KA53125 &
KA53989

Berrys

Witney Town Council

# Witney Sports Ground - New Depot Building and Alterations to Pavillion Building

## Workmanship and Materials

15-09-2025

Demolition of the existing Witney Mils Bowls Club building and construction of a new depot building, covered parking and storage. Additionally, refurbishment of the existing sports & social club, including the introduction of a lift and layout alterations

# Contents

Berrys
15-09-2025

# B05
# Whole project fire safety

## Clauses

### 120 Fire safety strategy

1. Objective: Life safety
2. Design parameters

Ω End of Section

# B50
# General structural requirements

## Tendering - Not Used

## General

### 110 Eurocodes

1. National Annexes: Reference to a Eurocode, or to an execution or a material standard referenced therein, is deemed to include the appropriate United Kingdom National Annex, to the Eurocode or referenced standard. Nationally determined parameters shall apply. Non-contradictory complementary information: Applies when referenced in the National Annex.
2. Substitution of alternative design rules for Eurocode Application Rules: Submit proposals.

### 120 Structural work

1. Designated codes of practice: To the Eurocodes appropriate to the nature of the structure.
2. Completed structure generally: To comply with the requirements of the designated codes of practice and the standards referenced therein. Deflections and other structural movements at serviceability limit state to be compatible with requirements of the building fabric, movement joints and weathertightness.

### 130 Contractor's design

1. Engineer responsible for overall stability of structure: Submit proposal, including details of qualifications and experience.
2. Design quality control: Submit proposals.
3. Maintenance: Make provision for and submit details of requirements to ensure the safety and serviceability of the structure, including:
    3.1. Critical parts that should be regularly inspected, with recommendations for the frequency of inspection.
    3.2. Elements susceptible to corrosion, mechanical wear or fatigue that may need to be reconstructed or replaced during the design working life of the structure.
    3.3. Means of safe access for maintenance and repair.

### 150 Ground investigation report

1. Requirement: Confirm acceptance of geotechnical proposals as appropriate for the particular ground conditions or submit alternative proposals, accepting full responsibility for them

### 160 Geotechnical design report

1. Standard: To BS EN 1997-1.

## Performance

### 220 Exposure to fire

1. Building purpose group: Commercial/Industrial/Storage
2. Reaction to fire of structural elements: To Building Regulations.
    2.1. Requirements (minimum): As section B05

### 250 Limits on movement generated by construction

1. Definition of critical values

1.1. Threshold value: The value beyond which further movement will be of significant concern.

1.2. Action value: The value at which execution must cease.

2. Precautions: Take as follows if movements reach critical values:

2.1. Threshold: Review situation, assess possible causes and submit proposals to ensure that action values are not exceeded.

2.2. Action: Stop work, report and revise working procedures to prevent further movements.

### 280 Settlement of existing structures

1. Location: Any part of the structure.
2. Action values: As geotechnical design report.

### 290 Lateral displacement of existing structures

1. Location: Any part of the structure.
2. Action values: As geotechnical design report.

### 320 Loads/ actions

1. Generally: Specified loads/ actions are characteristic values unless otherwise described.

### 380 Loads in roof and ceiling voids

1. Standard: To BS EN 1991-1-1.

### 430 Snow loads – contractor determined

1. Standard: To BS EN 1991-1-3.

### 440 Ice loads/ actions

1. Standard: To BS EN 1993-3-1.

### 470 Wind loads/ actions – contractor determined

1. Standard: To BS EN 1991-1-4.

1.1. Factors and coefficients: Appropriate to location, exposure, altitude, building shape and size, and taking account of existing and known future adjacent and/ or attached buildings.

### 500 Impact forces

1. Standard: To BS EN 1991-1-7.

### 504 Impact resistance of vertical cladding

1. Hard body impact loads: In accordance with CWCT TN75:
2. Soft body impact loads: To BS EN 14019:

## Execution

### 700 Execution generally

1. Standard: Report conflict between specification and the designated codes of practice and the standards referenced therein before ordering affected materials or executing affected work.
2. Inspection levels: To BS EN 1990, Table B5, level IL2.

