details, to be supplied by PermaRock
    - 10.3.5. **Equalizing coating/ Paint:** None
11. **Accessories:** N/A
12. **Additional requirements:** As detail drawings

## Installation

### 410 Installation

---

1. **Installer:** The system manufacturer, or a contractor approved by the system manufacturer.

### 420 Adverse weather

---

1. **Materials/ Surfaces:** Do not use frozen materials and do not apply materials to frost bound surfaces.
2. **Adhesives/ Mortars/ Renders:** Do not apply when air temperature is:
  - 2.1. At or below 5°C on a falling thermometer or below 3°C on a rising thermometer, or when temperature of the air or wall surface is above 30°C and the surface is not protected.
  - 2.2. Outside range recommended by manufacturer, if different from above.
3. **Temperature of the work:** Maintained above minimum level recommended by manufacturer until adhesive/ mortar/ render has fully hardened.
4. **Newly rendered surfaces:** Protect against adverse weather conditions.
5. **Render coatings damaged by adverse weather:** Replace.

### 430 Substrates

---

1. **Condition before pretreatment/ application of insulation system:** Structurally sound, adequately true and level, dry, free from contamination by dirt, dust, efflorescence, organic growths or other deleterious substances and in a suitable condition to receive specified insulation system.

### 550 Inspection of completed installation

---

1. **Timing:** As soon as possible after completion of the work and before removing scaffolding.
2. **Notice for inspection (minimum):** Three working days
3. **Submit:** Description of inspection and remedial works carried out.

Ω End of Section

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

### Types of lath/ reinforcement

#### 110 Metal lath

---

1. **Description:** For ceilings internally
2. **Substrate:** Timber joists at 400 mm centres as section G20
3. **Lath:** ribbed expanded metal
  - 3.1. **Grade:** Z275
  - 3.2. **Finish:** Not required
4. **Additional requirements:** Corner lath to perimeter

#### 112 Metal lath

---

1. **Description:** For ceilings externally
2. **Substrate:** Timber joists at 400 mm centres as section G20
3. **Lath:** ribbed expanded metal
  - 3.1. **Material:** Stainless steel
  - 3.2. **Finish:** Not required
4. **Additional requirements:** Corner lath

### Products

#### 215 Metal lath

---

1. **Internal applications:** Flat, corrugated and ribbed expanded lath to BS EN 13658-1.
2. **External applications:** Flat, corrugated and ribbed expanded lath to BS EN 13658-2.
3. **Galvanized steel:** To BS EN 10346 and BS EN 10143.
4. **Stainless steel:** To BS EN 10088-1 and -2, number 1.4301 (name X5CrNi18-10).

#### 285 Fixings

---

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

### Execution

#### 420 Fixing ribbed expanded metal lath

---

1. **Requirement:** Fixed securely to give a taut, firm base for plaster or render.
2. **Placement:**
  - 2.1. **Orientation:** Ribs at right angles to supports.
  - 2.2. **Apexes:** Bearing on supports.
3. **Laps:**
  - 3.1. **Side ribs:** Lap, press well together.
  - 3.2. **Ends (minimum):**
    - 3.2.1. 50 mm at supports.
    - 3.2.2. 100 mm between supports.
  - 3.3. **Angles and bends:** Do not locate laps within 100 mm of angles or bends.

**4. Fixing:**

- 4.1. **Generally:** Each rib.
- 4.2. **Sides:** 1.2 mm wire ties at 150 mm (maximum) centres.
- 4.3. **Ends at supports:** 1.6 mm wire ties at each pair of ribs.
- 4.4. **Ends between supports:** Two rows of 1.6 mm wire ties.
  - 4.4.1. **Centres (maximum):** 100 mm.

**460 Fixing metal lath on solid substrates**

---

- 1. **Requirement:** Fixed securely to give a taut, firm base for plaster or render.
  - 1.1. **Length and frequency of fasteners:** Increase as necessary in weak areas.
- 2. **Lath fixing generally:** 150 mm centres

Ω End of Section

## M40: Stone / concrete / quarry / ceramic tiling / mosaic

### Types of tiling/ mosaic

#### 110 Tiling to

---

1. **Description:** Walls generally
2. **Tiles:** to BS EN 12057
  - 2.1. **Manufacturer/ Supplier:** Contractor's choice
    - 2.1.1. **Product reference:** Contractor's choice
  - 2.2. **Colour:** Light Grey
  - 2.3. **Finish:** Glazed
  - 2.4. **Size:** Modular 200 x 100 mm
  - 2.5. **Thickness:** 4mm
  - 2.6. **Slip potential:**
    - 2.6.1. **Slip resistance value (SRV) (minimum)/ Pendulum test value (PTV) (minimum) to BS 7976-1, -2 and -3:** Not applicable
    - 2.6.2. **Surface roughness (Rz) (minimum) BS 1134:** Not applicable
    - 2.6.3. **Ramp test class:** Not applicable
  - 2.7. **Recycled content:** Not applicable
3. **Background/ Base:** Render, plasterboard or Inert Board
  - 3.1. **Preparation:** All plasterboard to be sealed with Uni-bond
4. **Intermediate substrate:** Not required
5. **Bedding:** Adhesive bed - notched trowel method, as clause 650.
  - 5.1. **Reinforcement:** Not applicable
  - 5.2. **Adhesive to BS EN 12004:** Contractor's choice
6. **Joint width:** 3mm
7. **Grout:** Cement:sand, as clause 855
  - 7.1. **Type/ classification:** CG2WA
  - 7.2. **Admixture:** None
8. **Movement joints:** As clause 815 at internal corners of rooms
9. **Accessories:** Plastic edge trim/beading to all external corners and exposed edges

#### 111 Tiling to

---

1. **Description:** Cleaners stores
2. **Tiles:** to BS EN 12057
  - 2.1. **Manufacturer/ Supplier:** Contractor's choice
    - 2.1.1. **Product reference:** Contractor's choice
  - 2.2. **Colour:** White
  - 2.3. **Finish:** Glazed
  - 2.4. **Size:** 150 x 150 mm
  - 2.5. **Thickness:** 4mm
  - 2.6. **Slip potential:**
    - 2.6.1. **Slip resistance value (SRV) (minimum)/ Pendulum test value (PTV) (minimum) to BS 7976-1, -2 and -3:** Not applicable
    - 2.6.2. **Surface roughness (Rz) (minimum) BS 1134:** Not applicable
    - 2.6.3. **Ramp test class:** Not applicable

- 2.7. **Recycled content:** Not applicable
- 3. **Background/ Base:** Render, plasterboard or Inert Board
  - 3.1. **Preparation:** All plasterboard to be sealed with Uni-bond
- 4. **Intermediate substrate:** Not required
- 5. **Bedding:** Adhesive bed - notched trowel method, as clause 650.
  - 5.1. **Reinforcement:** Not applicable
  - 5.2. **Adhesive to BS EN 12004:** Contractor's choice
- 6. **Joint width:** 3mm
- 7. **Grout:** Cement:sand, as clause 855
  - 7.1. **Type/ classification:** CG2WA
  - 7.2. **Admixture:** None
- 8. **Movement joints:** As clause 815 at internal corners of rooms
- 9. **Accessories:** Plastic edge trim/beading to all external corners and exposed edges

## 112 Tiling to

---

- 1. **Description:** To tea stations
- 2. **Tiles:** to BS EN 12057
  - 2.1. **Manufacturer/ Supplier:** Contractor's choice
    - 2.1.1. **Product reference:** Contractor's choice
  - 2.2. **Colour:** Light Grey
  - 2.3. **Finish:** Glazed
  - 2.4. **Size:** 50 x 50 mm
  - 2.5. **Thickness:** 4 mm minimum
  - 2.6. **Slip potential:**
    - 2.6.1. **Slip resistance value (SRV) (minimum)/ Pendulum test value (PTV) (minimum) to BS 7976-1, -2 and -3:** Not applicable
    - 2.6.2. **Surface roughness (Rz) (minimum) BS 1134:** Not applicable
    - 2.6.3. **Ramp test class:** Not applicable
  - 2.7. **Recycled content:** Not applicable
- 3. **Background/ Base:** Render, plasterboard or Inert Board
  - 3.1. **Preparation:** All plasterboard to be sealed with Uni-bond
- 4. **Intermediate substrate:** Not required
- 5. **Bedding:** Adhesive bed - notched trowel method, as clause 650.
  - 5.1. **Reinforcement:** Not applicable
  - 5.2. **Adhesive to BS EN 12004:** Contractor's choice
- 6. **Joint width:** 3mm
- 7. **Grout:** Cement:sand, as clause 855
  - 7.1. **Type/ classification:** CG2WA
  - 7.2. **Admixture:** None
- 8. **Movement joints:** As clause 815 at internal corners of rooms
- 9. **Accessories:** Plastic edge trim/beading to all external corners and exposed edges

## 120 Mosaic to

---

- 1. **Description:** Entrance porch floor
- 2. **Mosaic:** To match original
  - 2.1. **Manufacturer/ Supplier:** Contractor's choice

- 2.1.1. **Product reference:** Submit proposals
- 2.2. **Colour:** To match original
- 2.3. **Finish:** To match original
- 2.4. **Size:** To match original
- 2.5. **Thickness:** To match original
- 2.6. **Slip potential:**
  - 2.6.1. **Slip resistance value (SRV) (minimum)/ Pendulum test value (PTV) (minimum) to BS 7976-1, -2 and -3:** Manufacturer's standard
  - 2.6.2. **Surface roughness (Rz) (minimum) to BS 1134:** Manufacturer's standard
  - 2.6.3. **Ramp test class:** Manufacturer's standard
- 3. **Background/ Base:** To specialist conservation subcontractors specification
  - 3.1. **Preparation:** Consult manufacturer
- 4. **Intermediate substrate:** To specialist conservation subcontractors specification
- 5. **Bedding: Adhesive bed using notched trowel methods clause:** To specialist conservation subcontractors specification
  - 5.1. **Adhesive: To BS EN 12004:** To specialist conservation subcontractors specification
- 6. **Grout:** To specialist conservation subcontractors specification
  - 6.1. **Type/ classification:** To specialist conservation subcontractors specification
  - 6.2. **Admixture:** To specialist conservation subcontractors specification
- 7. **Movement joints:** To specialist conservation subcontractors specification
- 8. **Accessories:** To specialist conservation subcontractors specification

#### 121A Tiling to

---

- 1. **Description:** Stair well (from ground to second floor)
- 2. **Mosaic:** To match original
  - 2.1. **Manufacturer/ Supplier:** Contractor's choice
    - 2.1.1. **Product reference:** Submit proposals
  - 2.2. **Colour:** To match original
  - 2.3. **Finish:** To match original
  - 2.4. **Size:** To match original
  - 2.5. **Thickness:** To match original
  - 2.6. **Background/ Base:** To specialist conservation subcontractors specification
  - 2.7. **Preparation:** Consult manufacturer
- 3. **Intermediate substrate:** To specialist conservation subcontractors specification
- 4. **Bedding: Adhesive bed using notched trowel methods clause:** To specialist conservation subcontractors specification
  - 4.1. **Adhesive: To BS EN 12004:** To specialist conservation subcontractors specification
- 5. **Grout:** To specialist conservation subcontractors specification
  - 5.1. **Type/ classification:** To specialist conservation subcontractors specification
  - 5.2. **Admixture:** To specialist conservation subcontractors specification
- 6. **Movement joints:** To specialist conservation subcontractors specification
- 7. **Accessories:** To specialist conservation subcontractors specification

## General

### 210 Suitability of backgrounds/ bases

---

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

### 260 Control samples

---

1. **General: Complete sample areas, being part of finished work, in locations as follows:** First Floor WC
  - 1.1. **Approval of appearance:** Obtain before proceeding.
2. **Floor covering slip resistance testing:** Not required

## Preparation

### 310 Existing backgrounds/bases generally

---

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

### 380 New plaster

---

1. **Plaster:** Dry, solidly bedded, free from dust and friable matter.
2. **Plaster primer:** Apply if recommended by adhesive manufacturer.

### 390 Plasterboard backgrounds

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1. **Boards:** Dry, securely fixed and rigid with no protruding fixings and face to receive decorative finish exposed.

### 470A Inert board

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1. **Manufacturer:** wedi Systems (UK) Ltd.
  - 1.1. **Web:** [www.wedi.co.uk](http://www.wedi.co.uk).
  - 1.2. **Email:** [info@wedi.co.uk](mailto:info@wedi.co.uk).
  - 1.3. **Product reference:** wedi Building Board
2. **Size (l x w):** Contractor's choice
3. **Thickness:** 12.5 mm
4. **Accessories:** Self-adhesive Reinforcement Tape to all joints

## Fixing

### 510 Fixing generally

---

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

### 530A Setting out

---

1. **Joints:** True to line, continuous and without steps.
  - 1.1. **Joints on walls:** Horizontal, vertical and aligned round corners.
  - 1.2. **Joints in floors:** Parallel to the main axis of the space or specified features.
2. **Cut tiles:** Minimise number, maximise size and locate unobtrusively.
3. **Joints in adjoining floors and walls:** Align.
4. **Joints in adjoining floors and skirtings:** Align.
5. **Movement joints:** Where locations are not indicated, submit proposals.

### 550 Flatness/ regularity of tiling/ mosaics

---

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

### 560 Level of tiling across joints

---

1. **Deviation (maximum) between tile surfaces either side of any type of joint:**
  - 1.1. 1 mm for joints less than 6 mm wide.
  - 1.2. 2 mm for joints 6 mm or greater in width.

### 650 Adhesive bed - notched trowel method (walls)

---

1. **Application:** By 3 mm floated coat of adhesive to dry background in areas of approximately 1 m<sup>2</sup>. Comb surface.
2. **Tiling:** Press tiles firmly onto float coat.

### 660 Adhesive bed - notched trowel method for mesh backed mosaic (walls)

---

1. **Application:** By 3 mm floated coat of adhesive to dry background. Comb surface.
2. **Placing mosaic sheets:** Hang in horizontal rows, working downwards. Stagger vertical joints. Prevent slippage of sheets. Lightly beat mosaics into adhesive.
3. **Width, plane and alignment of joints between sheets:** To match joints between mosaic tiles.

## Movement joints/ grouting/ completion

### 855A Cement:sand grouting mix

---

1. To wall tiles

**2. Grout mix:**

**2.1. Cement:** White Portland cement to BS EN 197-1, type CEM I/42.5

**2.2. Sand (Fine aggregate):**

**2.2.1. Joint widths of 6 mm or greater:** To BS EN 13139, grading designation 0/2 (FP or MP), category 2 fines.

**2.2.2. Joint widths of 3-6 mm:** To BS 5385-5, table 1.

**2.3. Proportions (cement:sand):** 1:3

**2.4. Pigment:** None

**2.5. Admixture:** None

**3. Mixing:** Mix thoroughly. Use the minimum of clean water needed for workability.

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**875 Grouting**

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**1. Sequence:** Grout when bed/adhesive has set sufficient to prevent disturbance of tiles.

**2. Joints:** 6 mm deep (or depth of tile if less). Free from dust and debris.

**3. Grouting:** Fill joints completely, tool to profile, clean off surface. Leave free from blemishes.

**3.1. Profile:** Flush

**4. Polishing:** When grout is hard, polish tiling with a dry cloth.

---

**885 Coloured grout**

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**1. Staining of tiles:** Not permitted.

**2. Evaluating risk of staining:** Apply grout to a few tiles in a small trial area. If discoloration occurs apply a protective sealer to tiles and repeat trial.

Ω End of Section

## M42: Wood block / composition block / mosaic parquet flooring

### Types of flooring

#### 105 Wood flooring generally

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1. **Standard:** To BS EN 14342.
  - 1.1. **Evidence of compliance:** Submit.

#### 110A Wood block parquet flooring

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1. **Description:** To first floor
2. **Substrate:** self-levelling screed
  - 2.1. **Preparation:** Removal of existing finish
3. **Wood blocks:** Free from decay, through splits and insect attack (including ambrosia beetle damage, unless permitted in the class/ grade specified).
  - 3.1. **Manufacturer:** Contractor's choice
    - 3.1.1. **Product reference:** Contractor's choice
  - 3.2. **Species:** Oak, to match existing
  - 3.3. **Appearance class/ Grade:** To BS EN 942, class J2, except that sound knots up to 20 mm are permitted
  - 3.4. **Block size:** 225 x 55 mm
  - 3.5. **Edges:** Long edges tongued & grooved, ends grooved
    - 3.5.1. **Bottom of long edges:** Chamfered/ grooved to take up surplus adhesive.
  - 3.6. **Finish as delivered:** Planed or fine sawn
  - 3.7. **Moisture content at time of laying:** 10-14%
4. **Laying:**
  - 4.1. **Pattern:** to match existing
  - 4.2. **Adhesive:** Type recommended by flooring manufacturer/ supplier
5. **Method of finishing:** Sand and seal, two coats water-borne urethane with UV inhibitor; colour: Antique oak, satin finish
6. **Other requirements:**
  - 6.1. Stair nosings as Section L30
  - 6.2. **Perimeter Pattern:** 3 courses of 'stretcher' bond to perimeter of each room.
  - 6.3. **Door thresholds:** 1 'header' course to all door thresholds between adjoining rooms finished with wood block flooring.

### Preparation of substrates

#### 210 Dryness of concrete/ screed substrates

---

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

#### 220 Concrete/ screed substrates

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1. **Finished surface:** Smooth, even, and free from abrupt changes in level. Apply suitable smoothing compound, as necessary.

- 1.1. **Surface regularity when checked with a 3 m straightedge with 3 mm feet at each end, placed anywhere on the surface:** No gap greater than 6 mm, and straightedge not obstructed by the substrate.
- 1.2. **Primer:** If recommended by adhesive manufacturer, apply and allow to dry thoroughly before laying flooring.

## General

### 310 Environmental conditions

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

### 380 Acclimatization

---

1. **General:** Before laying commences acclimatize materials by unpacking and spreading out in the spaces where they are to be laid.
  - 1.1. **Acclimatization period:** As recommended by manufacturer, but not less than 48 hours.

## Laying/ finishing

### 410 Suitability of substrate

---

1. **Condition prior to laying flooring and applied features:** Dry, sound and free from dust, debris, grease and other deleterious matter.

### 450 Appearance of finished floor

---

1. **General:** Even distribution of colour variation and free from patchiness.
2. **Flatness/ regularity when checked with a 2 m straightedge with 3 mm feet at each end, placed anywhere on the surface:** Sudden irregularities not permitted. Straightedge not obstructed by flooring and no gap greater than 6 mm.

### 510 Laying wood blocks

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1. **Setting out:** Blocks laid to a symmetrical pattern. Small cut blocks kept to a minimum. Minor vertical gaps between blocks evened out.
2. **Laying:** Blocks fully bonded to substrate.

### 560 Allowance for movement

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1. **Expansion gap around perimeter of flooring:** 10 mm
  - 1.1. **Gap filler:** Permanently elastic, high density, acrylic impregnated, open cell polyurethane foam
  - 1.2. **Spacer blocks and debris:** Removed before fixing skirtings/ cover fillets.
2. **Intermediate movement joints:** Formed as recommended by flooring manufacturer/ supplier in agreed positions.

### 580 Sanding and filling

---

1. **Finished surfaces:** Smooth and even, free from drum marks and with a minimum of crossgrain scoring.
2. **Minor cracks and gaps:** Fill with a proprietary filler coloured to match flooring.
3. **Dust and debris:** Remove from flooring and adjacent surfaces.

Ω End of Section

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

### Types of covering

#### 150B Sheeting

---

1. **Description:** Linoleum
2. **Location:** See Room Data sheets
3. **Base:** Various, as Room Data Sheets
  - 3.1. **Preparation:** as recommended by manufacturer
4. **Flooring roll:** Linoleum on corkment backing to BS EN 687
  - 4.1. **Manufacturer:** Forbo Flooring Systems UK Ltd
    - 4.1.1. **Product reference:** Forbo Marmoleum® Acoustic
  - 4.2. **Thickness:** 2mm
  - 4.3. **Colour/ pattern:** to be agreed
5. **Adhesive (and primer if recommended by manufacturer):** As clause 640
6. **Seam welding:** Hot welding with complimentary coloured rod
7. **Accessories:** Cover strips to all thresholds and junctions with adjoining finishes as clause 740A
8. **Finishing:** Seal and polish as clause 820
9. **Other requirements:** Stair nosings as clause 750B, sealing to floor mounted drainage channels as manufacturers standard

#### 155A PVC sheet flooring in special wet areas

---

1. **Location:** See Room Data sheets
2. **Base:** [Various, as Room Data Sheets].
  - 2.1. **Preparation:** [As recommended by manufacturer].
3. **Flooring roll:** PVC to BS EN 13553.
  - 3.1. **Manufacturer:** Altro Ltd., Works Road, Letchworth Garden City, Herts, SG6 1NW. Tel: 1462 480480 E-mail: enquiries@altro.com.
    - 3.1.1. **Product reference:** Marine 20
  - 3.2. **Thickness:** 3mm
  - 3.3. **Colour/ pattern:** to be agreed
4. **Adhesive (and primer if recommended by manufacturer):** As clause 640
5. **Seam welding:** Hot welding with complimentary coloured rod
6. **Accessories:** Skirtings: coved to tiled walls as clause 770A; Cover strips to thresholds as clause 740A
7. **Other requirements:** [Sealing to floor mounted drainage channels as manufacturers standard].