2.1. Special requirements: None

3. Quality control: Submit proposals

4. Tolerances: Notwithstanding tolerances specified elsewhere, do not exceed requirements for compliance with the designated code.

## 705 Connections and anchorages

1. End and edge distances and spacing (minimum): Unless otherwise specified or detailed, as required by the designated code of practice for fixings/ anchorages carrying maximum load.
2. Report locations where
   2.1. Type and number of fixings cannot be accommodated.
   2.2. Size or position of members prevents correct positioning.

## 710 Geotechnical work

1. Geotechnical design report: Keep a copy on site during the execution of the geotechnical work.
2. Requirements for testing and monitoring: As geotechnical design report.
3. Assumed ground conditions: As geotechnical design report.

## 720 Stability during execution

1. 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.
2. Design loads: Structure has been designed for the completed state.
3. Before loading structure: Take into account:
   3.1. Reduction in strength due to immaturity of elements.
   3.2. Reduction in loadbearing capacity due to partial completion of continuous elements.

## 740 Condition survey of existing buildings and structures

1. Before starting work: Survey structure. Record and take photographs of damaged or defective areas.
   1.1. Items to be recorded: Location, extent and magnitude of cracks, spalling, indications of movement, previous repairs, modifications and other irregularities of the fabric.
2. Report: Submit for comment.
   2.1. Include recommendations: For repair or monitoring of defects that could adversely affect structural adequacy of facade while temporally supported

## 750 Monitoring of ground conditions during construction

1. Purpose: To identify differences between actual ground conditions and those assumed in the design.
2. Requirements: As detailed in the geotechnical design report.
3. Inspect and record: Sequence, nature and soil types revealed in excavations and formations.
4. Immediately notify: Variations from the assumed ground conditions or shortfall in test requirements.

## 760 Monitoring of existing buildings/ structures

1. Requirement: Visually inspect buildings/ structures for signs of movement, cracking or other indications of distress.
2. Record: Date and time of inspections.

## 770 Movement monitoring

1. Survey points: Agree number and location of survey points and record initial positions to enable monitoring of:

## 780 Crack monitoring of existing buildings/ structures

1. Survey points: Agree number and location of survey points, record initial readings and mark and date extent of cracks.
2. New or extending cracks: Mark extent and record date. Report and make proposals for additional monitoring points.

## Completion

## 900 Geotechnical records

1. Submit
   1.1. Details and results of monitoring.
   1.2. Details and purpose of any changes to the geotechnical work.

Ω End of Section

# C20
# Demolition

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

## 5 Desk study/ survey

1. Scope: before starting deconstruction/ demolition work, examine available information, and carry out a survey of: : The structure or structures to be deconstructed/ demolished.
2. Report and method statements: Submit, describing:
   - 2.1. Form, condition and details of the structure or structures, the site and the surrounding area.
     - 2.1.1. Extent: As demolition plan.
   - 2.2. Type, location and condition of features of historical, archaeological, geological or ecological importance.
   - 2.3. Type, location and condition of adjoining or surrounding premises that might be adversely affected by removal of the structure or structures or by noise, vibration and dust generated during deconstruction or demolition.
   - 2.4. Identity and location of services above and below ground, including those required for the contractor's use, and arrangements for their disconnection and removal.
   - 2.5. Form and location of flammable, toxic or hazardous materials, including lead-based paint, and proposed methods for their removal and disposal.
   - 2.6. Form and location of materials identified for reuse or recycling, and proposed methods for removal and temporary storage.
   - 2.7. Proposed programme of work, including sequence and methods of deconstruction or demolition.
   - 2.8. Details of specific pre-weakening required.
   - 2.9. Arrangements for protection of personnel and the general public, including exclusion of unauthorized persons.
   - 2.10. Arrangements for control of site transport and traffic.

## 10 Extent of deconstruction/ demolition

1. General: subject to retention requirements specified elsewhere, deconstruct/ demolish structures down to: : Levels indicated.