### General requirements

#### 210 Workmanship generally

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

#### 250 Layout - roll materials

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1. **Setting out of seams:** Agree setting out for sheeting types M50/: 150B

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**330 Commencement**

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

---

**340 Conditioning**

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

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**350 Environment**

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

**Preparing bases**

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**410 New bases**

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

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**420 Existing bases**

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

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**440 Substrates to receive thin coverings**

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

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**460 Smoothing/ levelling underlayment compound**

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1. **Type:** Latex cement
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice

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**470 Bases from which existing floor coverings have been removed**

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

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**530 Particleboard flooring**

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1. **Substrate:** Boards securely fixed, level and free from surface sealers and contaminants.

- 1.1. **Gaps between boards:** Not more than 1 mm.
- 1.2. **Priming:** As required by covering adhesive manufacturer.
2. **Equilibrium moisture content at time of laying covering:** As in service conditions.

## Laying coverings

### 610 Setting out tiles

---

1. **Method:** Set out from centre of area/ room, so that wherever possible:
  - 1.1. Tiles along opposite edges are of equal size.
  - 1.2. Edge tiles are more than 50% of full tile width.

### 640 Adhesive fixing generally

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

### 720 Doorways

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1. **Joint location:** On centre line of door leaf.

### 740A Cover strips

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1. **Manufacturer:** Gradus.
  - 1.1. **Web:** [www.gradusworld.com](http://www.gradusworld.com).
  - 1.2. **Email:** [imail@gradusworld.com](mailto:imail@gradusworld.com).
  - 1.3. **Product reference:** Design Clip
2. **Profile:** SCS454SF8G
3. **Finish:** Matt

### 750A Stair nosings and trims

---

1. To new stairs generally
2. **Manufacturer:** Gooding Aluminium Ltd., 1 British Wharf, Landmann Way, London SE14 5RS Tel: 020 8692 2255 E-mail: [sales@goodingalum.com](mailto:sales@goodingalum.com)
  - 2.1. **Product reference:** GA 1383
3. **Material/ finish:** Mill finish aluminium
4. **Fixing:** Secure, level and with mitred joints, and bedded in gap-filling adhesive recommended by nosing manufacturer.

### 750B Stair nosings and trims

---

1. To existing stairs
2. **Manufacturer:** [Gooding Aluminium Ltd., 1 British Wharf, Landmann Way, London SE14 5RS
3. **Tel: 020 8692 2255 E-mail:** [sales@goodingalum.com](mailto:sales@goodingalum.com)].
  - 3.1. **Product reference:** [GA 1410].
4. **Material/ finish:** [Black Anodised].
5. **Fixing:** Secure, level and with mitred joints, and bedded in gap-filling adhesive recommended by nosing manufacturer.
6. **Special requirements:** To be fixed via adhesive only, mechanical connection to the existing concrete stair is not allowed.

**770A Skirtings**

---

1. To toilets
2. **Manufacturer:** Altro.
  - 2.1. **Web:** [www.altro.co.uk](http://www.altro.co.uk).
  - 2.2. **Email:** [enquiries@altro.com](mailto:enquiries@altro.com).
3. **Product reference:** Self-Coved Skirting
4. **Cove former:** [CF20R].
5. **Capping seal:** [C8WHT].

**Completion****820 Finishing**

---

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

**880 Waste**

---

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

Ω End of Section

## M60: Painting / clear finishing

### Coating systems

#### 110A Emulsion paint

---

1. To internal plastered surfaces
2. **Manufacturer:** Keim Mineral Paints Ltd.
  - 2.1. **Web:** [www.keimpaints.co.uk](http://www.keimpaints.co.uk).
  - 2.2. **Email:** [sales@keimpaints.co.uk](mailto:sales@keimpaints.co.uk).
  - 2.3. **Product reference:** Keim Ecosil ME
3. **Primer:** Keim Granital Dilution
4. **Colour:** to be agreed
5. **Number of coats:** 3
6. **Special Requirements:** Adjacent walls and ceilings are to be painted in different colours, allow for cutting in at internal corners accordingly.

#### 150A Eggshell/ satin paint

---

1. **Description:** To internal new softwood
2. **Manufacturer:** Dulux Trade, brand of AkzoNobel.
  - 2.1. **Web:** [www.duluxtrade.co.uk](http://www.duluxtrade.co.uk).
  - 2.2. **Email:** [john.ashford@akzonobel.com](mailto:john.ashford@akzonobel.com).
  - 2.3. **Product reference:** [Eggshell /Heritage Range].
3. **Surfaces:** [New woodwork and MDF].
  - 3.1. **Preparation:** as clause 400
4. **Initial coats:** [Etching primer].
  - 4.1. **Number of coats:** [One].
5. **Undercoats:** [As recommended by manufacturer].
  - 5.1. **Number of coats:** [One].
6. **Finishing coats:** [Two].

#### 150B Eggshell/ satin paint

---

1. **Description:** To external new softwood
2. **Manufacturer:** Dulux Trade, brand of AkzoNobel.
  - 2.1. **Web:** [www.duluxtrade.co.uk](http://www.duluxtrade.co.uk).
  - 2.2. **Email:** [john.ashford@akzonobel.com](mailto:john.ashford@akzonobel.com).
  - 2.3. **Product reference:** Eggshell /Heritage Range
3. **Surfaces:** New woodwork and MDF
  - 3.1. **Preparation:** as clause 400
4. **Initial coats:** Etching primer
  - 4.1. **Number of coats:** One
5. **Undercoats:** As recommended by manufacturer
  - 5.1. **Number of coats:** Two
6. **Finishing coats:** Two

#### 150C Eggshell/ satin paint

---

1. **Description:** To internal new metal

2. **Manufacturer:** Dulux Paints Ltd.
  - 2.1. **Product reference:** Eggshell /Heritage Range
3. **Surfaces:** Galvanised metal
  - 3.1. **Preparation:** Degrease and abrade to provide key
4. **Initial coats:** Etching primer
  - 4.1. **Number of coats:** One
5. **Undercoats:** As recommended by manufacturer
  - 5.1. **Number of coats:** One
6. **Finishing coats:** Two

#### 160A Decorative woodstain varnish preservative

---

1. **Description:** To new timber
2. **Manufacturer:** Tor Coatings Limited. Portobello Industrial Estate, Birtley, Chester-le-Street, County Durham,
3. **DH3 2RE (t): 0191 410 6611 (e):** info@blackfriar.co.uk
  - 3.1. **Product reference:** Blackfriars Ltd.
4. **Surfaces:** New timber.
  - 4.1. **Preparation:** As clause as clause 400.
5. **Initial coats:** Wood dye
  - 5.1. **Number of coats:** Three
6. **Finishing coats:** Polyurethane clear satin finish Varnish.
  - 6.1. **Number of coats:** Two
  - 6.2. **Special Requirements:** Provide 4 no test samples of different colours to agree final appearance.

#### 160B Decorative woodstain varnish preservative

---

1. **Description:** To floor boarding & blocks
2. **Manufacturer:** Tor Coatings Limited. Portobello Industrial Estate, Birtley, Chester-le-Street, County Durham,
3. **DH3 2RE (t): 0191 410 6611 (e):** info@blackfriar.co.uk
  - 3.1. **Product reference:** Blackfriars Ltd. Dura tough floor varnish.
4. **Surfaces:** New timber flooring.
  - 4.1. **Preparation:** As clause as clause 400.
5. **Initial coats:** [Satin].
  - 5.1. **Number of coats:** [Two].
6. **Finishing coats:** [Satin.].
  - 6.1. **Number of coats:** [Two].
  - 6.2. **Special Requirements:** Provide 4 no test samples of different colours to agree final appearance.

#### 170C Masonry coating

---

1. **Description:** To internal brick walls
2. **Manufacturer:** Kingfisher building products
  - 2.1. **Product reference:** interior brick and dust sealer (Matt finish)
3. **Surfaces:** Brick walls
  - 3.1. **Preparation:** Brush down to remove surface contaminants and remove loose and spalled material and wash down. In general it is very important that the surface to be treated is dry

and any accumulated contaminants are thoroughly cleansed before application. Apply a small test area to check for compatibility before proceeding to full application and allow for inspection by CA. Cleaning If the surface to be treated is merely dusty, then vacuum thoroughly until all traces of dust are removed and proceed directly to application. Allow wall to dry out before proceeding to application.

4. **Finishing coats:** to be applied by roller or low pressure sprayer (not atomizer)

- 4.1. **Number of coats:** 1

- 4.2. 1 litre of product should cover approximately 4 to 6 m<sup>2</sup>.

#### 180A Floor coating

---

1. To plant room floors
2. **Manufacturer:** Rust-Oleum UK Ltd.
  - 2.1. **Web:** [www.rust-oleum.eu](http://www.rust-oleum.eu).
  - 2.2. **Email:** [info.uk@ro-m.com](mailto:info.uk@ro-m.com).
  - 2.3. **Product reference:** EpoxyShield 5200 Ultra
3. **Primer:** 5401 Impregnation Primer
4. **Resin flooring:**
  - 4.1. **Nominal thickness:** 500 micrometres
5. **Surface finish/ treatment:** Satin matt.

#### 195A Line & symbol painting

---

1. **Description:** To car park
2. **Manufacturer:** Rust-Oleum UK Ltd.
  - 2.1. **Web:** [www.rust-oleum.eu](http://www.rust-oleum.eu).
  - 2.2. **Email:** [info.uk@ro-m.com](mailto:info.uk@ro-m.com).
  - 2.3. **Product reference:** Tarmacoat 6100
3. **Primer:** [As manufacturers recommendations].
4. **Surface finish/ treatment:** Satin matt.

## Preparation

#### 400 Preparation generally

---

1. **Standard:** In accordance with BS 6150.
2. Refer to any pre-existing CDM Health and Safety File.
3. Refer to CDM Construction Phase Plan where applicable.
4. **Suspected existing hazardous materials:** Prepare risk assessments and method statements covering operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
5. **Preparation materials:** Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
6. **Substrates:** Sufficiently dry in depth to suit coating.
7. **Efflorescence salts:** Remove.
8. **Dirt, grease and oil:** Remove. Give notice if contamination of surfaces/ substrates has occurred.
9. **Surface irregularities:** Remove.
10. **Joints, cracks, holes and other depressions:** Fill flush with surface, provide smooth finish.
11. **Dust, particles and residues from preparation:** Remove and dispose of safely.
12. **Water based stoppers and fillers:**
  - 12.1. Apply before priming unless recommended otherwise by manufacturer.

12.2. **If applied after priming:** Patch prime.

13. **Oil based stoppers and fillers:** Apply after priming.

14. **Doors, opening windows and other moving parts:**

14.1. Ease, if necessary, before coating.

14.2. Prime resulting bare areas.

---

#### 420 Fixtures and fittings

1. **Removal: Before commencing work remove:** Coverplates, grilles, wall clocks, and other surface mounted fixtures
2. **Replacement:** Refurbishment as necessary, refit when coating is dry.

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#### 425 Ironmongery

1. **Removal:** Before commencing work remove ironmongery from surfaces to be coated.
2. **Hinges:** Remove
3. **Replacement:** Refurbish as necessary; refit when coating is dry.

---

#### 471 Preprimed wood

1. **Areas of defective primer:** Take back to bare timber.

---

#### 481 Uncoated wood

1. **General:** Provide smooth, even finish with arrises and moulding edges lightly rounded or eased.
2. **Heads of fasteners:** Countersink sufficient to hold stoppers/fillers.
3. **Resinous areas and knots:** Apply two coats of knotting.

---

#### 490 Previously coated steel

1. **Defective paintwork:** Remove to leave a firm edge and clean bright metal.
2. **Sound paintwork:** Provide key for subsequent coats.
3. **Corrosion and loose scale:** Take back to bare metal.
4. **Residual rust:** Treat with a proprietary removal solution.
5. **Bare metal:** Apply primer as soon as possible.
6. **Remaining areas:** Degrease.

---

#### 490A Previously coated steel

1. Existing metal balustrade internally
2. **Existing paintwork:** Remove all existing paint to leave a firm edge and clean bright metal.
3. **Existing details:** Minimise abrasion as far as possible.
  - 3.1. **Ingrained deposits:** Seek instruction.
  - 3.2. **Heavily corroded metal:** Seek instruction.
4. **Corrosion and loose scale:** Take back to bare metal.
5. **Residual rust:** Treat with a proprietary removal solution.
6. **Bare metal:** Apply anti-corrosive primer as soon as possible.
7. **Special Requirements:**
  - 7.1. Existing HW handrail fixings to be carefully dismantled prior to general cleaning, individually cleaned and overhauled, redecorated and reinstated to match existing.
  - 7.2. Handrail to be redecorated generally, prior to reinstatement of HW handrail.

---

#### 490B Previously coated steel

1. (Existing metal windows)

2. **Defective paintwork:** Remove to leave a firm edge and clean bright metal.
3. **Sound paintwork:** Provide key for subsequent coats.
4. **Corrosion and loose scale:** Take back to bare metal.
5. **Residual rust:** Treat with a proprietary removal solution.
6. **Bare metal:** Apply anti-corrosive primer as soon as possible.
7. **Remaining areas:** Degrease.

---

#### 500 Preprimed steel

1. **Areas of defective primer, corrosion and loose scale:** Take back to bare metal. Reprime as soon as possible.

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#### 511 Galvanized, sherardized and electroplated steel

1. **White rust:** Remove.
2. **Pretreatment:** Apply one of the following:
  - 2.1. Mordant solution to blacken whole surface.
  - 2.2. Etching primer recommended by coating system manufacturer.

---

#### 521A Uncoated steel - manual cleaning

1. **Oil and grease:** Remove.
2. **Corrosion, loose scale, welding slag and spatter:** Remove.
3. **Residual rust:** Treat with a proprietary removal solution.
4. **Primer:** Anti-Corrosive- Apply as soon as possible.

---

#### 622 Organic growths

1. **Dead and loose growths and infected coatings:** Scrape off and remove from site
2. **Treatment biocide:** Apply appropriate solution to growth areas and surrounding surfaces.
3. **Residual effect biocide:** Apply appropriate solution to inhibit re-establishment of growths.

---

#### 645 Sealing internal movement joints

1. **General:** To junctions of walls and ceilings with architraves, skirtings and other trims.
2. **Sealant:** Water-borne acrylic.
  - 2.1. **Manufacturer:** Contractor's choice
    - 2.1.1. **Product reference:** Contractor's choice
  - 2.2. **Preparation and application:** As section Z22.

## Application

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#### 711 Coating generally

1. **Application standard:** In accordance with BS 6150, clause 9.
2. **Conditions:** Maintain suitable temperature, humidity and air quality during application and drying.
3. **Surfaces:** Clean and dry at time of application.
4. **Thinning and intermixing of coatings:** Not permitted unless recommended by manufacturer.
5. **Overpainting:** Do not paint over intumescent strips or silicone mastics.
6. **Priming coats:**
  - 6.1. **Thickness:** To suit surface porosity.
  - 6.2. **Application:** As soon as possible on same day as preparation is completed.
7. **Finish:**

- 7.1. Even, smooth and of uniform colour.
- 7.2. Free from brush marks, sags, runs and other defects.
- 7.3. Cut in neatly.

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

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#### 730 Workshop coating of concealed joinery surfaces

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- 1. **General:** Apply coatings to all surfaces of components.

---

#### 731 Site coating of concealed joinery surfaces

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- 1. **General:** After priming, apply additional coatings to surfaces that will be concealed when fixed in place.
  - 1.1. **Components:** Built in window frames and external door frames
  - 1.2. **Additional coatings:** One undercoat

---

#### 740 Concealed metal surfaces

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- 1. **General:** Apply additional coatings to surfaces that will be concealed when component is fixed in place.
  - 1.1. **Components:** Window frames
  - 1.2. **Additional coatings:** Black bitumen to BS 3416, type 1

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#### 751 Staining wood

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- 1. **Primer:** Apply, if recommended by stain manufacturer.
- 2. **Application:** Apply in flowing coats and brush out excess stain to produce uniform appearance.

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#### 760 Varnishing wood

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- 1. **First coat:** Thin with white spirit
  - 1.1. Brush well in and lay off avoiding aeration.
- 2. **Subsequent coats:** Provide light key along the grain between coats.

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#### 770 External doors

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- 1. **Bottom edges:** Prime and coat before hanging doors.

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#### 790 Linseed oil putty glazing

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- 1. **Setting:** Allow putty to set for seven days.
- 2. **Sealing:**
  - 2.1. Within a further 14 days, seal with a solvent-borne primer.
  - 2.2. Fully protect putty with coating system as soon as it is sufficiently hard.
  - 2.3. Extend finishing coats on to glass up to sight line.

Ω End of Section

## M61: Intumescent coatings for fire protection of steelwork

### Protective coating systems

#### 110 On site coating to primed steel

---

1. **Description:** Internally
2. **Use/ location:** exposed new steelwork, excluding roof structure
3. **Fire resistance to BS 476-21:** 60 minutes
4. **Preparation and priming:** By steelwork contractor, as section G10.
5. **Intumescent coating system:**
  - 5.1. **Manufacturer:** Contractor's choice
    - 5.1.1. **Product reference:** Contractor's choice
  - 5.2. **Intumescent coat:**
    - 5.2.1. **Type:** Contractor's choice
    - 5.2.2. **Finish:** Visible areas: Normal decorative
  - 5.3. **Top sealer coat:**
    - 5.3.1. **Type:** Contractor's choice
    - 5.3.2. **Colour:** to be agreed
6. **Bolt head/ Nut protection:** As main steelwork

#### 120 On site coating to existing steel

---

1. **Description:** Internally
2. **Use/ Location:** Exposed existing steelwork
3. **Fire resistance to BS 476-21:** 60 minutes
4. **Preparation:** Blast cleaning
5. **Intumescent coating system:**
  - 5.1. **Manufacturer:** Contractor's choice
    - 5.1.1. **Product reference:** Contractor's choice
  - 5.2. **Primer:**
    - 5.2.1. **Type:** Contractor's choice
  - 5.3. **Intumescent coat:**
    - 5.3.1. **Type:** Contractor's choice
    - 5.3.2. **Finish:** Visible areas: Normal decorative
  - 5.4. **Top sealer coat:**
    - 5.4.1. **Type:** Contractor's choice
    - 5.4.2. **Colour:** to be agreed
6. **Bolt head/ Nut protection:** As main steelwork

### General requirements

#### 205 Validation of materials

---

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

## 210 Working procedures

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1. **Standard:** In accordance with BS 8202-2.
2. **Give notice:** Before commencing surface preparation and coating application.
3. **Quality control:** Record project specific procedures for surface preparation and coating application.

## 215 Working conditions

---

1. **General:** Maintain manufacturer's recommended temperature, humidity and air quality conditions during application and drying.
2. **Surface condition:** Clean and dry at time of coating application.

## 250A Sprayed coating application on site

---

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

## 270 Inspection

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

## Preparation of surfaces

### 320 Existing steel - blast cleaning

---

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

## Application of coatings

### 410 Intumescent coating dry film thickness (dft)

---

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

- 3.2. **Drawing content:** Steelwork drawings marked in colour to show required dft for each member.

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**450 Normal decorative finish**

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

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**490 Top sealer coat**

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

## **Completion**

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**530 Records of intumescent application**

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

Ω End of Section

## N10: General fixtures / furnishings / equipment

### Products

#### 110A Purpose made

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1. **Description:** Reception desk
2. **Joinery workmanship:** As section Z10.
3. **Metalwork materials and workmanship:** As section Z11.
4. **Other requirements:** See drawings

#### 160 Shelving system

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1. **Description:** To managers office
2. **Manufacturer:** Bruynzeel
  - 2.1. **Product reference:** Sysco static shelving
3. **Dimensions:** TBC
  - 3.1. **Shelf Spacing:** TBC
4. **Shelves:**
  - 4.1. **Material:** TBC
  - 4.2. **Finish/ Colour:** TBC
5. **Carcass or frame:**
  - 5.1. **Material:** TBC
  - 5.2. **Finish/ Colour:** TBC
6. **Other components:** Roller shutters

#### 270 Mirrors

---

1. **Description:** Generally
2. **Dimensions:**
  - 2.1. **Length:** As Room Data Sheets
  - 2.2. **Width:** As Room Data Sheets
  - 2.3. **Thickness:** 6mm
3. **Material:** Silvered float glass to BS EN 1036-1
4. **Quality:** Free from tarnishing, discoloration, scratches and other defects visible in the designed viewing conditions. Reflection undistorted.
5. **Backing:** Contractors choice
6. **Edges:** All round
7. **Treatment:** Polished
8. **Profile:** Square
9. **Fixing:** Holes, 4 mm diameter, inset 50 x 50 mm from corners, for fixing screws
10. **Installation:** Accurately with sides vertical.

#### 300A Entrance matting

---

1. To new rear entrance lobby
2. **Manufacturer:** Entrance Matting Systems Ltd.
  - 2.1. **Web:** [www.entrance-matting.com](http://www.entrance-matting.com).
  - 2.2. **Email:** [info@entrance-matting.com](mailto:info@entrance-matting.com).
  - 2.3. **Product reference:** Colortread

3. **Size:** to infill floor complete
4. **Insert:**
5. **Material:** EMS CT 003
  - 5.1. **Colour:** Anthracite
6. **Scraper bar colour:** Silver
7. **Frame:**
  - 7.1. **Material:** Stainless steel
  - 7.2. **Profile:** 25 x 25 x 5 mm angle section
8. **Accessories:** Recessed into surrounding floor finish

### 300B Entrance matting

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1. To reception
2. **Manufacturer:** Entrance Matting Systems Ltd.
  - 2.1. **Web:** [www.entrance-matting.com](http://www.entrance-matting.com).
  - 2.2. **Email:** [info@entrance-matting.com](mailto:info@entrance-matting.com).
  - 2.3. **Product reference:** Colortread
3. **Size:** 1600 X 1000 mm
4. **Insert:**
5. **Material:** EMS CT 003
  - 5.1. **Colour:** Anthracite
6. **Scraper bar colour:** Silver
7. **Frame:**
  - 7.1. **Material:** Stainless steel
  - 7.2. **Profile:** 25 x 25 x 5 mm angle section
8. **Accessories:** [Recessed into surrounding floor finish].

## Execution

### 770 Trims

---

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

## Completion

### 910 General

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

Ω End of Section

## N12: Commercial catering fittings, furniture and equipment

### Products

#### 309 Contractor to submit detail design drawings of the following for approval

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1. TEA STATIONS

#### 320A Worktops

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1. **Description:** To tea station
2. **Manufacturer:** AKW Ltd, Pointion Way, Hampton Lovett, Droitwich Spa, WR9 0LR
  - 2.1. **Product reference:** Independence Kitchen
3. **Dimensions:** see drawings
4. **Finish/ Colour:** Maryland Fonce Surf
  - 4.1. **Exposed ends:** [lipped to match worktops].
5. **Support:** Via base units generally and wall mounted adjustable legs to sink unit
6. **Other requirements:**
  - 6.1. Electrically operated 'ActivMotion' wall mounted adjustable 'rise and fall' worktop to sink unitbase units.
  - 6.2. **Modesty panel to screen 'rise and fall' brackets, finish/ colour:** to match sink base units.
  - 6.3. Joints in worktop corners to be mitred and sealed. Cover strips are not to be used.
  - 6.4. Apply sealant as clause 470 to junction with abutting walls.

#### 320B Worktops

---

1. **Description:** To office
2. **Manufacturer:** AKW Ltd, Pointion Way, Hampton Lovett, Droitwich Spa, WR9 0LR
  - 2.1. **Product reference:** Independence Kitchen
3. **Dimensions:** See drawings
4. **Finish/ Colour:** [Maryland Fonce Surf].
  - 4.1. **Exposed ends:** [lipped to match worktops].
5. **Support:** Intermediate legs as clause P20/--
  - 5.1. **Material:** Manufacturer's standard
  - 5.2. **Finish/ Colour:** Manufacturer's standard
  - 5.3. Apply sealant as clause 470 to junction with abutting walls.

#### 380A Sinks, taps, traps and wastes

---

1. **Description:** To tea station
2. Sinks
  - 2.1. **Manufacturer:** AKW Ltd, Pointion Way, Hampton Lovett, Droitwich Spa, WR9 0LR
    - 2.1.1. **Product reference:** Shallow 1.5 bowl
  - 2.2. **Configuration:** Reversible
  - 2.3. **Material:** Stainless steel grade 1.4301 (304)
  - 2.4. **Finish/ Colour:** Manufacturer's standard
3. **Support:** Built into worktop
4. **Tap/ Chainstay/ Overflow holes:** No chainstay hole and overflow.
5. **Taps:** Pillar
  - 5.1. **Manufacturer:** [AKW Ltd, Pointion Way, Hampton Lovett, Droitwich Spa, WR9 0LR].

6. **Wastes:** Pop up
  - 6.1. **Standard:** To BS EN 274-1, -2 and -3.
  - 6.2. **Size:** To fit sink
  - 6.3. **Material:** Chromed steel
7. **Traps:** Deep seal bottle
  - 7.1. **Standard:** To BS EN 274-1, -2 and -3.
  - 7.2. **Size:** To fit sink
  - 7.3. **Material:** Plastics
  - 7.4. **Depth of seal (minimum):** 75 mm
8. **Other requirements:** The base of the bowl to be insulated to protect potential users legs.

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#### 420A Cupboards and storage units

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1. To tea station
2. **Item:** Wall and Base Units
3. **Manufacturer:** AKW Ltd, Pointion Way, Hampton Lovett, Droitwich Spa, WR9 0LR
  - 3.1. **Product reference:** Independence
4. **Finish/ Colour:** Light Grey Gloss
  - 4.1. **Exposed edges:** To match doors
5. **Handles:** Steel flat 'D' handles.
  - 5.1. **Material:** Stainless steel.
6. **Accessories:**
  - 6.1. **Base Units:** Adjustable legs, raised continuous plinth and 66mm service void behind.
  - 6.2. **Generally:** See drawings.

---

#### 470 Sealant

---

1. **Standard:** To BS EN ISO 11600, class F20 HM
2. **Type:** One part silicone
  - 2.1. **Manufacturer:** Contractor's choice
  - 2.2. **Product reference:** Contractor's choice
3. **Colour:** to be agreed

## Execution

---

#### 620 Installation generally

---

1. **Fixing and fasteners:** As section Z20.
2. **Services:** As Engineering Services specification

---

#### 630 Installing equipment, units, appliances and worktops

---

1. **General:** Correctly positioned and aligned, stable and secure.

---

#### 650 Installing sinks, taps, traps and wastes

---

1. **Water supply:** To BS EN 806-1, -2, -3, -4 and -5 and BS 8558.
2. Taps
  - 2.1. **Fixing:** Secure, watertight seal with the appliance.
  - 2.2. **Positioning:** Hot tap to left of cold tap as viewed by the user of the appliance.
3. Wastes
  - 3.1. **Bedding:** Waterproof jointing compound.

- 3.2. **Fixing:** With resilient washer between appliance and backnut.

---

**660 Sealant bedding and pointing**

---

1. **Application:** As section Z22
2. **Bedding:** Sink to top of worktop
3. **Pointing:** Between units and splash backs

**Completion**

---

**910 General**

---

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

Ω End of Section

## N13: Sanitary appliances and fittings

### Products

#### 300 WCs and cisterns

---

1. **Description:** Generally
2. **WC standard:** To Defra WC suite performance specification or equivalent approved by relevant water company
3. **Type:** Back to wall, concealed cistern
4. **Pan:**
  - 4.1. **Standards:** To BS EN 33 and BS EN 997, Class 2
  - 4.2. **Manufacturer:** Contractor's choice
    - 4.2.1. **Product reference:** Contractor's choice
  - 4.3. **Material:** Vitreous china, white
5. **Seat and cover:**
  - 5.1. **Standard:** To BS 1254
  - 5.2. **Manufacturer:** Contractor's choice
    - 5.2.1. **Product reference:** Contractor's choice
  - 5.3. **Material:** Plastics
  - 5.4. **Finish/ Colour:** White
  - 5.5. **Soft close:** Required
6. **Pan connector:**
  - 6.1. **Standard:** To BS 5627.
  - 6.2. **Manufacturer:** Contractor's choice
    - 6.2.1. **Product reference:** Contractor's choice
  - 6.3. **Colour:** To match pan
7. **Cistern:**
  - 7.1. **Standard:** To BS EN 14055, Class 2
  - 7.2. **Manufacturer:** Contractor's choice
    - 7.2.1. **Product reference:** Contractor's choice
  - 7.3. **Material:** Plastics
  - 7.4. **Finish/ Colour:** Not applicable
8. **Inlet valve:** Cistern manufacturer's standard
  - 8.1. **Manufacturer:** Contractor's choice
    - 8.1.1. **Product reference:** Contractor's choice
  - 8.2. **Water supply connection:** Side
9. **Flushing arrangement:** Siphon, WRAS approved
  - 9.1. **Manufacturer:** Contractor's choice
    - 9.1.1. **Product reference:** Contractor's choice
  - 9.2. **Operating control:** Push button, chrome plated
  - 9.3. **Flush volume:** Dual flush 6 or 4 L
10. **Flush pipe:** Concealed
  - 10.1. **Manufacturer:** Contractor's choice
    - 10.1.1. **Product reference:** Contractor's choice
  - 10.2. **Material:** Plastics, white

**11. Accessories:** None**311A Unisex accessible WC**

---

1. **Description:** Generally
2. **Manufacturer:** AKW, Pointon Way, Hampton Lovett, Droitwich Spa, WR9 0LR.
  - 2.1. **Product reference:** Fully compliant low level Doc M pack
3. **Component/Finish/ Colour:**
  - 3.1. **Pan:** Manufacturer's standard, white
  - 3.2. **Cistern:** Manufacturer's standard, white
  - 3.3. **Seat:** Plastics, blue
  - 3.4. **Basin:** Manufacturer's standard, white
  - 3.5. **Handrails and grab bars:** Coated steel, dark blue
4. **Transfer handing:** As drawings
5. **Water supply fittings (basin):** Lever operated basin mixer tap
6. **Accessories:** Manufacturers Standard

**313 Unisex accessible shower**

---

1. **Description:** Generally
2. **Component:** Shower Tray.
  - 2.1. **Manufacturer:** Neaco Ltd, Norton Grove Industrial Estate, Norton, Malton, Yorkshire, YO17 9HQ
3. (t) 01653 695721 (w) [www.neaco.co.uk](http://www.neaco.co.uk)
  - 3.1. **Reference:** Neatdeck 3 corner combined grille and integral moulded tray (recessed into timber floor)
  - 3.2. **Colour: Tray - white, Grille:** Pigeon Blue.
  - 3.3. **Accessories:** Neatseal PVC insert attached to tray, hot-seam welded to adjacent floor finish.
4. **Component:** Shower Room Pack complete.
  - 4.1. **Manufacturer:** Ideal Standard (UK) Ltd.
  - 4.2. **Web:** [www.idealspec.co.uk](http://www.idealspec.co.uk).
  - 4.3. **Email:** [ukcustcare@idealstandard.com](mailto:ukcustcare@idealstandard.com).
  - 4.4. **Product reference:** [S6960LI Shower Room Pack (Blue).
  - 4.5. **Reference:** to include hinged seat and back support, shower curtain, curtain rail, Contour 21 thermostatic built in shower mixer, short projection head, armaglide handspray, lever operated shower diverter, wall elbow, sliding handset holder, 2 no. 60cm grab rails, 2 no 45cm grab rails, 2 no 2 no clothes hooks screwed to wall,
5. **Component:** Additional components
  - 5.1. 1500 x 600mm mirror
  - 5.2. 185 x 215mm shelf for soap etc, AKW 23145

**331A Sinks**

---

1. **Description:** –belfast
2. **Standard:** To BS 1206
3. **Manufacturer:** Contractor's choice
  - 3.1. **Product reference:** Contractor's choice
4. **Size:** 600 x 600 mm
5. **Material:** Glazed fireclay, white

6. **Configuration:** Wall-hung
7. **Tap/ Chainstay/ Overflow holes:** No tap holes, chainstay hole and overflow hole
8. **Water supply fittings:** Wall mounted taps on back plate elbow
  - 8.1. **Manufacturer:** Contractor's choice
    - 8.1.1. **Product reference:** Contractor's choice
9. **Wastes:** Chain and plug
  - 9.1. **Standards:** To BS EN 274-1, -2 and -3.
  - 9.2. **Manufacturer:** Contractor's choice
    - 9.2.1. **Product reference:** Contractor's choice
  - 9.3. **Size:** DN 50
  - 9.4. **Material:** Stainless steel
  - 9.5. **Tail:** Slotted
10. **Traps:** Contractors choice
  - 10.1. **Standards:** To BS EN 274-1, -2 and -3.
  - 10.2. **Manufacturer:** Contractor's choice
    - 10.2.1. **Product reference:** Contractor's choice
  - 10.3. **Size:** DN 50
  - 10.4. **Material:** as M & E Specification
  - 10.5. **Depth of seal (minimum):** 75 mm.
11. **Accessories:** Concealed support frame

### 335A Wash basins

---

1. **Description:** to washroom preplumbed panel system
2. **Standard:** To BS EN 14688
  - 2.1. **Overflow class:** as M & E Specification
3. **Manufacturer:** Contractor's choice
  - 3.1. **Product reference:** Contractor's choice
4. **Size:** 500 x 400 mm
5. **Material:** Vitreous china, white
6. **Configuration:** Wall-hung
7. **Tap/ Chainstay/ Overflow holes:** Two tap holes and overflow hole
8. **Water supply fittings:** Pillar taps
  - 8.1. **Manufacturer:** Contractor's choice
    - 8.1.1. **Product reference:** Contractor's choice
  - 8.2. **Operation:** Lever handles
9. **Wastes:** Pop up
  - 9.1. **Standards:** To BS EN 274-1, -2 and -3.
  - 9.2. **Manufacturer:** Contractor's choice
    - 9.2.1. **Product reference:** Contractor's choice
  - 9.3. **Size:** DN 40
  - 9.4. **Material:** Brass, chrome plated
  - 9.5. **Tail:** Contractors choice
10. **Traps:** Contractors choice
  - 10.1. **Standards:** To BS EN 274-1, -2 and -3.
  - 10.2. **Manufacturer:** Contractor's choice

10.2.1. **Product reference:** Contractor's choice

10.3. **Size:** DN 40

10.4. **Finish:** Brass, chrome plated

10.5. **Depth of seal (minimum):** 75 mm.

11. **Accessories:** None

---

#### 580A Sealant pointing

---

1. **Standard:** To BS EN ISO 11600

1.1. **Class:** F20 HM

2. **Type:** Silicone

2.1. **Manufacturer:** Contractor's choice

2.1.1. **Product reference:** Contractor's choice

3. **Location:** To perimeter of all fittings at their junction with abutting walls and/or floor

4. **Colour:** [White].

### Execution

---

#### 610 Installation generally

---

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

---

#### 620 Noggings and bearers

---

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

---

#### 630 Tiled backgrounds other than splashbacks

---

1. **Timing:** Complete before fixing appliances.
2. **Fixing appliances:** Do not overstress tiles.

---

#### 710 Installing taps

---

1. **Fixing:** Secure against twisting.
2. **Seal with appliance:** Watertight.
3. **Positioning:** Hot tap to left of cold tap as viewed by user of appliance.

---

#### 720 Installing wastes and overflows

---

1. **Bedding:** Waterproof jointing compound.
2. **Fixing:** With resilient washer between appliance and backnut.

Ω End of Section

## N14: General internal signage systems

### General

#### 110 Signage system

---

1. **Description:** Modular door designation
2. **System manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Layout and dimensions:** As door/ room schedule
4. **Lettering**
  - 4.1. **Language:** English and Welsh
  - 4.2. **Font:** Helvetica medium
  - 4.3. **Colour:** TBC/ Contrasting with the background
  - 4.4. **Size:** Manufacturer's standard range
5. **Symbols and graphics:** Manufacturer's standard range
  - 5.1. **Colour:** TBC
  - 5.2. **Size:** Manufacturer's standard range
6. **Background colour:** TBC/ Contrasting with the lettering
7. **Sign type:** Aluminium plate
  - 7.1. **Inserts:** None
  - 7.2. **Manufacturing process:** Contractor's choice
8. **Supports/ Fixings:** Wall mounted; screw fixed
9. **Accessories:** Not required

#### 110A Signage system

---

1. **Description:** For directory
2. **System manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Layout and dimensions:** As door/ room schedule
4. **Lettering**
  - 4.1. **Language:** English and Welsh
  - 4.2. **Font:** Helvetica medium
  - 4.3. **Colour:** TBC/ Contrasting with the background
  - 4.4. **Size:** Manufacturer's standard range
5. **Symbols and graphics:** Manufacturer's standard range
  - 5.1. **Colour:** TBC
  - 5.2. **Size:** Manufacturer's standard range
6. **Background colour:** TBC/ Contrasting with the lettering
7. **Sign type:** Aluminium plate
  - 7.1. **Inserts:** None
  - 7.2. **Manufacturing process:** Contractor's choice
8. **Supports/ Fixings:** Wall mounted; screw fixed
9. **Accessories:** Not required

## Products

### 305 Products generally

---

1. **Standard:** To BS 559.

### 320 Aluminium

---

1. **Description:** Plates
2. **Manufacturer:** Submit proposals
  - 2.1. **Product reference:** Submit proposals
3. **Component thickness:** 6 mm, 2 mm facing on 4 mm backing panel
4. **Finish:** Powder coated to BS 6496
5. **Perimeters:** Radiused corners

### 320A Aluminium

---

1. **Description:** Letters
2. **Manufacturer:** Submit proposals
  - 2.1. **Product reference:** Submit proposals
3. **Component thickness:** 2 mm
4. **Finish:** Powder coated to BS 6496
5. **Perimeters:** Not applicable

## Execution

### 610 Fixing signs generally

---

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

### 620 Fixing signs for the visually impaired

---

1. Protection of users
  - 1.1. Fasteners for tactile/ Braille signs must not have sharp edges or protrusions that would cause confusion or injury to users.

## Completion

### 910 Documentation

---

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

Ω End of Section

## N15: Internal fire and safety signage systems

### Clauses

2 To be read with preliminaries/ general conditions.

---

### General

#### 110 Fire and safety signage systems

---

1. **Description:** For escape route
2. **System manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Layout and dimensions:** As drawing GA 360 - 362
  - 3.1. **Language:** English.
4. **Sign type:** Contractor's choice
  - 4.1. **Manufacturing process:** Submit proposals
5. **Supports/ Fixings:** Wall projected
6. **Accessories:** Not required

#### 110A Fire signage systems

---

1. **Description:** For equipment & safety
2. **System manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Layout and dimensions:** As drawing GA 360 - 362
  - 3.1. **Language:** English.
4. **Sign type:** Contractor's choice
  - 4.1. **Manufacturing process:** Submit proposals
5. **Supports/ Fixings:** Wall projected
6. **Accessories:** Not required

### Products

#### 305 Internal signage products generally

---

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

### Execution

#### 610 Fixing signs generally

---

1. **Installation:** To BS 559.
  - 1.1. Secure, plumb and level.
2. Secure, plumb and level.
3. **Fasteners and adhesives:** As section Z20.
4. **Strength of fasteners:** Sufficient to support live and dead loads.
5. **Fasteners for external signs:** Corrosion resistant material or with a corrosion resistant finish. Isolate dissimilar metals to avoid electrolytic corrosion.

6. **Fixings showing on surface of sign:** Must not detract from the message being displayed.

## **Completion**

### **910 Documentation**

---

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

Ω End of Section

## N17: Portable fire fighting systems

### General

#### 110A Portable fire extinguisher system

---

1. **Description:** To tea stations
2. **Type:** Carbon dioxide
  - 2.1. **Capacity:** 2 kg
  - 2.2. **Supports:** Fixing bracket

#### 120 Portable fire extinguisher system

---

1. **Description:** Generally
2. **Type:** Water
  - 2.1. **Capacity:** 6 L
  - 2.2. **Supports:** Fixing bracket

#### 150 Fire blanket system

---

1. **Description:** For tea station
2. **Type:** Light duty
3. **Size:** 1 x 1 m
4. **Supports:** Mounting brackets

### System performance

#### 220 Colour coding

---

1. **Portable fire extinguishers:** Colour code in accordance with BS 7863.

### Products

#### 310 Carbon dioxide extinguishers

---

1. **Standard:** To BS EN 3-10.
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice

#### 340 Water extinguishers

---

1. **Standard:** To BS EN 3-10.
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice

#### 410 Fire blankets - light duty

---

1. **Standard:** To BS EN 1869.
2. **Manufacturer:** Contractors choice
  - 2.1. **Product reference:** Contractors choice

## Execution

### 610 Installing portable fire extinguishers

---

1. **Mounting height above finished floor level:** Bracket fixed at 1 m

### 650 Installing fire blankets

---

1. **Mounting height above finished floor level:** 1200 mm

## Completion

### 910 Cleaning

---

1. **Protective wrappings:** Remove.
2. **Cleaning:** Clean off and wipe down container finishes.

### 930 Training

---

1. **Training:** Submit instruction manuals or supply other appropriate resources to train the users of the building in the safe and appropriate use of the fire extinguishers and fire blankets.
2. **Fire brigade:** Submit contact details.

### 940 Maintenance

---

1. **Servicing:** Arrange the first annual service of the portable fire fighting systems.
2. **Maintenance standard:** To BS 5603-0.

Ω End of Section

## N25: Permanent access and safety equipment

### Types of system/ equipment

#### 210 Guided type fall arrest system

---

1. **Description:** For roof maintenance access
2. **Manufacturer:** Contractor's choice
  - 2.1. **System reference:** Submit proposals
3. **Anchorage device:** Horizontal stainless steel cable
4. **Overall system length:** See drawings
5. **Intermediate support spacing:** See drawings
6. **Accessories/ Other requirements:** As required by Contractors design, to CA's approval
7. **Installation:** In accordance with BS 7883 by the system manufacturer or a contractor approved by the system manufacturer.
8. **Structural anchors:** Type recommended by the system manufacturer to suit the structure/ fabric into which they will be fixed.

#### 220 Single point anchorage devices

---

1. **Description:** For personal protective equipment
2. **Standard:** To BS EN 795.
3. **Type:** Submit proposals
4. **Manufacturer:** Contractor's choice
  - 4.1. **Product reference:** Submit proposals
5. **Material/ Finish:** Nylon coated steel
6. **Locations:** As required by Contractors design, to CA's approval
7. **Installation:** In accordance with BS 7883.
8. **Other requirements:** Provide with each anchor:
  - 8.1. A backing disc giving the manufacturer's name and telephone number and the date of installation.
  - 8.2. A certificate of compliance with testing and examination requirements of BS EN 365.

### Design/performance requirements

#### 430 Safety

---

1. **General:** The equipment as installed must have no irregularities/ projections capable of inflicting personal injury.
2. **Finished surfaces and edges of all accessible parts:** Regular and smooth.

#### 440 Design life/ maintenance programme

---

1. **Design life of access/ safety system:** Not less than: 10years.
2. **Schedule for maintenance and for replacement of components:** Submit.

#### 450 Testing of permanent suspended access equipment

---

1. **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.

2. **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.
3. **Certificates for works and site testing:** Submit within 7 days of completion of satisfactory acceptance tests.