## 13 Groundworks

1. Old foundations, slabs and the like: Break out in locations and to the extents stated.
2. Contaminated material: Remove and dispose of contaminated material to appropriate site.
3. Removal of deleterious material: Remove rubbish, concrete, metal, glass, decayed vegetation and contaminated topsoil.
4. Ancillary items: Backfill basements and voids to level of surrounding site.

## 25 Location and marking of services

1. Services affected by deconstruction/ demolition work: Locate and mark positions.
2. Mains services marking: Arrange with the appropriate authorities for services positions to be located and marked.
   - 2.1. Marking standard: In accordance with Street Works UK publication Guidance on the Positioning and Colour Coding of Underground Utilities' Apparatus.

## 30 Services disconnection arranged by contractor

1. General: Arrange with the appropriate authorities and responsible private organizations for disconnection of services, and removal of fittings and equipment owned by those authorities and organizations where agreed, prior to starting deconstruction or demolition
2. Decommissioning action plan: Available in health and safety file.

## 32 Disconnection of drains

1. General: Locate, disconnect and seal disused drain connections. Agree where drains are to be sealed.
2. Sealing: Permanent, and within the site.
3. Decommissioning action plan: Available in health and safety file.

## 35 Live drainage systems and watercourses

1. Unrecorded features: Give notice if unrecorded pipes, drains, manholes, watercourses, ditches, etc. not shown on the drawings are encountered.
2. Drains and associated manholes, inspection chambers, gullies, vent pipes and fittings: Make good any damage arising from deconstruction or demolition work.
3. Existing watercourses: Divert or construct culvert or drain to ensure continued passage of water, all in accordance with the requirements of the local authority and environmental protection agency.

## 40 Service bypass connections

1. General: Provide as necessary to maintain continuity of services to occupied areas of the site on which the deconstruction or demolition is taking place and to adjoining sites and properties.
2. Minimum notice to adjoining owners and all affected occupiers: 72 hours, if shutdown is necessary during changeover.
3. Timing: Complete bypass of services before demolition works start.

## 45 Services to be retained

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

## 50 Workmanship

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 Construction Skills certification of competence.
3. Site staff responsible for supervision and control of work: Experienced in the assessment of risks involved and methods of deconstruction and demolition to be used. Hold appropriate qualification or training certificates for their role.

## 55 Site hazards

1. Precautions: Prevent fire or explosion caused by gas and vapour from tanks, pipes, etc. Identify potential sources and assess risk prior to commencement of works on site.
2. Hazardous atmospheres: Produce and submit risk assessments.
3. Dust: Minimise airborne dust by periodically spraying deconstruction and demolition works with an appropriate wetting agent. Keep public roadways and footpaths clear of mud and debris.

3.1. Dust suppression and reduction: Submit method statement for control, containment and clean-up regimes. Submit documentation outlining additional lead dust controls

4. Site operatives and general public: Protect from health hazards including those associated with vibration, dangerous fumes and dust arising during the course of the works.

## 60 Adjoining property

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 and provide an assessment of impact.
3. Damage: Minimize disturbance. Repair promptly to ensure safety, stability, weather protection and security.
4. Support to foundations: Do not disturb.

## 65 Structures to be retained

1. Extent: As demolition plan and schedule.
2. Parts which are to be kept in place: Protect. Give notice and notify service authority or owner of damage arising from the execution of the works.
3. Interface between retained structures and deconstruction or demolition: Cut away and strip out with care to minimise the amount of making good needed.

## 70 Partly demolished structures

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

## 71 Dangerous openings

1. General: Provide guarding at all times, including outside of working hours. Illuminate during hours of darkness.
2. Access: Prevent access by unauthorized persons.

## 75 Asbestos-containing materials – known occurrences

1. General: materials containing asbestos are known to be present in: : as per asbestos survey.
2. Removal: By contractor licensed by the Health and Safety Executive (HSE), and prior to other works starting in these locations

## 76 Asbestos-containing materials – unknown occurrences

1. Discovery: Stop work, and give immediate notice of suspected asbestos-containing materials when they are discovered during deconstruction and demolition work. Avoid disturbing such materials.
2. Removal: Submit statutory risk assessments and details of proposed methods for safe removal.