## Fabrication, assembly and installation

### 535 Execution generally

---

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

### 540 Mechanical fixings

---

1. **Materials:** Unless otherwise recommended by equipment manufacturer:
  - 1.1. **Connecting bolts and other fixings fully accessible for inspection:** Carbon steel hot dip galvanized to BS 7371-6.
  - 1.2. **Nuts:** Tapped after galvanizing.
  - 1.3. **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

---

1. **Supplier:** Equipment manufacturer/ supplier.

### 570 Fixing anchor installation

---

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

### 610 Identification and registration labels for other equipment

---

1. **Description:** For fall arrest system
2. **Provision:** Provide and fix to each piece of equipment a permanent label giving:
  - 2.1. Manufacturer's name, address and telephone number.
  - 2.2. Name and/ or reference code of model.
  - 2.3. Serial number and year of manufacture.
  - 2.4. Maximum load (in kilograms) that may be sustained by the equipment.
3. **Location:** In positions such that labels can be easily read.

### 615 CE marking and declaration of conformity of permanently installed suspended access equipment

---

1. **Marking:** Equipment to be clearly labelled with a CE mark indicating conformity with the current edition of the Supply of Machinery (Safety) Regulations.
2. **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.

### 640 Marking of anchor devices

---

1. **Provision:** Provide on or near each anchor device a label or other clear marking giving:
  - 1.1. Manufacturer's name and telephone number.
  - 1.2. Serial number and year of manufacture of device.
  - 1.3. Maximum number of personnel that may be attached to the device at any one time.
  - 1.4. Requirements for energy absorbers, ground clearance, etc.
2. **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

---

1. **Description:** Of all items
2. **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.
3. **Service/ Maintenance period:** 12 months

### 820 Operating instructions

---

1. **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

---

1. **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.
2. **Content:**
  - 2.1. Instructions for assembling/ erecting equipment for use.
  - 2.2. Comprehensive operating instructions, including safety and emergency procedures, for all motions including upward, downward and lateral travel, and slew.
  - 2.3. Servicing and planned maintenance procedures, including assembly instructions where maintenance necessitates dismantling of machinery parts.
  - 2.4. List of replacement parts, with references.
  - 2.5. Recommended procedures for testing equipment.

Ω End of Section

## N91: External signage and interpretation

### System performance

#### 205 Design of signage systems

---

1. **Description:** All signage
2. **Design:** Complete detailed design and submit before commencing work.
3. **Proposals:** Submit drawings, schedules, technical information, calculations and manufacturer's literature before commencing work.

#### 210 External signage generally

---

1. **Signage systems generally:** Complete to BS 559, including components, inserts, accessories and fixings necessary to complete the system.
2. **External signage:** To BS 559, clause 6.1.
3. **Content:** Signs including facing information, components, inserts, accessories and fixings necessary to complete the system.
4. **Geometric shapes, colours and layout:** To BS 8501 and ISO 7001.
5. **Wind loads:** To BS EN 1991-1-4.

#### 215 Design life

---

1. **Description:** Of car park signage
2. **Duration:** 7 years
  - 2.1. Subject to reasonable wear and tear.
3. **Environment:** Car Park
4. **Condition of use:** Subject to regular maintenance.

#### 220 Safety signage requirements

---

1. **Description:** Prohibition
2. **General:** To relevant parts of BS ISO 3864-1.
3. **Safety meaning:** To BS ISO 3864-1.
4. **Geometric shapes, colours and layout:** To BS ISO 3864-1 and BS ISO 3864-4.
5. **Water safety:** To BS ISO 20712-1.
6. **Escape route:** To BS ISO 16069.

#### 220A Safety signage requirements

---

1. **Description:** Danger
2. **General:** To relevant parts of BS ISO 3864-1.
3. **Safety meaning:** To BS ISO 3864-1.
4. **Geometric shapes, colours and layout:** To BS ISO 3864-1 and BS ISO 3864-4.
5. **Water safety:** To BS ISO 20712-1.
6. **Escape route:** To BS ISO 16069.

#### 230 Accessibility

---

1. **Design standard for disabled users:** In accordance with BS 8300.
2. **Geometric shapes, colours and layout:** To BS ISO 3864-1 and BS 8501.
  - 2.1. **Font:** Helvetica medium.

### 235 Electrical requirements for illuminated signs

---

1. **Electrical requirements for illumination:** To BS 559, section 7.

## Products

### 305 Signage products generally

---

1. **Materials:** To BS 559.
2. **Colorimetric and photometric properties:** To BS ISO 3864-4.
3. **Fabricated letters:** To BS 559, clause 6.6.
4. **Fixings:** To BS 559, clause 6.11 and section Z12.

### 310 Posts for external signs

---

1. **Description:** Car Park, dda bridge and bicycle shelter
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Material:** Aluminium porthole extruded tubes to BS EN 755-8 grade 6063-T4
4. **Size:** TBC
5. **Finish:** Powder coated as section Z31
6. **Colour:** Grey
7. **Base:** None
8. **Method of setting post to ground or base:** Contractor's choice

## Fabrication

### 505 Signage samples

---

1. **Sign type:** All sign types
  - 1.1. **Action:** Submit labelled samples.
    - 1.1.1. **Timing:** 2 weeks prior to
  - 1.2. **Conformity:** Retain samples on site for the duration of the contract or until instructed to remove.
  - 1.3. **Delivered product:** To conform with labelled samples.

### 565 Plaque/ wall-mounted sign

---

1. **Description:** For company logo
2. **Manufacturer:** Submit proposals
  - 2.1. **Product reference:** Submit proposals
3. **Material:** Aluminium
  - 3.1. **Finish:** Polyester powder coated as section Z31
  - 3.2. **Background colour:** TBC/ Contrasting with lettering
4. **Layout and dimensions:** TBC
  - 4.1. **Content:** Submit proposals
  - 4.2. **Lettering**
    - 4.2.1. **Manufacturing process:** Engraved
    - 4.2.2. **Font:** Helvetica medium
    - 4.2.3. **Size:** Manufacturer's standard range
    - 4.2.4. **Colours:** TBC/ Contrasting with background

- 4.2.5. **Language:** English and Welsh
- 4.3. **Symbols and graphics:** Manufacturer's standard range
  - 4.3.1. **Manufacturing process:** Manufacturer's standard
  - 4.3.2. **Size:** Manufacturer's standard range
  - 4.3.3. **Colours:** Manufacturer's standard range
- 4.4. **Bespoke artwork:** Artwork to be supplied by CHRT
  - 4.4.1. **Manufacturing process:** Manufacturer's standard
- 5. **Method of fixing:** Wall-mounted, screw-fixed
- 6. **Fixing accessories:** Concealed, vandal proof fixings
- 7. **Additional requirements:** None

## Execution/ erection/ installation

### 605 Method of fixing signs

---

1. **Description:** Safety signage
2. Method of fixing Contractor's choice, easily visible.

### 610 Fixing signs generally

---

1. **Generally:** Where not specified precisely, select methods of jointing and fixing and types, sizes and spacings of fasteners in compliance with section Z20.
2. **Installation:** To BS 559.
  - 2.1. Secure, plumb and level.
3. **Strength of fasteners:** Sufficient to support all live and dead loads.
4. **Fasteners and/ or adhesives:** As section Z20.
5. **Fasteners for external signs:** Corrosion resistant material or with a corrosion resistant finish. Isolate dissimilar metals to avoid electrolytic corrosion.
6. **Fixings showing on surface of sign:** Must not detract from the message being displayed.
7. **Temporary support:** Do not subject members to non-design loadings.
8. Protection of users
  - 8.1. Fasteners for signs must not have sharp edges or protrusions that would cause injury to users.
  - 8.2. Fasteners for tactile/ Braille signs must not have protrusions that would cause confusion to users.

## Completion

### 905 Inspection of signs

---

1. **Standard for timber structures:** In accordance with BS EN 1995-1-1.
2. **Timing:** Give reasonable notice before covering up
3. **Period of notice (minimum):** Three working days.
4. **Maintenance inspection:** Check and tighten fixings 6-8 weeks after completion of structure.
5. **Access:** Provide access for inspection and maintenance of luminaires and other technologies.

### 920 Documentation

---

1. Submit
  - 1.1. Copies of structural design calculations/ test reports.
  - 1.2. General product information.

- 1.3. Installation information.
  - 1.4. Inspection and maintenance reports.
  - 1.5. Manufacturer's maintenance instructions.
  - 1.6. Guarantees, warranties, test certificates, record schedules and log books.
  2. **Number of copies:** Three
  3. **Submission:** Two weeks prior to date when principal contractor expects work to be complete
- Ω End of Section

## P10: Sundry insulation / proofing work

### Clauses

#### 1 Sundry insulation/ proofing work

---

### Types of insulation

#### 140A Insulation fitted at rafter level

---

1. Replacement pitched roof & modern dormers
2. **Manufacturer:** NBT Pavatherm
  - 2.1. **Product reference:** Pavaflex
3. **Location:** Between rafters
4. **Material:** Wood wool to BS EN 13168
5. **Facing:** Not required
6. **Recycled content:** Not applicable
7. **Thickness:** 150 mm
8. **Installation requirements:**
  - 8.1. **General:** Insulation to be friction fitted between rafters with no gaps.
  - 8.2. **Joints:** Butted, no gaps.
  - 8.3. **Fasteners:** Used where necessary to retain insulation and/ or prevent slumping as manufacturers recommendations
  - 8.4. **Air space above insulation:** Not restricted.
  - 8.5. **Eaves ventilation:** Unobstructed.

#### 141 Insulation fitted at rafter level

---

1. Traditional dormers
2. **Manufacturer:** Kingspan Insulation.
  - 2.1. **Web:** [www.kingspaninsulation.co.uk](http://www.kingspaninsulation.co.uk).
  - 2.2. **Email:** [info@kingspaninsulation.co.uk](mailto:info@kingspaninsulation.co.uk).
  - 2.3. **Tel:** +44 (0)1544 388601.
  - 2.4. **Product reference:** Kingspan Kooltherm® K7 Pitched Roof Board
3. **Location:** [Between rafters].
4. **Insulation thickness:** 125
5. **Installation requirements:**
  - 5.1. **General:** Insulation to be friction fitted between rafters with no gaps.
  - 5.2. **Joints:** Butted, no gaps.
  - 5.3. **Fasteners:** Used where necessary to retain insulation and/ or prevent slumping.
  - 5.4. **Vapour control facing (if specified):** Fit insulation with facing on warm side. Staple overlap (if provided) to underside of rafters; tape joints between adjacent overlaps using vapour impermeable adhesive tape.
  - 5.5. **Air space above insulation:** Not restricted.
  - 5.6. **Eaves ventilation:** Unobstructed.

#### 149A Insulation fixed above rafters

---

1. Replacement pitched roof
2. **Manufacturer:** NBT Pavatherm

- 2.1. **Product reference:** NBT Pavatherm plus
3. **Thickness:** 80
4. **Number of layers:** One
5. **Installation requirements:**
  - 5.1. **Fixing:** Secure to top of rafters, orientation of insulation board laid to manufacturers recommendations.
    - 5.1.1. **Fixing type & centres:** as recommended by insulation manufacturer
  - 5.2. **Joints:** Butt as recommended by insulation manufacturer, with no gaps. Seal with vapour impermeable adhesive tape. Butt as recommended by insulation manufacturer, with no gaps. Seal with vapour impermeable adhesive tape. For weather tightness seal the boards against the structure at all open joints, intersections, openings and penetrations and along all edges using NBT PAVATAPE + PAVABASE primer. As a thumb rule, tape all junctions where there's no T&G. T&G joints need not to be taped.
  - 5.3. **Air space above insulation:** 25mm and not restricted.
  - 5.4. **Eaves ventilation:** Unobstructed.

#### 150A Insulation fixed above rafters

---

1. Modern flat roof
2. **Manufacturer:** NBT Pavatherm
  - 2.1. **Product reference:** NBT Pavatherm plus
3. **Thickness:** 100
4. **Number of layers:** One
5. **Installation requirements:**
  - 5.1. **Fixing:** Secure to top of rafters, orientation of insulation board laid to manufacturers recommendations.
    - 5.1.1. **Fixing type & centres:** as recommended by insulation manufacturer
  - 5.2. **Joints:** Butt as recommended by insulation manufacturer, with no gaps. Seal with vapour impermeable adhesive tape. For weather tightness seal the boards against the structure at all open joints, intersections, openings and penetrations and along all edges using NBT PAVATAPE + PAVABASE primer. As a thumb rule, tape all junctions where there's no T&G. T&G joints need not to be taped.
  - 5.3. **Air space above insulation:** 50mm and not restricted.
  - 5.4. **Eaves ventilation:** Unobstructed.

#### 185A Soffit insulation

---

1. To new rear extension exposed floor
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Material:** Phenolic foam boards to BS EN 13166
4. **Thickness:** To achieve a U value of 0.22 W/m²K
5. **Facing:** to be confirmed
6. **Installation requirements:** to be confirmed
  - 6.1. **Joints:** to be confirmed
  - 6.2. **Fixing:** to be confirmed
    - 6.2.1. **Fasteners:** to be confirmed

#### 190A Insulated sheathing fitted to the face of studs

---

1. Third floor
2. **Location:** To face of studs through plywood sheathing

3. **Manufacturer:** Kingspan
  - 3.1. **Product reference:** Kooltherm K12 Framing Board
4. **Material:** Phenolic foam to BS EN 13166
  - 4.1. **Facing:** Metal Foil Laminate
5. **Recycled content:** Not applicable
6. **Thickness:** 60 mm
7. **Installation requirements:**
  - 7.1. **Joints:** Butted, no gaps.
  - 7.2. **Fasteners:** Use where necessary to retain insulation and prevent slumping. Type and quantity of fixing as required to take load of cladding, as recommended by cladding manufacturer.
  - 7.3. **Breather membrane:** Kingspan Nilvent to the outer face of insulation board secured in place using 38x50 treated softwood counter battens fixed through insulation into studs.

---

#### 192 Insulation fitted between studs

1. To new external walls third floor
2. **Location:** Insert Between studs
3. **Manufacturer:** NBT Pavatherm
  - 3.1. **Product reference:** PAVAFLEX
4. **Material:** Wood wool to BS EN 13168
  - 4.1. **Facing:** Not required
5. **Recycled content:** Not applicable
6. **Thickness:** 140mm & 100mm as shown on drawings
7. **Installation requirements:**
  - 7.1. **Joints:** Butted, no gaps.
  - 7.2. **Fasteners:** Use where necessary to retain insulation and/ or prevent slumping.

---

#### 221 Insulation slabs

1. **Manufacturer:** ROCKWOOL Ltd.
  - 1.1. **Web:** [www.rockwool.co.uk](http://www.rockwool.co.uk).
  - 1.2. **Email:** [info@rockwool.com](mailto:info@rockwool.com).
  - 1.3. **Tel:** +44 (0)1656 862621.
  - 1.4. **Product reference:** ROCKWOOL RW 3
2. **Thickness:** 60 mm
3. **Facing:** Plain, unfaced

---

#### 250A Insulation supported between floor joists

1. **Manufacturer:** ROCKWOOL Ltd.
  - 1.1. **Web:** [www.rockwool.co.uk](http://www.rockwool.co.uk).
  - 1.2. **Email:** [info@rockwool.com](mailto:info@rockwool.com).
  - 1.3. **Product reference:** Rockwool Flexi
2. **Dimensions:**
  - 2.1. **Thickness:** 140 mm
  - 2.2. **Width:** 600/400 mm
3. **Supports:** Contractors choice.
4. **Installation requirements:**
  - 4.1. **Joints:** Boards butted, no gaps.

5. **Length:** 1200 mm

---

**310 Vapour control layer**

---

1. **Description:** To timber studs
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Material:** 1000 gauge virgin polyethylene
4. **Minimum vapour resistance:** 250 MN s/g
5. **Installation requirements:**
  - 5.1. **Setting out:** Joints minimized.
  - 5.2. **Method of fixing:** Double sided sealant tape and staples at 250 mm centres maximum along all timber frames and supports to ensure membrane does not sag
  - 5.3. **Joints:** At supports only, lapped 150 mm minimum.
  - 5.4. **Openings:** Membrane fixed to reveals.
  - 5.5. **Joints and edges:** Sealed with double sided tape with vapour resistivity not less than the vapour control layer.
6. **Penetrations:** Sealed.
7. **Other requirements:** Moisture content of timber at time of fixing (maximum): 20%

---

**320 Breather membrane**

---

1. **Manufacturer:** Contractor's choice
  - 1.1. **Product reference:** Contractor's choice
2. **Installation requirements:**
  - 2.1. **Setting out:** Joints minimized. Membrane to form a continuous barrier to prevent water, snow and wind blown dust reaching the substrate.
  - 2.2. **Method of fixing:** Galvanized large head nails at 300 mm centres into timber studs
  - 2.3. **Joints:** Lapped 100 mm minimum horizontally and 150 mm minimum vertically.
  - 2.4. **Openings:** Membrane fixed to reveals.
  - 2.5. **Bottom edges:** Membrane lapped over flashings, sills, etc. to allow free drainage to the exterior.
3. **Penetrations:** Sealed.

---

**440A Fire protection**

---

1. **Manufacturer:** ROCKWOOL Ltd.
  - 1.1. **Web:** [www.rockwool.co.uk](http://www.rockwool.co.uk).
  - 1.2. **Email:** [info@rockwool.com](mailto:info@rockwool.com).
  - 1.3. **Product reference:** Rockwool Cavity Barrier
2. **Material:** Wired mineral wool with foil face
3. **Form:** Single layer 60 mm, foil faced Fire Barrier with overlapped joints
4. **Base fixing:** Wired

Ω End of Section

## P12: Fire stopping systems

### Clauses

2 To be read with preliminaries/ general conditions.

---

### General

#### 130 Fire stopping system to individual services penetrations

---

1. **Description:** Through separating walls
2. **Fire resistance:** As drawings 3510/GA/360,361 and 362
3. **Penetration seal:** Contractor's choice
  - 3.1. **Size:** To match wall thickness
4. **Capping sealant:** Contractor's choice
  - 4.1. **Colour:** Submit proposals

#### 160 Linear gap sealing

---

1. **Description:** At top of fire resisting walls and partitions
2. **Fire resistance:** As drawings 3510/GA/360,361 and 362
3. **Gap width or height (nominal):** may vary, allow 25mm
4. **Gap filler:** Contractor's choice
5. **Capping sealant:** Contractor's choice
  - 5.1. **Colour:** Submit proposals

### Execution

#### 620 Workmanship generally

---

1. **Gaps:** Seal gaps between building elements and services, to provide fire resistance and resist the passage of smoke.
2. **Adjacent surfaces:** Prevent overrun of sealant or mortar on to finished surfaces.

#### 650 Installing fire stop laminate

---

1. **Fitting of strips:** Compress strips and fit into gap, so that, as they decompress, the strips wedge themselves in the void.
2. **Shrink wrapping:** Do not remove
3. **Joints:**
  - 3.1. **Ends of strips:** Fit intumescent 'end piece' at both ends of run of stop laminate.
  - 3.2. **Joints between strips:** Fit two intumescent 'end pieces' at each butt joint.

#### 660 Applying intumescent foam

---

1. **New joints:** Remove builder's debris, mortar droppings, grease, and other contaminants.
2. **Old joints:** Clean and remove existing sealant from each joint.
3. **Priming:** Lightly moisten substrate with water.
4. **Application:** Fill joint to approximately half its depth and allow foam to expand to face of joint.
5. **Trimming:** Trim excess foam to give a neat, flush appearance

#### 670 Applying intumescent mortar

---

1. **Sequence:** Install mortar after services are permanently installed.

2. **Loose dust and combustible materials:** Remove from the opening.
3. **Shuttering:** Install suitable shuttering panels to the faces of the opening.
4. **Temperature:** Do not apply mortar when it could be damaged by frost.
5. **Powder:water ratio:** 1 kg:1.2-1.3 L
6. **Mortar cure:** Do not disturb mortar before final set has taken place.
7. **Shuttering:** Remove after mortar has cured.

#### 710 Installing mineral wool batts

---

1. **Installing batts:** Fit tight into void between the penetrating services and the surrounding construction to form a solid barrier.
  - 1.1. **Brackets:** as manufacturers recommendations
    - 1.1.1. **Bracket fixing:** as manufacturers recommendations
2. **Face of batts:** Flush with the surface of wall, floor or soffit.
3. **Joints between batts:** Close butt joints; seal with fire resisting sealant
4. **Gaps between services and barrier:** Seal with fire resisting sealant.

#### 730 Fixing pipe collar

---

1. **Collar fixing:** Contractor's choice
2. **Gap around collar:** Contractor's choice
3. **Length of wraps:** Project 50 mm from each side of the element

#### 740 Inserting sealant backing material

---

1. **Preparation:** Removed debris from service penetration.
2. **Installation:** Insert joint filler to full depth of joint leaving sufficient depth to apply sealant

#### 745 Applying sealants generally

---

1. **Application:** As section Z22.

### Completion

#### 910 Cleaning

---

1. **Masking tapes:** Remove.
2. **Cleaning:** Clean off splashes and droppings. Wipe down finishes.

#### 920 Inspection

---

1. **Notice for inspection (minimum):** 4 working days

Ω End of Section

## P20: Unframed isolated trims / skirtings / sundry items

### To be read with preliminaries/general conditions

#### 110 Softwood

---

1. **Description:** Generally
2. **Quality of wood and fixing:** To BS 1186-3.
  - 2.1. **Species:** Contractor's choice
  - 2.2. **Class:** 1
3. **Moisture content at time of fixing:** 9-13%
4. **Preservative treatment:** Not required
5. **Fire rating:** Not applicable
6. **Profile:** See drawings/schedules
  - 6.1. **Finished size:** As drawings/schedules
7. **Finish as delivered:** Prepared and primed as Section M60
8. **Fixing:** Plugged, screwed and pelleted at 600 centres

#### 120 Hardwood

---

1. **Description:** Generally
2. **Quality of wood and fixing:** To BS 1186-3.
  - 2.1. **Species:** Contractors choice
  - 2.2. **Class:** 1
3. **Moisture content at time of fixing:** 9-13%
4. **Preservative treatment:** Not required
5. **Fire rating:** Not applicable
6. **Profile:** See drawings/schedules
  - 6.1. **Finished size:** As drawings/schedules
7. **Finish as delivered:** Prepared and primed as section M60
8. **Fixing:** As drawings

#### 200 Medium density fibreboard

---

1. **Description:** Generally
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Standard:** To BS EN 622-5.
  - 3.1. **Type:** MDF.H
  - 3.2. **Formaldehyde class:** To BS EN 622-1, Class E1.
4. **Fire rating:** Not applicable
5. **Thickness:** as drawings/schedules
6. **Edges:** as drawings/schedules
7. **Finish:** Prepared and primed as section M60
8. **Recycled content:** Contractor's choice
9. **Support/ Fixing:** as drawings/schedule

#### 240 Plywood

---

1. **Description:** Internally

2. **Face ply species:** Contractor's choice
3. **Appearance class to BS EN 635:** Class I/II
4. **Bond quality to BS EN 314-2:** Class 1
5. **Fire rating:** Not applicable
6. **Thickness:** as drawings/schedule
7. **Edges:** as drawings/schedule
8. **Support/ Fixing:** as drawings/schedule

#### 240A Plywood

---

1. **Description:** Externally
2. **Face ply species:** Contractor's choice
3. **Appearance class to BS EN 635:** Class I/II
4. **Bond quality to BS EN 314-2:** Class 3
5. **Fire rating:** Not applicable
6. **Thickness:** as drawings/schedule
7. **Edges:** as drawings/schedule
8. **Support/ Fixing:** as drawings/schedule

#### 360A Notice board

---

1. Generally
2. **Manufacturer:** Forbo Nairn, P.O. Box 1, Kirkcaldy, Fife, KY1 2SB.Tel: 0800 0935 258 E-mail: info.flooring.uk@forbo.com
  - 2.1. **Product reference:** Bulletin Board
3. **Thickness:** 6mm
4. **Width:** 1220mm
5. **Fixing:** Contact adhesive, as recommended by the manufacturer

#### 410A Leg supports

---

1. **Description:** To office worktop
2. **Manufacturer:** Wickes Ltd., Rhosili Road, Brackmills Industrial Estate, Northampton, Northamptonshire,
3. **NN4 7JE (t):** 0844 892 2701.
  - 3.1. **Product reference:** Worktop support leg
  - 3.2. **Type/size:** 870mm
  - 3.3. **Finish:** Chrome.
  - 3.4. **Type/size:** [870mm] .
4. **Fixing:** Screwed to underside of worktop at 1200mm c/c max

#### 450A Proprietary

---

1. **Description:** Adjustable shelving
2. **Manufacturer:** Storage Solutions Limited, Unit 7 White Horse Business Park, Stanford in the Vale, Faringdon, Oxfordshire, SN7 8NY (Tel): 01367 711800 e-mail info@storagesolutions.co.uk
3. **Product reference:**
  - 3.1. **Uprights & brackets:** Genuine White Spur Twinslot 1220mm
  - 3.2. **Particleboard Shelf:** 220 x 12 mm faced and edged with white melamine.
4. **Fixing:**
  - 4.1. **Uprights:** screwed to wall at 450mm c/c's.

- 4.2. **Brackets:** clipped to uprights at 450mm c/c's and twice screwed to each shelf.

#### 510 Installation generally

---

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

Ω End of Section

## P21: Door / window ironmongery

### Pre-tender

#### 10 Quantities and locations

---

1. **Quantities and locations of ironmongery are:** in the door schedule
2. **Fixing:** As sections L10 and L20.

### General

#### 122 Ironmongery from single proprietary range

---

1. **Manufacturer:** Allgood plc.
  - 1.1. **Web:** www.allgood.co.uk.
  - 1.2. **Email:** info@allgood.co.uk.
  - 1.3. **Tel:** +44 (0)20 7387 9951.
  - 1.4. **Product reference:** Proprietary Single Range Ironmongery
2. **Type:** Modric
3. **Principal material:** Anodized aluminium

#### 170 Ironmongery for fire doors

---

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

#### 180 Strength class or category of duty for door ironmongery

---

1. **Requirement:** In accordance with DD 171, Medium duty.
2. **General:** Durability of ironmongery components to be compatible with stated category of duty of each door leaf.
  - 2.1. **Exclusions:** Ironmongery with specific duty or 'category of use' defined elsewhere.
  - 2.2. **Documentation:** Before placing orders with suppliers submit documentation showing product compliance with stated category of duty.

### Door hanging devices

#### 320 Door hinges

---

1. **Description:** For all internal timber doors
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Submit proposals
3. **Type:** Parliament
4. **Size:** As Required
5. **Material/ finish:** Satin stainless steel, grade 1.4301 (304)
6. **Other requirements:** None

## Window hanging devices

### 370 Window hinges

---

1. **Description:** To all new windows
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Type:** As schedule
4. **Size:** As drawings
5. **Material/ finish:** As schedule

## Door operating devices

### 410 Overhead door closers

---

1. **Description:** To all fire doors
2. **Standard:** To BS EN 1154.
  - 2.1. **Door closing devices to fire/ smoke control doors:** CE marked.
3. **Manufacturer:** Dormer
  - 3.1. **Product reference:** TS 91 over head door closer
4. **Type:** As schedule
5. **Power size:** Adjustable 2-6
6. **Other functions:** As schedule
7. **Casing finish:** As schedule
8. **Operational adjustment:**
  - 8.1. **Variable power:** Matched to size, weight and location of doors.
  - 8.2. **Latched doors:** Override latches and/ or door seals when fitted.
  - 8.3. **Unlatched doors:** Hold shut under normal working conditions.
  - 8.4. **Closing against smoke seals of fire doors:** Positive. No gaps.

### 412 Overhead door closers

---

1. Door type 10
2. **Manufacturer:** dormakaba.
  - 2.1. **Web:** [www.dormakaba.co.uk](http://www.dormakaba.co.uk).
  - 2.2. **Email:** [info.gb@dormakaba.com](mailto:info.gb@dormakaba.com).
  - 2.3. **Tel:** +44 (0)1462 477600.
  - 2.4. **Product reference:** RTS 85
3. **Size:** EN 5
4. **Finish:** TBC
5. **Pivot point:** 65 mm
6. **Spindle insert extension:** Standard
7. **Hold-open angle:** 90°
8. **Accessories:** As Required

## Door securing devices

### 515 Door locks

---

1. **Description:** To timber doors generally

2. **Standard:** To BS EN 12209.
3. **Manufacturer:** Assa Abloy
  - 3.1. **Product reference:** Submit proposals
4. **Type:** Cylinder mortice lock
5. **Backset:** As schedule
6. **Material/ finish:** Stainless steel faceplate
7. **Keying:** In master keyed suite

## Window furniture

### 900 Casement handles

---

1. **Description:** To all side hung timber casements
2. **Manufacturer:** Kirkpatrick Ironmongery
  - 2.1. **Product reference:** Bulb end casement fastener
3. **Type:** 1193
4. **Material/ finish:** Smooth black
5. **Features:** with hook plate for meeting styles

### 905 Casement stays

---

1. **Description:** To all side hung timber casements
2. **Manufacturer:** Kirkpatrick Ironmongery
  - 2.1. **Product reference:** 1078
3. **Type:** Sliding casement stay
4. **Size:** 279mm
5. **Material/ finish:** Smooth black
6. **Features:** None

### 906 Fanlight catch

---

1. **Description:** To all top hung timber casements
2. **Manufacturer:** Kirkpatrick Ironmongery
  - 2.1. **Product reference:** 3754
3. **Type:** Fanlight catch
4. **Size:** n/a
5. **Material/ finish:** Smooth black
6. **Features:** None

### 907A Restrictors

---

1. **Description:** To first floor casements
2. **Manufacturer:** Kirkpatrick Ironmongery
  - 2.1. **Product reference:** 5182
3. **Type:** Casement restrictor
4. **Size:** n/a
5. **Material/ finish:** White
6. **Features:** None

### 960 Weatherstrip to windows

---

1. **Description:** To all casement windows

2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Type:** Recessed Elastomeric compression strip in metal carrier
4. **Size:** As manufacturer's recommendations
5. **Material/ finish:** Colour as window

Ω End of Section

## P31: Holes, chases, covers and supports for services

### Products

#### 370 Access covers/ gratings for

---

1. **Description:** Mezzanine floor
2. **Manufacturer:** Howe Green Ltd, Marsh Lane, Ware, Herts, SG12 9QQ
  - 2.1. **Product reference:** Aluminium Multipart
3. **Covers/ Gratings:** Vinyl infill on ply
  - 3.1. **Sizes:** As drawings
  - 3.2. **Loading grade:** Pedestrian
4. **Frame/ Support/ Fixing:** Screwed to timber suspended floor
5. **Accessories:** Aluminium show edge with aluminium lifting blocks.

### Execution

#### 730A Installing access covers/ gratings and frames

---

1. **Horizontal positioning of frames:**
  - 1.1. Centred over openings.
  - 1.2. **Install square with joints in surrounding surfaces:** Required
2. **Vertical positioning of frames:**
  - 2.1. Level and married-in with levels of surrounding surfaces.

Ω End of Section

## Q10: Kerbs / edgings / channels / paving accessories

### Types of kerbs/ edgings/ channels

#### 110A Precast concrete splayed kerb

---

1. **Manufacturer:** Marshalls plc.
  - 1.1. **Web:** www.marshalls.co.uk.
  - 1.2. **Email:** info@marshalls.co.uk.
  - 1.3. **Product reference:** BS Standard Concrete Kerb, Straight, RK0400000
2. **Size:** 125 x 255 x 600 mm
3. **Special shapes:** 45° Splayed, Straight
4. **Colour:** Natural

#### 110B Precast concrete splayed drop kerb

---

1. Left hand
2. **Manufacturer:** Marshalls plc.
  - 2.1. **Web:** www.marshalls.co.uk.
  - 2.2. **Email:** info@marshalls.co.uk.
  - 2.3. **Product reference:** BS Standard Concrete Kerb, Drop Kerb Left, RK4400010.
  - 2.4. **Size:** 125x 255/150 x 914 mm
3. **Special shapes:** 45° Splayed

#### 110C Precast concrete splayed drop kerb

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1. Right hand
2. **Manufacturer:** Marshalls plc.
  - 2.1. **Web:** www.marshalls.co.uk.
  - 2.2. **Email:** info@marshalls.co.uk.
  - 2.3. **Product reference:** BS Standard Concrete Kerb, Drop Kerb Right, RK4400020
  - 2.4. **Size:** 125 x 255/150 x 914 mm
3. **Special shapes:** 45° Splayed Straight

#### 110D Precast concrete bullnosed kerb

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1. **Manufacturer:** Marshalls plc.
  - 1.1. **Web:** www.marshalls.co.uk.
  - 1.2. **Email:** info@marshalls.co.uk.
  - 1.3. **Product reference:** BS Standard Concrete Kerb, Bullnosed RK0550000.
  - 1.4. **Size:** 125 x 150 x 914 mm
2. **Special shapes:** Bullnosed Straight

#### 110E Precast concrete splayed radius kerb

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1. **Manufacturer:** Marshalls plc.
  - 1.1. **Web:** www.marshalls.co.uk.
  - 1.2. **Email:** info@marshalls.co.uk.
  - 1.3. **Product reference:** BS Standard Concrete Kerb, Radius Splayed, RK0405100.
  - 1.4. **Size:** 125 x 255 x 780 mm, Radius 1000mm
2. **Special shapes:** 45° Splayed Radius

### 110F Precast concrete dished channel

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1. **Manufacturer:** Marshalls plc.
  - 1.1. **Web:** www.marshalls.co.uk.
  - 1.2. **Email:** info@marshalls.co.uk.
  - 1.3. **Product reference:** BS Standard Concrete Kerb, Dished Channel, RK3550000.
  - 1.4. **Size:** 440 x 150 x 914 mm
2. **Special shapes:** Dished Channel

### 110G Precast concrete drop kerb

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1. **Manufacturer:** Marshalls plc.
  - 1.1. **Web:** www.marshalls.co.uk.
  - 1.2. **Email:** info@marshalls.co.uk.
  - 1.3. **Product reference:** BS Standard Concrete Kerb, Radius Splayed, RK0405100.
  - 1.4. **Size:** 125 x 150 x 914 mm, Radius 1000mm
2. **Special shapes:** Dropped Kerb

## Road/ paving accessories/ marking/ demarcation

### 395A Preformed thermoplastic road marking

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1. **Manufacturer:** Adbruf Ltd.
  - 1.1. **Web:** www.adbruf.com.
  - 1.2. **Email:** sales@adbruf.com.
  - 1.3. **Product reference:** Preform
2. **Colour:** White

## Laying

### 510 Laying kerbs, edgings and channels

---

1. **Cutting:** Neat, accurate and without spalling. Form neat junctions.
  - 1.1. **Long units (450 mm and over) minimum length after cutting:** 300 mm.
  - 1.2. **Short units minimum length after cutting:** The lower of one third of their original length or 50 mm.
2. **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.
3. **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.

### 530 Concrete for foundations, races and haunching

---

1. **Standard:** To BS 8500-2.
2. **Designated mix:** Not less than GEN0 or Standard mix ST1.
3. **Workability:** Very low.

### 540 Cement mortar bedding

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1. **General:** To section Z21.
2. **Mix: (Portland cement:sand): 1:3.**
  - 2.1. **Portland cement:** Class CEM I 42.5 to BS EN 197-1.
  - 2.2. **Sand:** to BS EN 12620, grade 0/4 or 0/2 (MP).

3. **Bed thickness:** 12-40 mm.

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#### **547 Bedding/ backing of units on fresh concrete races**

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1. **Standard:** To BS 7533-6.

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#### **570 Channels**

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1. **Installation:** To an even gradient, without ponding or backfall.
2. **Lowest points of channels:** 6 mm above drainage outlets.

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#### **580 Drainage channel systems**

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1. **Installation:** To an even gradient, without ponding or backfall. Commence laying from outlets.
2. **Silt and debris:** Removed from entire system immediately before handover.
3. **Washing and detritus:** Safely disposed without discharging into sewers or watercourses.

---

#### **590 Drainage channel systems with built in fall**

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1. **Installation:** Top of channels level, installed in correct sequence to form an even gradient without ponding or backfall. Commence laying from outlets.
2. **Silt and debris:** Removed from entire system immediately before handover.
3. **Washings and detritus:** Safely disposed without discharging into sewers or watercourses.

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#### **620 Accuracy**

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1. **Deviations (maximum):**
  - 1.1. **Level:**  $\pm 6$  mm.
  - 1.2. **Horizontal and vertical alignment:** 3 mm in 3 m.

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#### **625 Regularity of paved surfaces**

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1. **Maximum undulation of (non-tactile) paving surface:** 3 mm.
  - 1.1. **Method of measurement:** Under a 1 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface).
2. **Difference in level between adjacent units (maximum):**
  - 2.1. **Joints flush with the surface:** Twice the joint width (with 5 mm max difference in level).
  - 2.2. **Recessed, filled joints:** 2 mm.
    - 2.2.1. **Recess depth (maximum):** 5 mm.
  - 2.3. **Unfilled joints:** 2 mm.
3. **Sudden irregularities:** Not permitted.

---

#### **630 Narrow mortar joints**

---

1. **Jointing:** Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled, tightly butted and surplus mortar removed immediately.
  - 1.1. **Joint width:** 3 mm.

Ω End of Section

## Q20: Granular sub-bases to roads / pavings

**To be read with preliminaries/ general conditions.**

### 110 Thicknesses of sub-base/ subgrade improvement layers

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1. **Thicknesses:** See sections:
  - 1.1. Q22 Coated macadam/ asphalt roads/ pavings

### 130 Herbicides

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1. **Type:** Contractor's choice
2. **Application: To subgrade of:** all surfaces generally

### 140 Excavation of subgrades

---

1. **Final excavation to formation/ subformation level:** Carry out immediately before compaction of subgrade.
2. **Soft spots and voids:** Give notice.
3. **Old drainage and service trenches:** Give notice
4. **Wet conditions:** Do not excavate or compact when the subgrade may be damaged or destabilized.

### 145 Preparation and compaction of subgrades

---

1. **Timing:** Immediately before placing sub-base.
2. **Soft or damaged areas:** Obtain instructions
3. **Compaction:** Thoroughly, by roller or other suitable means, adequate to resist subsidence or deformation of the subgrade during construction and of the completed roads/ pavings when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

### 150 Subgrades for vehicular areas

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1. **Preparation and treatment:** To Highways Agency 'Specification for highway works', clauses 616 and 617.

### 211 Granular material

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1. **Quality:** Of a known suitability for use in sub-base, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111 or a resistance to fragmentation of LA50 for the Los Angeles test to BS EN 1097-2, and in any one layer only one of the following:
  - 1.1. Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
  - 1.2. Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
  - 1.3. Gravel or hoggins with not more clay content than is required to bind the material together, and with no large lumps of clay.
  - 1.4. Natural gravel.
  - 1.5. Natural sand.
2. **Filling:** Spread and levelled in 150 mm maximum layers, each layer thoroughly compacted.

### 215 Coarse graded aggregate for permeable paving

---

1. **Description:** Unbound
2. **Material:** Hard crushed rock, locally sourced
  - 2.1. **Standard: To BS EN 13242:** and paving manufacturers recommendations

- 2.2. **Aggregate size:** 4/20
- 2.3. **Grading:** As Interpave, table 12
- 2.4. **Other properties:** As Interpave 'Guide to the design, construction and maintenance of concrete block permeable pavements edition 6
- 3. **Testing:**
  - 3.1. **Materials:** Provide suppliers certificates for grading and specified properties
  - 3.2. **Sub-base:** Not required
- 4. **Laying:** Lay in 100 - 150 mm layers and lightly compact to ensure maximum density and aggregate interlock without crushing individual particles or reducing the void ratio
- 5. **Protection:** Prevent damage by traffic and contamination by mud and soil.

### 230 Placing granular material generally

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- 1. **Preparation:** Loose soil, rubbish and standing water removed.
- 2. **Structures, membranes and buried services:** Ensure stability and avoid damage.

### 241 Laying granular sub-bases for vehicular areas

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- 1. **Proposals:** Well in advance of starting work submit details of:
  - 1.1. Maximum depth of each compacted layer.
  - 1.2. Type of plant.
  - 1.3. Minimum number of passes per layer.
- 2. **General:** Spread and levelled in layers. As soon as possible thereafter compact each layer.
- 3. **At drainage fittings, inspection covers, perimeters and where local excavation and backfilling has taken place:** Take particular care to compact fully.
- 4. **Defective areas:** Remove loose, segregated or otherwise defective areas to the full thickness of the layer and lay and compact new material.
- 5. **Sub-base surface after compaction and immediately before overlaying:** Uniformly well closed and free from loose material, cracks, ruts or hollows.

### 250 Laying granular sub-bases

---

- 1. **Description:** Pedestrian areas
- 2. **General:** Spread and levelled.
- 3. **Compaction:**
  - 3.1. **Timing:** As soon as possible after laying.
  - 3.2. **Method:** By roller or other suitable means, adequate to resist subsidence or deformation of the sub-base during construction and of the completed paving when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

### 310 Accuracy

---

- 1. **Permissible deviation from required levels, falls and cambers (maximum):**
  - 1.1. **Subgrades:**
    - 1.1.1. **Roads and parking areas:** +20 -30 mm.
    - 1.1.2. **Footways and recreation areas:** ± 20 mm.
  - 1.2. **Sub-bases:**
    - 1.2.1. **Roads and parking areas:** +20 -30
  - 1.3. **Footways and recreation areas:** ± 20 mm

### 320 Surfaces to receive sand bedding for paving

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- 1. **Description:** Beneath car park permeable paving

2. **Blind surface:** As necessary before compaction to ensure that surface is tight and dense enough to prevent laying course sand being lost into it during construction or use.
3. **Material:** Course Sand

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**330 Cold weather working**

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1. **Frozen materials:** Do not use.
2. **Freezing conditions:** Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.

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**340 Protection**

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1. **Sub-bases:** As soon as practicable, cover with subsequent layers, specified elsewhere.
2. **Subgrades and sub-bases:** Prevent degradation by construction traffic, construction operations and inclement weather.

Ω End of Section

## Q23: Gravel / hoggin / woodchip / resin bound roads / pavings / overlays

### Types of surfacing

#### 120 Hard gravel

---

1. **Description:** To gravel terrace
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Granular sub-base:** Contractor's choice
  - 3.1. **Compacted thickness:** 100 -150 mm
4. **Surface course:** Angular gravel free from clay, with sufficient voids for drainage.
  - 4.1. **Type:** Local rock
  - 4.2. **Source:** Locally sourced
  - 4.3. **Colour:** Contractor's choice
  - 4.4. **Size:** Graded 10 - 20 mm
  - 4.5. **Compacted thickness:** 100 mm
5. **Completion:** Compact to produce a firm, regular surface, stable in use.

### Laying

#### 350 Cold weather working

---

1. **Frozen materials:** Do not use.
2. **Freezing conditions:** Do not lay pavings.
3. **Cold bituminous surface dressings:** Do not apply when ambient temperature is below 10°C.
4. **Other dressings or overlays:** As manufacturers' recommendations.