## 78 Unforeseen hazards

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

## 85 Site condition at completion

1. Debris: Clear away and leave the site in a clean, tidy, safe and secure condition.

## 86 Site surface at completion

1. Topography: As drawings.

## 90 Contractor's property

1. Components and materials arising from the deconstruction and demolition work: Property of the contractor, except for designated items which remain the property of the employer.
2. Action: Remove from site as work proceeds where not to be reused or recycled for site use.

## 91 Employer's property

1. Components and materials to remain the property of the employer: if applicable.
2. Protection: Maintain until these items are removed by the employer or reused in the works, or until the end of the contract.

## 95 Recycled materials

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

Ω End of Section

# C41
# Repairing/ renovating/ conserving masonry

## Generally/ preparation

### 110 Scope of work

1. Schedule: Repairs to existing masonry of Sports Club as required.
2. Records of masonry to be repaired: Before starting work, use measurements and photographs, as appropriate to record bonding patterns, joint widths, special features, etc.
3. Identification of masonry 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.

### 120 Site inspection

1. Purpose: To confirm type and extent of repair/ renovation/ conservation work shown on drawings and described in survey reports and schedules of work.
2. Parties involved: Contract administrator.

### 130 Removal of plant growths from masonry

1. Plants, root systems and associated soil/ debris: Carefully remove from joints, voids and facework.
2. Removal of roots: Where growths cannot be removed completely without disturbing masonry seek instructions.
3. Unwanted plants close to masonry: Where removal of root system is not possible or desirable, cut through stem as close to the ground as possible. Remove bark from stump and apply herbicide paste. Leave stump to wither.

### 140 Record of work

1. General: Record work carried out to masonry clearly and accurately using written descriptions, sketches, drawings and photographs, as necessary.

## Workmanship generally

### 150 Power tools

1. Usage for removal of mortar: Not permitted.

### 160 Protection of masonry units and masonry

1. Masonry units: 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. Masonry: Prevent damage, particularly to arrises, projecting features and delicate, friable surfaces. Prevent mortar/ grout splashes and other staining and marking on facework. Protect using suitable nonstaining slats, boards, tarpaulins, etc. Remove protection on completion of the work.

### 165 Structural stability

1. General: Maintain stability of masonry. Report defects, including signs of movement that are exposed or become apparent during the removal of masonry units.

## 170 Disturbance to retained masonry

1. Retained masonry in the vicinity of repair works: Disturb as little as possible.
2. Existing retained masonry: 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.

## 180 Workmanship

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

## 185 Adverse weather

1. General: Do not use frozen materials or lay masonry units on frozen surfaces.
2. Air temperature: Do not bed masonry units or repoint:
    2.1. 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.
    2.2. 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.
    2.3. In non-hydraulic lime:sand mortars in cold weather, unless approval is given.
3. Temperature of the work: Maintain above freezing until mortar has fully set.
4. Rain, snow and dew: Protect masonry by covering during precipitation, and at all times when work is not proceeding.
5. Hot conditions and drying winds: Prevent masonry from drying out rapidly.
6. New mortar damaged by frost: Rake out and replace.

# Material/ production/ accessories

## 215 Material samples

1. Representative samples of designated materials: Submit before placing orders.

## 220 Recording profiles

1. Profiles: Take measurements from existing masonry units, as instructed, to allow accurate matching of replacements.
2. Recording in situ: If there are no suitable joints to allow use of inserts, seek instructions.
3. Drawings and templates: Prepare as necessary. Templates must be clearly and indelibly marked to identify use and location.

## 260 Bricks

1. Standard: To BS EN 771-1

# Dismantling/ rebuilding - Not Used

# Replacements and insertions

## 360 Tile replacement of

1. Description: Replace missing or broken roof tiles to the Sports Club.
2. Tiles: To match existing.
    2.1. Installation: Tiles cut neatly, laid to break joints, set into backing on a full bed of mortar.