Ω End of Section

## Q24: Interlocking brick / block roads / pavings

### Clauses

#### 2 To be read with preliminaries/ general conditions

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### Types of paving

#### 117A Aggregate

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1. **Manufacturer:** Marshalls plc.
  - 1.1. **Web:** www.marshalls.co.uk.
  - 1.2. **Email:** info@marshalls.co.uk.
  - 1.3. **Product reference:** Piora Laying Course Aggregate

#### 117B Aggregate

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1. **Manufacturer:** Marshalls plc.
  - 1.1. **Web:** www.marshalls.co.uk.
  - 1.2. **Email:** info@marshalls.co.uk.
  - 1.3. **Product reference:** Piora Sub-base Aggregate

#### 117C Stabilizing grid

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1. **Manufacturer:** Marshalls plc.
  - 1.1. **Web:** www.marshalls.co.uk.
  - 1.2. **Email:** info@marshalls.co.uk.
  - 1.3. **Product reference:** MG15 Grid

### Execution

#### 211 Colour banding

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1. **General:** Unless premixed by manufacturer, select blocks/ pavers/ setts vertically from at least: 4- 6 separate packs in rotation, to avoid colour banding.

#### 220 Samples

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1. **General:** Before ordering, submit samples of: permeable paving flagsblocks/ pavers/ setts, that are representative of colour and appearance.

#### 240 Adverse weather

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1. **General:** Do not use frozen materials or lay bedding on frozen or frost covered sub-bases.

#### 490 Laying permeable paving

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1. **General:** in accordance with BS 7533-3. Consult manufacturer

#### 505 Regularity of paved surfaces

---

1. **Maximum undulations in the surface of pavings (except tactile paving surfaces) under a 1 m straight edge placed anywhere on the surface (where appropriate in relation to the geometry of the surface):** 3 mm.
2. **Joints between paving units or utility access covers:**
  - 2.1. **Joints flush with the surface:** difference in level between adjacent units to be no more than twice the joint width (with a 5 mm max difference in level).

- 2.2. **Recessed, filled joints:** difference in level between adjacent units to be no greater than 2 mm; the recess to be no deeper than 5 mm.
- 2.3. **Unfilled joints:** difference in level between adjacent units to be no greater than 2 mm.
3. **Sudden irregularities:** Not permitted.

## Completion

### 615 Completion of paving

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1. **Final compaction of the surface course:** In accordance with BS 7533-3.
2. **Vacuum cleaning machines:** Not allowed.

Ω End of Section

## Q25: Slab / brick / sett / cobble pavings

### Products

#### 315B Permeable concrete flags

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1. **Description:** Permeable.
2. **Standard:** To BS EN 1339.
  - 2.1. **Manufacturer:** Marshalls
    - 2.1.1. **Product reference:** FL7440100, FL7440300, FL7442100 and FL7442300
3. **Colour:** Natural and Charcoal.
  - 3.1. **Finish:** Exposed aggregate
  - 3.2. **Nominal sizes:** 200x 400, 400 x 400 mm
4. **Arrises:** Square
5. **Bedded:** Permeable sand screed

#### 320A Tactile flags and slabs

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1. Directional guidance paving
2. **Manufacturer:** Marshalls plc.
  - 2.1. **Web:** [www.marshalls.co.uk](http://www.marshalls.co.uk).
  - 2.2. **Email:** [info@marshalls.co.uk](mailto:info@marshalls.co.uk).
  - 2.3. **Product reference:** Directional Guidance Paving
3. **Sizes:** 450 x 450 x 50 mm
  - 3.1. To be used in accordance with The Disabled Persons Act 1981 and DDA 2004, installed in a single run 450mm wide.
4. **Colour:** Buff
5. **Bedded:** Permeable sand screed

#### 320B Tactile flags and slabs

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1. Hazard warning paving
2. **Manufacturer:** Marshalls plc.
  - 2.1. **Web:** [www.marshalls.co.uk](http://www.marshalls.co.uk).
  - 2.2. **Email:** [info@marshalls.co.uk](mailto:info@marshalls.co.uk).
  - 2.3. **Product reference:** Hazard Warning Paving
3. **Sizes:** 450 x 450 x 50 mm
  - 3.1. To be used in accordance with The Disabled Persons Act 1981 and DDA 2004 this unit is installed at 90 degrees and 400mm away from the hazard.
4. **Colour:** Buff
5. **Bedded:** Permeable sand screed

#### 375 Sand/ fine aggregate for site mixed mortar

---

1. **Description:** To permeable paving
2. **Standard:** To BS EN 12620, designations:
  - 2.1. **Flag and slab paving laying course:** Consult manufacturer
  - 2.2. **Flag and slab paving jointing:** Consult manufacturer
  - 2.3. **Concrete sett paving laying course and jointing:** Consult manufacturer
  - 2.4. **Rigid brick paving laying course and jointing:** Consult manufacturer

## 2.5. Precast concrete and grass or gravel paving: Consult manufacturer

### 390 Sand for flexible laying course and jointing of concrete flag paving

---

1. **Description:** Beneath permeable paving flags
2. **Standard:** To BS 7533-4, unbound construction laying course and jointing material.
3. **Purity:** Free from deleterious salts, contaminants, lime and cement.
4. **Procurement:** Obtain from one source and ensure consistent grading.

## Execution

### 620 Adverse weather

---

1. **General:**
  - 1.1. **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.
  - 1.2. **Frozen materials:** Do not use. Do not lay bedding on frozen or frost covered bases.
2. **Paving with mortar joints and/ or bedding:**
  - 2.1. Protect from frost damage, rapid drying out and saturation until mortar has hardened.
3. **Paving laid and jointed in sand:**
  - 3.1. **Stockpiled bedding sand:** Protect from saturation.
  - 3.2. **Exposed areas of sand bedding and uncompacted areas of sand bedded paving:** Protect from heavy rainfall.
  - 3.3. **Saturated sand bedding:** Remove and replace or allow to dry before proceeding.
  - 3.4. **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

---

1. **Appearance:** Smooth and even with regular joints and accurate to line, level and profile.
2. **Falls:** To prevent ponding.
3. **Bedding of paving units:** Firm so that rocking or subsidence does not occur or develop.
  - 3.1. **Bedding/ Laying course:** Consistently and accurately graded, spread and compacted to produce uniform thickness and support for paving units.
4. **Slopes:** Lay paving units upwards from the bottom of slopes.
5. **Paving units:** Free of mortar and sand stains.
6. **Cutting:** Cut units cleanly and accurately, without spalling, to give neat junctions with edgings and adjoining finishes.

### 630 Levels of paving

---

1. **Permissible deviation from specified levels:**
  - 1.1. **Generally:** ± 6 mm.
2. **Height of finished paving above features:**
  - 2.1. **At gullies:** +6 to +10 mm.
  - 2.2. **At drainage channels and kerbs:** +3 to +6 mm.

### 635 Regularity – to BS 7533

---

1. **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):**

- 1.1. **Precast concrete paving blocks and clay pavers for flexible pavements: Maximum variation in gap under a 3 m straight edge: 10 mm; difference in level between adjacent paving units (maximum): 2 mm.**
- 1.2. **Precast concrete flags or natural stone slabs: 3 mm; Difference in level between adjacent paving units (maximum): 2 mm.**
2. **Sudden irregularities:** Not permitted.

#### 645 Protection

---

1. **Cleanliness:** Keep paving clean and free from mortar droppings, oil and other materials likely to cause staining.
2. **Materials storage:** Do not overload pavings with stacks of materials.
3. **Handling:** Do not damage paving unit corners, arrises, or previously laid paving.
4. **Mortar bedded pavings:** Keep free from traffic after laying:
  - 4.1. **Pedestrian traffic (minimum):** 7 days
  - 4.2. **Vehicular traffic (minimum):** 14 days
5. **Access:** Restrict access to paved areas to prevent damage from site traffic and plant.

#### 650 Cementitious bases and sub-bases

---

1. **General:** Protect from moisture loss, if not covered by another pavement course within 2 hours of completion.

#### 655 Condition of sub-bases/ bases before spreading laying course

---

1. **Trenches and excavation of soft or loose spots in subgrade:** Fill and thoroughly compact.
2. **Granular surfaces:** Lay and compact so as to be sound, clean, smooth and close-textured enough to prevent migration of bedding/ laying course materials into the sub-base during compaction and use, free from movement under compaction plant and free from compaction ridges, cracks and loose material.
3. **Prepared existing and new bound bases (roadbases):** Sound, clean, free from rutting or major cracking. Remove sharp stones, projections and debris.
4. **Sub-base/ Roadbase level tolerances:** To BS 7533-7, Annex A.
5. **Levels and falls:** Accurate and within the specified tolerances.
6. **Drainage outlets:** Within 0-10 mm of the required finished level.
7. **Features in sand bedded paving (including mortar bedded restraints and drainage ironwork):** Complete to required levels; adequately bed and haunch in mortar.
8. **Sub-bases containing cement/ hydraulic binder:** Cure for minimum times specified in BS 7533-4.

#### 710 Laying flag and slab paving - sand laying course and jointing

---

1. **Standard:** In accordance with BS 7533-4.
2. **Flag installation and cutting:** To Interpave 'Concrete flag paving'.
3. **Laying course:**
  - 3.1. **Nominal thickness after compaction:** 10 mm
4. **Joint width:** 2-5 mm.

#### 785 Tooled joints in mortar bedded units

---

1. **Joints:** Completely filled with bedding mortar as work proceeds.
  - 1.1. **Joint width:** 10 mm
  - 1.2. **Finish:** Neat flush profile.

## Completion

### **915 Completion of paving with dry sand or fine aggregate filled joints**

---

1. **Sand dressing:** Not to be disturbed for first 3 - 6 months
2. **Final compaction of the surface course:** In accordance with BS 7533-3.
3. **Vacuum cleaning machines:** Not allowed.

Ω End of Section

## Q40: Fencing

### Clauses

2 To be read with preliminaries/ general conditions.

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### Fencing systems

#### 340 Steel vertical bar fencing

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1. **Manufacturer:** Jacksons
  - 1.1. **Product reference:** Barbican Imperial
2. **Standard:** To BS 1722-9.
3. **Height:** 1800 mm
4. **Verticals:** 25mm CHS @ 130 mm centres. Pales cut at 45 degrees to form a point
5. **Centres of verticals:** 130 mm
6. **Posts:** 60 x 60 mm
  - 6.1. **Finish:** Hot dipped galvanized to BS EN 1461
    - 6.1.1. **Colour:** Manufacturer's standard
7. **Centres of posts (maximum):** 2.8 m.
8. **Method of setting posts/ stays/ legs:** Posts to be embedded 600mm with minimum 100mm concrete cover, intermediate supports in rammed earth
9. **Accessories:** none
10. **Conformity:** Submit manufacturer's and installer's certificates, to BS 1722-9.

### Execution

#### 710 Installation generally

---

1. **Set out and erect:**
  - 1.1. **Alignment:** Straight lines or smoothly flowing curves.
  - 1.2. **Tops of posts:** Following profile of the ground.
  - 1.3. **Setting posts:** Rigid, plumb and to specified depth, or greater where necessary to ensure adequate support.
  - 1.4. **Fixings:** All components securely fixed.

#### 715 Competence

---

1. **Operatives:** Contractors must employ competent operatives.
2. **Qualifications:** Submit certification of training.
  - 2.1. **NHSS Sector Scheme 2A sub categories:** (b)
  - 2.2. **NHSS Sector Scheme 2C sub categories:** Not required

#### 720 Setting posts in concrete

---

1. **Standard:** To BS 8500-2.
2. **Mix:** Designated concrete not less than GEN1 or Standard prescribed concrete not less than ST2.
3. **Admixtures:** Do not use.
4. **Holes:** Excavate neatly and with vertical sides.
5. **Filling:** Position post/ strut and fill hole with concrete to not less than the specified depth, well rammed as filling proceeds and consolidated.

6. **Backfilling of holes not completely filled with concrete:** Excavated material, well rammed and consolidated.

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**780 Making good, galvanized surfaces**

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1. **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.
2. **Thickness:** Apply sufficient material to provide a zinc coating at least equal in thickness to the original layer.

Ω End of Section

## Q41: Barriers / guardrails

### Types of barriers/ guardrails

#### 170 Vehicle safety fences – metal

---

1. **Description:** External works
2. **Standard:** To PD 6634-1.
3. **Type and reference:** To SE specification
4. **Manufacturer:** Contractor's choice
  - 4.1. **Product reference:** Contractor's choice
5. **Surface finish:** Powder coating as section Z31
  - 5.1. **Colour/ Texture:** RAL 9010/ matt
  - 5.2. **Minimum film thickness:** 60 micrometres
6. **Fixings/ Foundations:** Caged foundation bolts grouted into prepared holes
7. **Testing:** Fence post and foundation testing Supervised.

### Performance/ inspection/ testing

#### 325 Testing vehicle fence post foundations

---

1. **Test post foundations:** Install after completion of finished ground.
  - 1.1. **Locations:** Every fourth post
2. **Loading tests:** Make available a vehicle of minimum 5 tonnes while tests are being carried out under supervision of the Civil or Structural Engineer.
  - 2.1. **Completion:** Remove test posts and foundations and make good finished ground.

### Installation

#### 405A Competence

---

1. **Operatives:** Contractors must employ competent operatives.

#### 420 Alignment

---

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

#### 450 Erection of vehicle safety fences

---

1. **Standard:** To BS 7669-3.
2. **Erector requirements**
  - 2.1. Operate Quality Management System, certified by a United Kingdom Accreditation Service (UKAS) independent laboratory.
  - 2.2. Comply with the 'Sector scheme 2B Supply, installation, maintenance and repair of road restraint systems'.
  - 2.3. Hold a valid registration card, issued by the National Fencing Training Authority, for the types of fences to be erected.
3. **Completion:** Before handover, check all bolts and fixings for tightness without overstressing members.

**480 Concrete foundations for posts**

---

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

Ω End of Section

## Q50: Site / street furniture / equipment

### Site and street furniture

#### 210 Cycle stands

---

1. **Manufacturer:** Velopa/Autopa
  - 1.1. **Product reference:** Clifton Cycle Stand, Ragged 138515135.
2. **Type:** Rack of 4.
3. **Material:** Steel.
  - 3.1. **Finish:** Galvanized.
  - 3.2. **Colour:** Colour coated black
4. **Accessories:** none.
5. **Method of fixing:** Set in concrete.

#### 240 Litter bins

---

1. **Manufacturer:** Marshalls plc.
  - 1.1. **Product reference:** Heritage Litter Bin.
2. **Material:** Ferrocast polyurethane.
  - 2.1. **Finish:** Black with gold lettering.
  - 2.2. **Colour:** Black.
3. **Accessories/ Special requirements:** Antigraffiti coating.
4. **Method of fixing:** Bolted to ground level mounting plate.

#### 242A Cigarette bin

---

1. **Manufacturer:** Marshalls Street Furniture.
  - 1.1. **Web:** [www.marshalls.co.uk/streetfurniture](http://www.marshalls.co.uk/streetfurniture).
  - 1.2. **Email:** [msf.sales@marshalls.co.uk](mailto:msf.sales@marshalls.co.uk).
  - 1.3. **Product reference:** Ollerton Cigarette and Litter Bin
2. **Material:** Polyester powder coated steel.

### Installation

#### 510 Concrete foundations generally

---

1. **Standard:** To 8500-2.
2. **Mix:** Designated concrete not less than GEN1 or standard prescribed concrete not less than ST2.
3. **Admixtures:** Do not use.
4. **Foundation holes:** Neat vertical sides.
5. **Depth of foundations, bedding, haunching:** Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.

#### 515 Setting components in concrete

---

1. **Holes:** As small as possible.
2. **Components:** Accurately positioned and securely supported.
3. **Concrete fill:** Fully compacted as filling proceeds.
4. **Concrete foundations exposed to view:** Compacted until air bubbles cease to appear on the upper surface, then weathered to shed water and trowelled smooth.
5. **Temporary component support:** Maintain undisturbed for minimum 48 hours.

## Q55: External decks, boardwalks and bridges

### General

#### 140 Hard landscaping materials specification

---

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

### Products

#### 390 Guarding

---

1. **Description:**
2. **Manufacturer:**
  - 2.1. **Product reference:**
3. **Height:**
4. **Material:**
  - 4.1. **Treatment:**
5. **Finish:**
  - 5.1. **Colour:**
6. **Handrail:**
  - 6.1. **Material and finish:**
  - 6.2. **Cross-section:**
  - 6.3. **Height (to upper surface of handrail):**
7. **Lower handrail:**
  - 7.1. **Material and finish:**
  - 7.2. **Cross-section:**
  - 7.3. **Height (to upper surface of handrail):**
8. **Accessories:**

#### 395 Support pedestals

---

1. **Fasteners and methods of fixing:** As section Z20.
2. **Structural members:** Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.
3. **Temporary support:** Do not use stairs, walkways or balustrades as temporary support or strutting for other work.

## Fabrication

### 510 Fabrication generally

---

1. **Design:**
2. **Shop drawings:**
3. **Structural calculations:**
4. **Frameworks:**
5. **Contact between dissimilar metals:**
6. **Fixings:**
7. **Temporary support:**

## Execution

### 610 Loading

---

1. **Standard:** To BS 8500-2.
2. **Mix:** Designated concrete not less than GEN1 or standard prescribed concrete not less than ST2.
3. **Admixtures:** Do not use.
4. **Foundation holes:** Neat vertical sides.
5. **Depth of foundations, bedding, haunching:** Appropriate to provide adequate support and to receive overlying soft landscape or paving finishes.

### 620 Concrete foundations generally

---

1. **Holes:** 250 x 250 x minimum 300 mm deep
2. **Components:** Accurately positioned and securely supported.
3. **Concrete fill:** Compact as filling proceeds.
4. **Concrete foundations exposed to view:** Finished to weathering profile to shed water and trowel smooth.
5. **Temporary component support:** Maintain undisturbed for minimum 48 hours.

### 670 Installation of surfacing

---

1. **Timing:** Prepare surfaces and apply finishes as soon as possible after installing components.

## Products

### 950 Documentation

---

1. **Description:** To be confirmed
2. **Width:** As drawing
3. **Span:** As drawing
4. **Structure, other than surfacing:** Steel and as drawing
  - 4.1. **Fasteners:** As drawing
5. **Post setting:** Posts set on concrete foundations
6. **Surfacing:** As drawing
  - 6.1. **Method of attachment:** As drawing ???
7. **Guarding:** Required
8. **Edge protection:** 100 mm upstand with visual contrast as drawing
9. **Accessories:** To be confirmed

Ω End of Section

## R10: Rainwater drainage systems

### System performance

#### 221 Collection and distribution of rainwater

---

1. **General:** Complete, and without leakage or noise nuisance.

### Products

#### 312 Aluminium box gutters

---

1. To north east elevation
2. **Standard:** Agrément certified
3. **Manufacturer:** Contractor's choice
  - 3.1. **Product reference:** Contractor's choice
4. **Profile:** Box
5. **Type/ Thickness:** Extruded, 1.6 mm thickness
6. **Nominal size:** 150x100, unless otherwise stated on drawings
7. **Finish:** Polyester powder coated, colour to be agreed
8. **Colour:** Satin Black
9. **Brackets:** Strap type
  - 9.1. **Fixings:** Stainless steel screws
    - 9.1.1. **Size:** 40 x 5 mm
10. **Accessories:** As required to complete the installation

#### 315A Cast iron gutters

---

1. To traditional dormers
2. **Standard:** To BS 460, except for shape and dimensions
3. **Manufacturer:** Contractor's choice
  - 3.1. **Product reference:** Contractor's choice
4. **Profile:** Ogee
5. **Jointing type:** Jointing clips
6. **Nominal size:** 125
7. **Finish as supplied:** Prepainted semigloss black
8. **Brackets:** Cast Iron
  - 8.1. **Fixings:** Stainless steel screws
    - 8.1.1. **Size:** 30 x 4 mm
9. **Accessories:** Jointing clips and Stop ends

#### 321A Combined fascia, soffit and gutter

---

1. To modern dormer windows and extension
2. **Manufacturer:** Alumasc Exterior Building Products Ltd.
  - 2.1. **Web:** [www.alumascskyline.co.uk/](http://www.alumascskyline.co.uk/)
  - 2.2. **Phone:** 01536 383 810
  - 2.3. **Product reference:** Skyline
3. **Sheet thickness:** 3 mm
4. **Finish/ Colour:** Polyester powder coated, colour to be agreed

5. **Support:** Softwood Rafters as drawings.
6. **Fixings:** Secret fix to Rafters, as recommended by the manufacturer.
7. **Nominal depth, edge profile and details:** As drawings.
8. **Accessories:** Mitred and welded external corners with smooth and sharp arisses.
9. **Other requirements:**
  - 9.1. Detailed working drawings for the CA's approval prior to manufacture.
  - 9.2. Any additional support required at joints, etc to be built into the design of each component.
  - 9.3. **Installer:** A contractor approved by the system manufacturer.

### 360 Sealant for gutters

---

1. **Type:** low modulus silicone

### 365A Proprietary rainwater outlets

---

1. **Manufacturer:** Wade International Ltd.
  - 1.1. **Web:** [www.wade.eu](http://www.wade.eu).
  - 1.2. **Email:** [tech@wade.eu](mailto:tech@wade.eu).
  - 1.3. **Product reference:** Parapet outlet, PVC body
2. **Type:** WF115 Parapet outlet, 4" BSP thread, Aluminium grating
3. **Accessories:** U47, to suit existing wall thickness

### 370A Aluminium pipework

---

1. **Standard:** Agrément certified
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice
3. **Type/ Thickness :** Extruded, 1.2 mm
4. **Section:** Round
5. **Nominal size:** 102 mm generally
6. **Finish:** Polyester powder coated
7. **Colour:** To be agreed
8. **Brackets:** Extruded aluminium pipe clips coated as pipes
  - 8.1. **Fixings:** Stainless steel screws
    - 8.1.1. **Size:** 50 x 5 mm
9. **Accessories:** - Directional shoes to the bottom of each pipe.- Offset bobbins to ensure pipes clear all string courses, parapets, etc.- Hopper heads to match existing

## Execution

### 600 Preparation

---

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

### 605 Installation generally

---

1. **Electrolytic corrosion:** Avoid contact between dissimilar metals where corrosion may occur.
2. **Plastics and galvanized steel pipes:** Do not bend.

3. **Allowance for thermal and building movement:** Provide and maintain clearance as fixing and jointing proceeds.
4. **Protection:**
  - 4.1. Fit purpose made temporary caps to prevent ingress of debris.
  - 4.2. Fit access covers, cleaning eyes and blanking plates as the work proceeds.

#### 610 Fixing and jointing gutters

---

1. **Joints:** Watertight
2. **Brackets:** Securely fixed.
  - 2.1. **Fixings:** Screwed into softwood fascia board
    - 2.1.1. **Fixing centres:** 900 mm
  - 2.2. **Additional brackets:** Where necessary to maintain support and stability, provide at joints in gutters and near angles and outlets.
3. **Roofing underlay:** Dressed into gutter.

#### 616 Setting out eaves gutters - level

---

1. **Setting out:** Level and as close as practical to the roof.
2. **Outlets:** Aligned with connections to below ground drainage.

#### 635 Fixing pipework

---

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

#### 640 Fixing vertical pipework

---

1. **Bracket fixings:** Plugged and screwed into masonry
2. **Distance between bracket fixing centres (maximum):** 1500 mm

#### 650 Jointing pipework and gutters

---

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

**660 Jointing external pipework**

---

1. **Jointing:** Low modulus silicone sealant over a polyethylene foam backing insert

**675A Cutting coated pipework and gutters**

---

1. **Cutting:** Only to dicken faces of components, bare metal to be recoated as recommended by the manufacturer.

**Completion****910 Gutter test**

---

1. **Preparation:** Temporarily block all outlets.
2. **Testing:** Fill gutters to overflow level and after 5 minutes closely inspect for leakage.

Ω End of Section

## R11: Above ground foul drainage systems

### Products

#### 310A Linear drainage channel

---

1. To circulation areas
  - 1.1. **Manufacturer:** Wade International Ltd., Third Avenue, Halstead, Essex, CO9 2SX
2. **Tel:** (0)1787 475151 **E-mail:** sales@wade.eu
  - 2.1. **Product reference:** SVFB 'flexible sheet' level invert stainless steel channel.
  - 2.2. **Depth:** 75 mm nominally.
  - 2.3. **Outlet:** 75mm with filter bucket, type and direction to suit adjacent pipework.
  - 2.4. **Grating:** 80 mm stainless steel Streamline (SS31140).

Ω End of Section

## R12: Below ground drainage systems

### Clauses

2 To be read with preliminaries/ general conditions.

---

### General

#### 110A Below ground drainage system

---

1. **Description:** For all areas
2. **Surface water and rainwater drainage sources:** Rainwater downpipes (nonsiphonic), as
3. section R10 and French drains.
4. **Foul drainage sources:** Discharge stack and branch pipes, as section R11.
5. **Land drainage sources:** None .
6. **Pressure relief drainage sources:** None .
7. **Pipes, bends and junctions:** PVC-U - solid wall or Submit proposals .
  - 7.1. **Accessories:** Submit proposals .
8. **Manholes, inspection chambers, traps, and separators:**
  - 8.1. Inspection chambers - plastics;
  - 8.2. Manholes and inspection chambers - concrete; and
  - 8.3. Manholes and inspection chambers - brick, as section F10.
  - 8.4. **Accessories:** Vortex flow control units.
9. **Disposal:** To sewers.
10. **Accessories – general:**
  - 10.1. Geotextile - impervious;
  - 10.2. Granular sub-base material; and
  - 10.3. Silt traps, as section R16
  - 10.4. attenuation tanks - propriatry.

### Products

#### 315A One piece gullies and covers

---

1. **Description:** Yard
2. **Standards:** To BS EN 1253-1, -2, -3, -4 and -5; or
  - 2.1. **Cast iron:** To BS 437 and Kitemark certified, or Agrément certified.
  - 2.2. **Clay:** To BS EN 295-1 and Kitemark certified, or Agrément certified.
  - 2.3. **Concrete:** To BS 5911-6 and Kitemark certified, or Agrément certified.
  - 2.4. **Plastics:** To BS 4660 and Kitemark certified, or Agrément certified.
  - 2.5. **Polypropylene:** To BS EN 1852-1.
3. **Material:** Plastics.
4. **Manufacturer:** Submit proposals.
  - 4.1. **Product reference:** Submit proposals.
5. **Sizes:** 150 x 150 mm.
6. **Outlet sizes:** As drawing 6994-550.
7. **Covers:** As architects drawings.

- 7.1. **Product reference:** Submit proposals.
- 7.2. **Type:** Bolted grating.
- 7.3. **Material:** Galvanized steel.
- 7.4. **Sizes:** 150 x 150 mm.
- 7.5. **Loading grades to BS EN 124:** A15.
- 8. **Silt buckets:** None.
- 8.1. **Product reference:** N/A.

### 329 Pipes, bends and junctions – supply

---

- 1. **Pipes and fittings:** From same manufacturer for each pipeline.

### 346 Pipes, bends and junctions – pvc-u – solid wall

---

- 1. **Description:** For all drainage
- 2. **Standard:** BS EN 1401-1 with flexible joints.
  - 2.1. **Class:** SN4 or SN8
- 3. **Manufacturer:** Submit proposals
  - 3.1. **Product reference:** Submit proposals
- 4. **Recycled content:** Contractor's choice
- 5. **Sizes:** As drawings 6994-550
- 6. **Application area code:** UD.

### 379 Warning marker tapes

---

- 1. **Description:** For all drainage
- 2. **Type:** Heavy gauge polyethylene.
- 3. **Manufacturer:** Contractor's choice
  - 3.1. **Product reference:** Contractor's choice
- 4. **Colour:** Red with black lettering
- 5. **Widths:** 150 mm
- 6. **Message:** FOUL/ SURFACE SEWER BELOW
- 7. **Wire detection aid:** Required

### 401A Inspection chambers - plastics

---

- 1. **Description:** as drawing 6994-550
- 2. **Standard:** To BS 7158 or BS EN 13598-1, or Agrément certified.
- 3. **Diameter:** 450 mm.
- 4. **Manufacturer:** Contractor's choice.
- 5. Bases
  - 5.1. **Product reference:** Contractor's choice.
- 6. Shaft units
  - 6.1. **Product reference:** Contractor's choice.
- 7. Access covers and frames
  - 7.1. **Product reference:** Contractor's choice.
  - 7.2. **Loading grades to BS EN 124:** A15 for internal areas and B125 for car park.

### 407A Manholes and inspection chambers - concrete

---

- 1. **Description:** As drawing 6994-550
- 2. Standards

- 2.1. To BS 5911-3 and BS EN 1917 and Kitemark certified; or
- 2.2. To BS 5911-4 and BS EN 1917.
- 3. **Manufacturer:** Contractor's choice.
- 4. **Shape:** Circular.
- 5. **Sizes:** DN 1200.
- 6. **Cement type and content:** To BS 5911-1 and BS EN 1916.
- 7. Chamber sections
  - 7.1. **Product reference:** Contractor's choice.
  - 7.2. **Jointing type:** Proprietary sealant.
- 8. Cover slabs
  - 8.1. **Product reference:** Contractor's choice.
  - 8.2. **Thickness:** 175 mm.
  - 8.3. **Loading grades to BS EN 124:** A15 for internal areas and B125 for car park.
  - 8.4. **Openings:** To suit access covers.
- 9. **Steps:** Required in chambers over 900 mm deep.
- 10. **Vortex flow control unit:** Not required.

#### 433 Manhole channels and branches – conventional

---

- 1. **Description:** All
- 2. **Material:** Plastics
- 3. **Manufacturer:** Contractor's choice
  - 3.1. **Product reference:** Contractor's choice

#### 435 Manhole channels and branches – preformed plastics

---

- 1. **Description:** All
- 2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice

#### 437 Vortex flow control units

---

- 1. **Description:** As drawing 6994-5501
- 2. **Manufacturer:** Submit proposals
  - 2.1. **Product reference:** Submit proposals
- 3. **Material:** Stainless steel
- 4. **Drain down secondary outlet pipe:** Integral
  - 4.1. **Control type:** Submit proposals
  - 4.2. **Operation:** From surface.

#### 464 Modular stormwater attenuation units

---

- 1. **Description:** As drawing 6994-550
- 2. **Manufacturer:** Submit proposals
  - 2.1. **Product reference:** Submit proposals
- 3. **Unit size:** Submit proposals
- 4. **Tank capacity/ size (minimum):** As drawing 6694-550

#### 483 Concrete

---

- 1. **Description:** General
- 2. **Standard:** To BS 8500-2

### 3. **Concrete:** Designated, GEN1

#### 492 Geotextile membranes – filter

---

1. **Description:** .
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice

#### 494 Geotextile membranes - impervious

---

1. **Description:** .
2. **Manufacturer:** Contractor's choice
  - 2.1. **Product reference:** Contractor's choice

#### 496 Granular material – natural

---

1. **Description:** .
2. **Standards:** To Water Industry Specification WIS 4-08-02 (as amended by WIS 4-08-02A, 2008).
3. **Supplier:** Contractor's choice
4. **Recycled content:** Contractor's choice
  - 4.1. **Size:** Dependent on location - see Execution clauses in this section, and in sections R16, R17 and R18, if used.

#### 498 Granular sub-base material

---

1. **Description:** .
2. **Standard:** To Highways Agency Volume 1, 'Specification for Highway Works', Type 1 Unbound mixtures for sub-base.
3. **Recycled content:** Contractor's choice

## Execution

#### 610 Stripping out

---

1. **Extent of stripping out:** .
2. **Exposed ends of existing drainage to be abandoned:** Seal with concrete.

#### 611 Existing drains

---

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

#### 613 Excavated material

---

1. **Turf, topsoil, hardcore, etc:** Set aside for use in reinstatement.

#### 616 Selected fill for backfilling

---

1. **Selected fill:** As-dug material, free from vegetable matter, rubbish, frozen soil and material retained on a 40 mm sieve.
  - 1.1. **Compaction:** By hand in 100 mm layers.

#### 623 Lower part of trench – general

---

1. **Trench up to 300 mm above crown of pipe:** Vertical sides, width as small as practicable.
  - 1.1. **Width (minimum):** External diameter of pipe plus 300 mm.

**625 Lower part of trench -transition depth**

---

1. • **Trench widths up to 300 mm above crown of pipe (maximum):**
  - 1.1. **DN 100 pipelines more than 6.0 m deep:** 600 mm.
  - 1.2. **DN 150 pipelines more than 5.4 m deep:** 700 mm.
  - 1.3. **DN 225 pipelines more than 4.0 m deep:** 800 mm.
  - 1.4. **DN 300 pipelines more than 2.9 m deep:** 900 mm.

**631 Type of subsoil**

---

1. **General:** Where type of subsoil at level of crown of pipe differs from that stated for the type of bedding, surround or support, give notice.

**635 Formation for beddings**

---

1. **Timing:** Excavate to formation immediately before laying beddings or pipes.
2. **Mud, rock projections, boulders and hard spots:** Remove. Replace with consolidated bedding material.
3. **Local soft spots:** Harden by tamping in bedding material.
4. **Inspection of excavated formations:** Give notice.

**641 Pipes at different levels in common trench**

---

1. **Subtrench:** Permissible provided soil of step is stable and unlikely to break away.
  - 1.1. **Subtrench not permissible:** Trench depth as required for lower pipe. Increase thickness of bedding to support pipe as necessary.
2. **Lower pipe:** Backfill with compacted granular material to at least half way up higher pipe.
4. **Clear horizontal distance between pipes (minimum):**
  - 4.1. **Pipes up to DN 700:** 350 mm.
  - 4.2. **Pipes exceeding DN 700:** 500 mm.

**655 Class D bed**

---

1. **Description:** For all drainage
2. **Type of subsoil:** Rock or gravel clay
3. **Trench:** Excavate slightly shallower than final levels.
  - 3.1. **Trimming:** By hand to accurate gradients. Replace overdig with compacted soil.
4. **Pipes:** Rest uniformly on barrels, adjust to line and gradient. Do not use hard packings under pipes.
5. **Initial testing before backfilling:** Required
6. **Backfilling**
  - 6.1. **Material:** Protective cushion of selected fill.
  - 6.2. **Depth:** 150 mm (250 mm for adoptable sewers) above crown of pipe.
  - 6.3. **Compaction:** By hand in 100 mm layers.

**678 Class Z surround**

---

1. **Description:** For all drainage less than 600mm deep or below building footprint
2. **Type of subsoil:** Rock or gravel clay
3. **Blinding**
  - 3.1. **Material:** Concrete.
  - 3.2. **Thickness (minimum):** 25 mm.
  - 3.3. **Width:** Full width of trench.

- 3.4. Allow to set before proceeding.
4. Pipes
  - 4.1. **Temporary support:** Folding wedges of compressible board. Prevent flotation.
  - 4.2. **Clearance under pipes (minimum):** 100 mm.
  - 4.3. Adjust pipes to line and gradient.
5. **Initial testing before placing surround:** Required
6. Surround
  - 6.1. **Material:** Concrete.
  - 6.2. **Depth:** To 150 mm above crown of pipe.
  - 6.3. **Width:** Full width of trench.
7. Vertical construction joints
  - 7.1. **Location:** At face of flexible pipe joints.
  - 7.2. **Material:** 18 mm thick compressible board precut to profile of pipe.
  - 7.3. **Socketed pipes:** Fill gaps between spigots and sockets with resilient material to prevent entry of concrete.

---

#### 680 Concrete surround for pipe runs near foundations

---

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

---

#### 683 Laying pipelines

---

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

---

#### 685 Jointing pipelines

---

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

---

#### 687 Concrete surround for crossovers

---

1. **Class Z surround:** Provide where two pipelines (other than plastics pipes) cross with less than 300 mm separation.
- 2.1. **Extent, on both pipes:** 1 m centred on the crossing point, and beyond as necessary to come within 150 mm of nearest flexible joints.

### 689 Pipelines passing through structures

---

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

### 691 Bends at base of soil stacks

---

1. **Type:** Nominal 90° rest bends
  - 1.1. **Radius to centreline of pipe (minimum):** 200 mm
2. **Height of invert of horizontal drain at base of stack below centreline of lowest branch pipe (minimum):** 450 mm
3. **Bedding:** Do not impair flexibility of pipe couplings.
  - 3.1. **Material:** Concrete.

### 693 Direct connection of ground floor wcs to drains

---

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

### 699A Connections to sewers

---

1. **General:** Connect new pipework to existing adopted sewers to the requirements of the
2. adopting authority or its agent.

### 705 Initial testing of pipelines

---

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

### 711 Trench supports

---

1. **Removal of trench supports and other obstacles:** Sufficient to permit compacted filling of all
2. spaces.

### 713 Installing root barriers

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1. **Root barrier installation:** Full depth of excavation. Fit closely to trench wall nearest the tree.

### 715 Backfilling to pipelines

---

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

### 720 Backfilling under roads and pavings

---

1. **Backfilling from top of surround or protective cushion up to formation level:** Granular sub-base material, laid and compacted in 150 mm layers.

---

**722 Public roads and pavings – Eng, Wales, Scot**

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1. **Excavating and backfilling of trenches:** To Department for Transport 'Specification for the reinstatement of openings in highways'.

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**728 Laying warning marker tapes**

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

---

**734 Installing access points and gullies**

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1. Bedding
  - 1.1. **Material:** Concrete
  - 1.2. **Thickness (minimum):** 100 mm
2. Surround
  - 2.1. **Material:** Concrete
  - 2.2. **Thickness (minimum):** 100 mm
  - 2.3. **Height:** Full height
3. Backfilling
  - 3.1. **Material:** Granular - natural, size 4/10 to BS EN 13242, to 100 mm above crown of pipes, then selected fill
  - 3.2. **Compaction:** By hand in 100 mm layers.
4. **Setting out relative to adjacent construction features:** Square and tightly jointed.
5. **Permissible deviation in level of external covers and gratings:** +0 to -6 mm.
6. **Raising pieces (clay and concrete units):** Joint with 1:3 cement:sand mortar.
7. **Exposed openings:** Fit purpose made temporary caps. Protect from site traffic.

---

**741 Installing inspection chambers – plastics**

---

1. Bedding
  - 1.1. **Material:** Concrete
  - 1.2. **Thickness (minimum):** 100 mm
2. Surround
  - 2.1. **Material:** Concrete
  - 2.2. **Thickness (minimum):** 100 mm
3. **Backfilling:** Granular material - manufactured, size 4/10 to BS EN 13242, to 100 mm above crown of pipes, then selected fill
  - 3.1. **Compaction:** By hand in 100 mm layers.
4. Concrete collar
  - 4.1. **Material:** Concrete
  - 4.2. **Thickness (minimum):** 200 mm
  - 4.3. **Width (minimum):** 200 mm
5. **Seating:** Not required

---

**743 Installing concrete manholes**

---

1. Bases
  - 1.1. **Material:** Concrete
  - 1.2. **Thickness (minimum):** 225 mm
2. Surround

- 2.1. **Material:** Concrete
- 2.2. **Thickness (minimum):** 150 mm
- 2.3. **Height:** Full height
- 3. Backfilling
  - 3.1. **Material:** Granular - manufactured, size 4/10 to BS EN 13242, to 100 mm above crown of pipes, then selected fill
  - 3.2. **Compaction:** By hand in 100 mm layers.

#### 750 Installing vortex flow control units

---

- 1. Benching
  - 1.1. **Material:** Concrete.
  - 1.2. **Profile:** Rise from manhole base to a level not lower than soffit of outlet pipe, then slope upwards at 10% to soffit of inlet pipe.
  - 1.3. Topping
    - 1.3.1. **Material:** Concrete
  - 1.4. **Application:** Before benching concrete has set, and with dense smooth uniform finish.
- 2. Vortex flow control mounting block (cast in situ)
  - 2.1. **Material:** Concrete
  - 2.2. **Profile:** Rise from manhole base vertically to provide plane surface for attachment of unit.
- 3. **Outlet pipe:** Build in.
- 4. **Drain down secondary outlet pipe:** Build in

#### 757 Laying conventional channels, branches and benching

---

- 1. **Main channel:** Bed solid in 1:3 cement:sand mortar.
  - 1.1. **Branches:** Connect to main channel at or slightly above invert level, but not higher than half channel level, so that discharge flows smoothly in direction of main flow.
  - 1.2. **Branches greater than nominal size 150 mm:** Connect the branch soffit level with the main drain soffit.
  - 1.3. **Connecting angles more than 45° to direction of flow:** Use three-quarter section channel bends.
- 2. Benching
  - 2.1. **Material:** Concrete.
  - 2.2. **Profile:** Rise vertically from top of main channel to a level not lower than soffit of outlet pipe, then slope upwards at 10% to walls.
  - 2.3. Topping
    - 2.3.1. **Material:** Concrete
    - 2.3.2. **Application:** Before benching concrete has set, and with dense smooth uniform finish.

#### 759 Laying preformed plastics channels, branches and benching

---

- 1. **Main channel:** Bed solid in 1:3 cement:sand mortar.
  - 1.1. **Branches:** Connect to main channel at or slightly above invert level, but not higher than half channel level, so that discharge flows smoothly in direction of main flow.
  - 1.2. **Connecting angles more than 45° to direction of flow:** Use three-quarter section channel bends.
- 2. **Bedding:** 1:3 cement:sand mortar. Use clips or ensure adequate mechanical key.
- 3. Benching
  - 3.1. **Material:** Concrete.

- 3.2. **Profile:** Rise vertically from top of main channel to a level not lower than soffit of outlet pipe, then slope upwards at 10% to walls.

- 3.3. Topping

- 3.3.1. **Material:** Concrete

- 3.3.2. **Application:** Before benching concrete has set, and with dense smooth uniform finish.

---

## 776 Exposed openings in inspection chambers, access points, fittings and equipment

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

## Completion

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### 901 Removal of debris and cleaning

---

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

---

### 903 Temporary measures

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1. **Water used to stabilize tanks and the like during installation:** Drain.

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### 941 Water testing of manholes and inspection chambers

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

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### 978 Lifting keys

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1. • **Lifting keys:** Supply suitable keys for each type of access cover.
  - 1.1. **Timing:** At completion.

Ω End of Section

## R13: Land drainage

### Clauses

**2 To be read with preliminaries/general conditions.**

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### Generally

#### 100 Existing drains and watercourses

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1. **Setting out:** Before starting work, check invert levels and positions of existing drainage against drawings. Report any discrepancies.
2. **Drains to be retained:** Protect. Maintain normal operation.