3. Mortar: As section Z21.
   3.1. Standard: BS EN 998-2

## Tooling/ dressing stone in situ - Not Used

## Mortar repairs

### 510 Preparation for mortar repairs

1. Repair area: Scribe area of masonry to be removed using straight horizontal and vertical lines parallel to joints. Where repair area abuts joints, maintain existing joint widths and do not bridge joints.
2. Decayed masonry: Cut back carefully to a minimum depth of 20 mm to a sound background. Where the depth of removal exceeds 50 mm, seek instructions.
3. Precautions: Do not weaken masonry by removing excessive material. Do not damage adjacent masonry.
4. Top and vertical reveals of repair area: Undercut.

### 520 Mortar repairs

1. Undercoats: As section Z21.
   1.1. Mix: As finishing coat, without stone dust
2. Finishing coat: To match approved samples.

### 540 Applying mortar

1. Surfaces to receive mortar: Clean, and free from dust and debris. Dampen to control suction.
2. Applying coats: Build up in layers to specified thickness. Apply mortar firmly, ensuring good adhesion with no voids. Form a mechanical key to undercoats by combing or scratching to produce evenly spaced lines.
3. Allow each layer to achieve an initial set before applying subsequent coats. Prevent each layer from drying out rapidly by covering immediately with plastics sheeting and/ or dampening intermittently with clean water.
4. Finishing mortar coat: Form accurately to required planes/ profiles, and finish flush with adjacent masonry.
5. Protection: Protect completed repairs from adverse weather until mortar has set.

## Crack repairs/ ties/ reinforcement - Not Used

## Grouting rubble filled cores - Not Used

## Pointing/ repointing - Not Used

Ω End of Section

# D20
# Excavating and filling

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

## 4 Site investigation

1. Report: See Preliminaries section A12.

## 12 Site clearance

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

## 14 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 Forest Industry Safety Accord safety leaflets.

## 16 Felling large trees

1. Definition: Girth over 600 mm.
2. Identification: Clearly mark trees to be removed.
3. Safety: Comply with Forest Industry Safety Accord safety leaflets.
4. Felling: As close to the ground as possible.
5. Work near retained trees: Take down trees carefully in small sections to avoid damage to adjacent trees that are to be retained, where tree canopies overlap and in confined spaces generally.

## 20 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. Handling: Handle topsoil for reuse or sale in accordance with BS 3882.
3. Around trees: Do not remove topsoil from below the spread of trees to be retained.
4. Site storage: Keep separate from excavated sub-soil.

## 22 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.

## 23 Excavations adjacent to existing foundations

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: Five working days

## 30 Recorded features

1. Recorded foundations, beds, drains, manholes, etc: Break out and seal drain ends.
2. Contaminated earth: Remove and disinfect as required by Local Authority.

## 31 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.

## 33 New foundations crossing old foundations or walls

1. Break out: The old foundation/ wall where it crosses the new foundation/ wall:
    1.1. Depth of breaking out: As necessary to permit the construction of the new foundation to its design cross section.
2. Disturbed/ softened soil: When the formation for the old foundation/ wall is deeper than the formation of the new foundation.
3. Step up: The formation for the new foundation as necessary on either side of the old foundation/ wall until the formation is at its design level.

## 40 Excavated topsoil removal

1. General: Remove from site.

## 45 Surplus subsoil

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

## 50 Hazardous, aggressive or unstable materials

1. Generally: Do not import or use fill materials which would, either in themselves or in combination with other materials or groundwater, 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 'Specification for highway works', clause 601.

## 53 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.

## 55 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 use frozen materials or materials containing ice. 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.

## 60 Backfilling around foundations

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.

## 62 Frost susceptibility

1. General: Except as allowed below, fill must be non-frost-susceptible as defined in the '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:
3. Fine grained soil with a plasticity index less than 20%.
4. Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve.
5. Crushed chalk.
6. Crushed limestone fill with average saturation moisture content in excess of 3%.
7. Burnt colliery shale.
8. Frost-susceptible fill: May only be used:
9. At depths below the finished ground surface greater than 450 mm.
10. Within the external walls of buildings below spaces that will be heated. Protect from frost during construction.
11. Where frost heave will not affect structural elements.