#### 106 In situ concrete (general)

---

1. **Standard:** To BS 8500-2.
  - 1.1. **Concrete:** Designated. GEN1 or Standardized prescribed, ST2, as section E10

### Drains

#### 211 Filter drains with pipe

---

1. Trench
  - 1.1. **Depth:** 600 mm
  - 1.2. **Width:** 450 mm
2. **Pipe bedding:** Granular material to BS EN 13242, size 4/10
  - 2.1. **Recycled content of granular material:** Contractor's choice
3. **Pipes:** Plastics to BS 4962, Kitemark certified, perforated
  - 3.1. **Manufacturer:** Contractor's choice
    - 3.1.1. **Product reference:** Contractor's choice
  - 3.2. **Sizes:** DN 150
  - 3.3. **Recycled content of plastics pipes:** Contractor's choice
  - 3.4. **Perforations:** Up
4. Pipe surround and backfill
  - 4.1. **Material:** Granular surround and backfill - subsoil drains
  - 4.2. **Recycled content of granular material:** Contractor's choice
  - 4.3. **Level:** To 200 mm below ground level and cover with topsoil to ground level, allowing for settlement

#### 350 Laying pipes

---

1. **Weather conditions:** Lay pipes in good weather using methods suitable for the site conditions.
  - 1.1. **Plastics pipes:** Do not lay or backfill at temperatures lower than 5°C.
  - 1.2. **Soil structure:** Prevent compaction, smearing, top ponding, rutting and damage.
2. **General:** Lay to line and gradient on a firm bed free from loose soil to give a free-draining installation without backfalls. Do not lay on soil backfill or in slurry.
3. **Drains closer than 6 m to trees or hedges:** Unperforated pipes with positively sealed joints and as-dug backfill.
4. **Junctions between branches and mains:** Purpose made components.
5. **Upper ends of drain runs:** Plug to prevent ingress of soil or animals.

6. **Backfilling:** Do not damage, distort or displace pipes.

## **Excavating/ beddings/ surrounds/ backfill**

### **500 Topsoiling**

---

1. **Filter drains:** Do not lay until soiling operations, including spreading and grading of topsoil, have been completed.
2. **Segregation:** Carefully remove topsoil when forming trenches and prevent mixing with subsoil.

### **505 Excavation**

---

1. **Pipe gradients:** Between 1 in 200 and 1 in 80.
2. **Subsoil:** Remove from site or to approved locations at end of each day and before pipe laying. Do not disperse on topsoiled areas.
  - 2.1. **Approved locations:** .

### **525 Granular beds**

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1. **Compacted thickness (minimum):** 50 mm.
  - 1.1. **Laying pipes:** Scoop out locally at couplings and sockets and lay pipes digging slightly into bed and resting uniformly on their barrels.

### **530 Granular surround and backfill – subsoil drains**

---

1. **Material:** Clean gravel, broken stone, hard clinker or slag, with no fines, graded 40 to 10 mm or approved recycled material.
2. Covering: Cap to granular material .....
  - 2.1. **Cap to granular material:** Geotextile trench lining

### **540 Granular surround and backfill – surface water drains**

---

1. **Material:** Clean gravel, broken stone, hard clinker or slag, with no fines, graded 75 to 20 mm or approved recycled material.

### **546 Selected as-dug surround and backfill**

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1. **Material:** Selected as-dug, free from vegetable matter, rubbish, frozen soil, large lumps of clay and material retained on a 40 mm sieve.
2. **Placing material around sides of pipes and against fin drains:** Carefully pack. Prevent damage or disruption to pipelines or fin drains and compact thoroughly.

### **555 Granular backfilling to drains with pipes**

---

1. **General:** Not applicable to narrow trenches where a backfill is placed continuously by machine.
2. **Placing:** in maximum 300 mm thick layers, with mechanical compaction from 300 mm above crown of pipe, up to finished ground level.
  - 2.1. **Surround and backfill material:** Do not heap in the trench before spreading.
  - 2.2. **Packing:** Carefully pack material around the sides of the pipe. Prevent damage or disruption to pipelines and compact thoroughly.

### **565 Backfilling with as-dug material**

---

1. **General:** Not applicable to narrow trenches where a backfill is placed continuously by machine.
2. **Material:** As excavated from the trench.
3. **Placing and compaction:** Maximum 300 mm thick layers, up to finished ground level. Compact each layer before placing the next.
4. **Heavy compactors:** Do not use before there is 600 mm of material over pipes.

**570 Geotextile trench lining**

---

1. **Preparation:** Trim trench. Remove sharp stones and other projections.
2. **Placing:**
  - 2.1. **Dressing geotextile:** Uniformly to trench profile without stretching, perforation or rupture.
  - 2.2. **Top of aggregate:** Wrap free lengths of geotextile over top surface and overlap by 300
3. mm. Tuck top layer down trench side by 100 mm.

Ω End of Section

## Z10: Purpose made joinery

**To be read with preliminaries/ general conditions.**

### 110 Fabrication

---

1. **Standard:** To BS 1186-2.
2. **Sections:** Accurate in profile and length, and free from twist and bowing. Formed out of solid unless shown otherwise.
  - 2.1. **Machined surfaces:** Smooth and free from tearing, wooliness, chip bruising and other machining defects.
3. **Joints:** Tight and close fitting.
4. **Assembled components:** Rigid. Free from distortion.
5. **Screws:** Provide pilot holes.
  - 5.1. **Screws of 8 gauge (4 mm diameter) or more and screws into hardwood:** Provide clearance holes.
  - 5.2. **Countersink screws:** Heads sunk at least 2 mm below surfaces visible in completed work.
  - 5.3. **Adhesives:** Compatible with wood preservatives applied and end uses of timber.
6. **Adhesives:**

### 120 Cross section dimensions of timber

---

1. **General:** Dimensions on drawings are finished sizes.
2. Maximum permitted deviations from finished sizes
  - 2.1. **Softwood sections:** To BS EN 1313-1:-
    - 2.1.1. Clause 6 for sawn sections.
  - 2.2. **Hardwood sections:** To BS EN 1313-2:-
    - 2.2.1. Clause 6 for sawn sections.
    - 2.2.2. Clause NA.3 for further processed sections.

### 130 Preservative treated wood

---

1. **Cutting and machining:** Completed as far as possible before treatment.
2. **Extensively processed timber:** Retreat timber sawn lengthways, thickened, planed, ploughed, etc.
3. **Surfaces exposed by minor cutting and/ or drilling:** Treat as recommended by main treatment solution manufacturer.

### 140 Moisture content

---

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

### 250 Finishing

---

1. **Surfaces:** Smooth, even and suitable to receive finishes.
  - 1.1. **Arrises:** Eased unless shown otherwise on drawings.
2. **End grain in external components:** Sealed with primer or sealer as section M60 and allowed to dry before assembly.

Ω End of Section

## Z11: Purpose made metalwork

### Clauses

2 To be read with preliminaries/ general conditions.

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To be read with preliminaries/ general conditions.

#### 310 Materials generally

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1. **Grades of metals, section dimensions and properties:** To appropriate British Standards. When not specified, select grades and sections appropriate for the purpose.
2. **Prefinished metal:** May be used if methods of fabrication do not damage or alter appearance of finish, and finish is adequately protected.
3. **Fasteners:** To appropriate British Standards and, unless specified otherwise, of same metal as component being fastened, with matching coating or finish.

### Fabrication

#### 515 Fabrication generally

---

1. **Contact between dissimilar metals in components:** Avoid.
2. **Finished components:** Rigid and free from distortion, cracks, burrs and sharp arrises.
  - 2.1. **Moving parts:** Free moving without binding.
3. **Corner junctions of identical sections:** Mitre.

#### 520 Cold formed work

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1. **Profiles:** Accurate, with straight arrises.

#### 527 Welding

---

1. **Description:** Steel
2. Welding procedures
  - 2.1. **Method and standard:** Metal arc welding to BS EN 1011-1 and -2.
  - 2.2. **Welding Procedure Specification (WPS):** Submit electronic copy before commencement of welding
3. Preparation
  - 3.1. **Joint preparation:** Clean thoroughly.
  - 3.2. **Surfaces of materials that will be self-finished and visible in the completed work:** protect from weld splatter.
4. Jointing
  - 4.1. **Joints:** Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
  - 4.2. **Dissimilar metals:** Welding not permitted
  - 4.3. **Strength requirements:** Welds to achieve design loads.
  - 4.4. **Heat straightening:** Obtain approval
  - 4.5. **Complex assemblies:** Agree priority for welding members to minimize distortion caused by subsequent welds.
  - 4.6. **Tack welds:** Use only for temporary attachment.
  - 4.7. **Jigs:** Provide to support and restrain members during welding.
  - 4.8. **Filler plates:** Not permitted

4.9. **Lap joints:** Minimum 5 x metal thickness or 25 mm, whichever is greater.

4.10. **Weld terminations:** Clean and sound.

## Finishing

### 710 Finishing welded and brazed joints visible in complete work

---

1. **Standard:** To BS EN ISO 8501-3.
  - 1.1. **Preparation grade:** P3
2. **Butt joints:** Smooth, and flush with adjacent surfaces.
3. **Fillet joints:** Neat.
4. **Grinding:** Grind smooth where indicated on drawings.

### 745 Preparation for application of coatings

---

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

### 780 Galvanizing

---

1. **Standard:** To BS EN ISO 1461.
2. Preparation
  - 2.1. **Vent and drain holes:** Provide in accordance with BS EN 14713-1 and -2. Seal after sections have been drained and cooled.
  - 2.2. **Components subjected to cold working stresses:** Heat treat to relieve stresses before galvanizing.
  - 2.3. **Welding slag:** Remove.
  - 2.4. **Component cleaning:** To BS EN ISO 8501-3.
  - 2.5. **Grade:** St 2½

Ω End of Section

## Z12: Preservative/fire retardant treatment

To be read with preliminaries/ general conditions.

### 110 Treatment application

---

1. **Timing:** After cutting and machining timber, and before assembling components.
2. **Processor:** Licensed by manufacturer of specified treatment solution.
3. **Operatives:** Must have completed the PCA training scheme
4. **Certification:** For each batch of timber provide a certificate of assurance that treatment has been carried out as specified.

### 120 Commodity specifications

---

1. **Standard:** Current edition of the Wood Protection Association (WPA) publication 'Industrial wood preservation specification and practice'.

### 130 Preservative treatment solution strengths/ treatment cycles

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1. **General:** Select to achieve specified service life and to suit treatability of specified wood species.

### 150 Water-based organic preservative treatment

---

1. Solution
  - 1.1. **Manufacturer:** Contractor's choice
    - 1.1.1. **Product reference:** Contractor's choice
  - 1.2. **Application:** High pressure impregnation.
2. Moisture content of wood
  - 2.1. **At time of treatment:** Not more than 28%.
  - 2.2. **After treatment:** Timber to be surface dry before use.

### 610 Making good to preservative treatment on site

---

1. **Preservative solution:** Compatible with off-site treatment.
2. **Application:** In accordance with preservative manufacturer's recommendations.

### 620 Making good to flame-retardant treatment on site

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1. **Fire retardant:** Compatible with off-site treatment.
2. **Application:** In accordance with fire retardant manufacturer's recommendations.

Ω End of Section

## Z20

# Fixings and adhesives

### Clauses

**2 To be read with preliminaries/ general conditions.**

---

### Products

#### 310 Fasteners generally

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1. **Materials:** To have:
  - 1.1. Bimetallic corrosion resistance appropriate to items being fixed.
  - 1.2. Atmospheric corrosion resistance appropriate to fixing location.
2. **Appearance:** Submit samples on request.

#### 320 Packings

---

1. **Materials:** Noncompressible, corrosion proof.
2. **Area of packings:** Sufficient to transfer loads.

#### 340 Masonry fixings

---

1. **Light duty:** Plugs and screws.
2. **Heavy duty:** Expansion anchors or chemical anchors.

#### 350 Plugs

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

#### 390 Adhesives

---

1. Standards
  - 1.1. **Hot-setting phenolic and aminoplastic:** To BS 1203.
  - 1.2. **Thermosetting wood adhesives:** To BS EN 12765.
  - 1.3. **Thermoplastic adhesives:** To BS EN 204.

#### 410 Powder actuated fixing systems

---

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

### Execution

#### 610 Fixing generally

---

1. **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.
2. **Components, substrates, fixings and fasteners of dissimilar metals:** Isolate with washers/ sleeves to avoid bimetallic corrosion.
3. **Appearance:** Fixings to be in straight lines at regular centres.

#### 620 Fixing through finishes

---

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

#### 630 Fixing packings

---

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

2. **Limits:** Do not use packings beyond thicknesses recommended by fixings and fasteners manufacturer.
3. **Locations:** Not within zones to be filled with sealant.

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**640 Fixing cramps**

---

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

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**680 Plugged countersunk screw fixing**

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

---

**690 Using powder actuated fixing systems**

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

---

**700 Applying adhesives**

---

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

Ω End of Section

## Z21: Mortars

### Clauses

2 To be read with preliminaries/ general conditions.

---

### Cement gauged mortars

#### 110 Cement gauged mortar mixes

---

1. **Specification:** Proportions and additional requirements for mortar materials are specified elsewhere.

#### 120 Sand for site made cement gauged masonry mortars

---

1. **Standard:** To BS EN 13139.
2. **Grading:** 0/2 (FP or MP).
  - 2.1. **Fines content where the proportion of sand in a mortar mix is specified as a range (e.g. 1:1: 5-6):**
    - 2.1.1. **Lower proportion of sand:** Use category 3 fines.
    - 2.1.2. **Higher proportion of sand:** Use category 2 fines.
3. **Sand for facework mortar:** Maintain consistent colour and texture. Obtain from one source.

#### 135 Site made lime:sand for cement gauged masonry mortars

---

1. **Permitted use:** Where a special colour is not required and in lieu of factory made ready-mixed material.
2. **Lime:** Nonhydraulic to BS EN 459-1.
  - 2.1. **Type:** CL 90S.
3. **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

---

1. **Cement:** To BS EN 197-1 and CE marked.
  - 1.1. Types: Portland cement, CEM I.
    - 1.1.1. Portland limestone cement, CEM II/A-L or CEM II/A-LL.
    - 1.1.2. Portland slag cement, CEM II/B-S.
    - 1.1.3. Portland fly ash cement, CEM II/B-V.
  - 1.2. **Strength class:** 32.5, 42.5 or 52.5.
2. Portland slag cement, CEM II/B-S.
3. Portland fly ash cement, CEM II/B-V.
  - 3.1. **Strength class:**
4. **White cement:** To BS EN 197-1 and CE marked.
  - 4.1. **Type:** Portland cement, CEM I.
  - 4.2. **Strength class:** 52.5.
5. Sulfate resisting Portland cement
  - 5.1. Types: To BS EN 197-1 Sulfate resisting Portland cement, CEM I/SR and CE marked.
    - 5.1.1. To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.
  - 5.2. **Strength class:** 32.5, 42.5 or 52.5.
6. To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.

**6.1. Strength class:****7. Masonry cement:** To BS EN 413-1 and CE marked.**7.1. Class:** MC 12.5.**180 Admixtures for site made cement gauged mortars**

---

1. **Air entraining (plasticizing) admixtures:** To BS EN 934-3 and compatible with other mortar constituents.
2. **Other admixtures:** Submit proposals.
3. **Prohibited admixtures:** Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

**210 Making cement gauged mortars**

---

1. **Batching:** By volume. Use clean and accurate gauge boxes or buckets.
  - 1.1. **Mix proportions:** Based on dry sand. Allow for bulking of damp sand.
2. **Mixing:** Mix materials thoroughly to uniform consistency, free from lumps.
  - 2.1. **Mortars containing air entraining admixtures:** Mix mechanically. Do not overmix.
3. **Working time (maximum):** Two hours at normal temperatures.
4. **Contamination:** Prevent intermixing with other materials.

**Lime:sand mortars****310 Lime:sand mortar mixes**

---

1. **Specification:** Proportions and additional requirements for mortar materials are specified elsewhere.

**320 Sand for lime:sand masonry mortars**

---

1. **Type:** Sharp, well graded.
  - 1.1. **Quality, sampling and testing:** To BS EN 13139.
  - 1.2. **Grading/ Source:** As specified elsewhere in relevant mortar mix items.

**360 Making lime:sand mortars generally**

---

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

**400A Making hydraulic lime:sand mortars**

---

1. **Mixing hydrated hydraulic lime:sand:** Follow the lime manufacturer's recommendations for each stage of the mix.
  - 1.1. **Water quantity:** Only sufficient to produce a workable mix.
2. **Working time:** Within limits recommended by the hydraulic lime manufacturer.
  - 2.1. Keep plant and banker boards clean at all times.
  - 2.2. Measure materials accurately by volume using clean gauge boxes. Proportions of mixes are for dry sand; allow for bulking if sand is damp.
3. On no account is cement to be used in the hydraulic lime mortar.

**410 Protecting lime mortars**

---

1. During and after application, protection should be in place for as long as necessary for the mortar to firstly cure properly, and then dry sufficiently. Do not remove the protection until the moisture content of the mortar is less than 8%.

2. Protection is to be provided against rain saturation, strong direct sunlight and/or wind action via small sized mesh debris netting (double if necessary), robust tarpaulins, and/or heavy plastic sheeting. Such protection is to be independently supported on scaffolding to prevent any contact with the mortar, the scaffolding also projecting sufficiently above the works to afford full protection to the wall heads and/or eaves.
3. Protection is to be provided against frost or freezing via close covering with Hessian sheets or tarpaulins, with additional heating provided if required. Polythene sheeting should not be used.
  - 3.1. It should be noted that while saturation by rain is to be avoided, light and continuous rain will help to cure the mortar, provided that frost is not forecast, and especially during warm weather.
  - 3.2. Do not use lime mortars when the air temperature is at or below 5°C and falling or below 3°C and rising.

Ω End of Section

## Z22: Sealants

### Clauses

2 To be read with preliminaries/general conditions.

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### Products

#### 310 Joints

---

1. **Description:**
2. **Primer, backing strip, bond breaker:** Types recommended by sealant manufacturer.

### Execution

#### 610 Suitability of joints

---

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

#### 620 Preparing joints

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

#### 630 Applying sealants

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

Ω End of Section

## Z31: Powder coatings

**To be read with preliminaries/ general conditions.**

### 120 Powder coating materials

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1. **Manufacturer: Obtain from one only of the following:** Submit proposals
2. **Selected manufacturer:** Submit details before commencement of powder coating including:
  - 2.1. Name and contact details.
  - 2.2. Details of accreditation schemes.
  - 2.3. Technical data of product including current Agrément certificates.

### 210 Working procedures

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1. Comply with the follow following standards.
  - 1.1. **Aluminium components:** To BS 6496 or BS EN 12206-1.
  - 1.2. **Steel components:** To BS EN 13438.
  - 1.3. **Safety standards:** To British Coatings Federation 'Code of safe practice - Application of thermosetting powder coatings by electrostatic spraying'.

### 220 Powder coating applicators

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1. **Applicator requirements:**
  - 1.1. Approved by powder coating manufacturer.
  - 1.2. Currently certified to BS EN ISO 9001.
  - 1.3. Comply with quality procedures, guarantee conditions, standards and tests required by powder coating manufacturer.
  - 1.4. Applicator to use only one plant.
  - 1.5. **Selected applicator:** Submit details before commencement of powder coating including:
    - 1.5.1. Name and contact details.
    - 1.5.2. Details of accreditation schemes.

### 225 Guarantees

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1. **Powder coating manufacturer and applicator guarantees:**
  - 1.1. Submit sample copies before commencement of powder coating.
  - 1.2. Submit signed project specific copies on completion of work.

### 310 Pretreatment of aluminium components

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

### 320 Pretreatment of steel components

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1. **Condition of components to be pretreated:**

- 1.1. Free from corrosion and damage.
- 1.2. All welding and jointing completed and finish off as specified.
- 1.3. Free from impurities including soil, grease, oil.
- 1.4. Suitable for and compatible with the pretreatment process.
2. **Conversion coating requirements:** To BS EN 13438.
3. **Rinsing requirements:** Use demineralized water. Drain and dry.

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#### 430 Extent of powder coatings

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

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#### 435 Application of powder coatings

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1. **Surfaces to receive powder coatings:** Free from dust or powder deposits.
2. **Powder colours:** Obtain from one batch of one manufacturer.
3. **Commencement of powder coatings:** To be continuous from pretreatment.
4. **Jig points:** Not visible on coated components.
5. **Curing:** Controlled to attain metal temperatures and hold periods recommended by powder coating manufacturer.
6. **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.
7. **Overcoating of components:** Not acceptable.

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#### 440 Performance and appearance of powder coatings

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

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#### 450 Aluminium alloy fabrications

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

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#### 460 Steel fabrications

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

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**470 Fixings**

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1. **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.

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**480 Damaged components - repair/ replacement**

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

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**510 Protection**

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1. **Powder coated surfaces of components:** Protect from damage during handling and installation, or by subsequent site operations.
2. **Protective coverings:** Must be:
  - 2.1. Resistant to weather conditions.
  - 2.2. Partially removable to suit building in and access to fixing points.
3. **Protective tapes in contact with powder coatings:** Must be:
  - 3.1. Low tack, self adhesive and light in colour.
  - 3.2. 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.
4. **Inspection of protection:** Carry out monthly. Promptly repair any deterioration or deficiency.

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**535 Documentation**

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1. **Submit the following information for each batch of powder coated components:**
  - 1.1. Supplier.
  - 1.2. Trade name.
  - 1.3. Colour.
  - 1.4. Type of powder.
  - 1.5. Method of application.
  - 1.6. Batch and reference number.
  - 1.7. Statutory requirements.
  - 1.8. Test certificates.
  - 1.9. Maintenance instructions.

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**540 Completion**

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

Ω End of Section



# CONTACT

Davies Sutton Architects  
Penhevad Studios  
Penhevad Street  
Grangetown  
Cardiff  
CF11 7LU

T. 029 2066 4455  
W. [www.davies-sutton.co.uk](http://www.davies-sutton.co.uk)