## 65 Hardcore filling

1. Fill: Granular material, free from excessive dust, well graded, all pieces less than 75 mm in any direction.
2. Permitted materials in any one layer.
   - 2.1. Test requirements
     - 2.1.1. Minimum 10% fines value tested in a soaked condition to BS 812-111: Not required.
     - 2.1.2. Impact value SZ tested to BS EN 1097-2: Not required.
   - 2.2. Permitted materials in any one layer
     - 2.2.1. Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
     - 2.2.2. Crushed concrete, crushed brick or tile, free from plaster, timber and metal.

2.2.3. Crushed non-expansive slag.

2.2.4. Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.

2.2.5. Well-burned non-plastic colliery shale.

2.2.6. Natural gravel.

2.3. Natural sand.

3. Filling: Spread and level in 150 mm maximum layers. Thoroughly compact each layer.

## 67 Venting Hardcore layer

1. Fill: Clean granular material, well graded, passing a 75 mm BS sieve but retained on a 20 mm BS sieve. In each layer only one of the following:

1.1. Crushed hard rock.

1.2. Crushed concrete, crushed brick or tile, free from plaster, timber and metal.

1.3. Gravel.

2. Filling: Spread and level in 150 mm maximum layers. Thoroughly compact each layer, whilst maintaining enough voids to allow efficient venting.

## 75 Blinding

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).

Ω End of Section

# E05
# In situ concrete construction generally

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

## 210 Contractor's structural design

1. Design responsibility: Contractor's Design as per Schedules.
2. Requirement
   - 2.1. Generally: As section B50.
     - 2.1.1. Modifications: None.
   - 2.2. Structure: Complete the design and prepare reinforcement drawings and schedules in accordance with the designated code of practice and to satisfy the specified performance criteria.
   - 2.3. Additional requirements: None.
3. Member sizes and locations: Submit proposals.
4. Design and production information: As preliminaries.

## 223 Structural drawings and schedules

1. Standards
   - 1.1. Drawings: To BS EN ISO 3766.
   - 1.2. Reinforcement schedules: To BS EN ISO 3766.

## 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.

## 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

# F10
# Brick/ block walling

## Clauses

### 5 Facing brickwork

1. Bricks: To BS EN 771-1.
2. Mortar: As section Z21.
   2.1. Standard: To BS EN 998-2.

### 18 Concrete facing blockwork

1. Blocks: To BS EN 771-3.
2. Mortar: As section Z21.
   2.1. Standard: To BS EN 998-2

### 20 Manufactured stone blockwork

1. Blocks: To BS 1217.
2. Mortar: As section Z21.
   2.1. Standard: To BS EN 998-2

### 45 Engineering brickwork

1. Bricks: To BS EN 771-1.
   1.1. Freeze/ thaw category: F2.
   1.2. Active soluble salts content category: S2.
2. Mortar: As section Z21.
   2.1. Standard: To BS EN 998-2

### 51 Basic workmanship

1. Bond where not specified: Half lap stretcher.
2. Mortar joints: Fill all vertical joints. Lay bricks, solid and cellular blocks on a full bed.
3. AAC block thin mortar adhesive and gypsum block adhesive joints: Fill vertical joints. Lay blocks on a full bed.
4. Clay block joints
   4.1. Thin layer mortar: Lay blocks on a full bed.
   4.2. Interlocking perpends: Butted.
5. Quoins and advance work: Rack back.
6. Locations for equal levelling of cavity wall leaves
   6.1. Every course containing vertical twist type ties or other rigid ties.
   6.2. Every third tie course for double triangle/ butterfly ties.
   6.3. Courses in which lintels are to be bedded.
7. Lift height (maximum) for walling using cement gauged or hydraulic lime mortar: 1.2 m above any other part of work at any time.
8. Daily lift height (maximum) for walling using cement gauged or hydraulic lime mortar: 1.5 m for any one leaf.
9. Lift height (maximum) for walling using thin layer mortar: 1.3 m above any other part of work at any time.

## 55 Facework

1. Commencement of facework: Not less than 150 mm below finished level of adjoining ground or external works level.
2. Brick/ block selection: Do not use units with damaged faces or arrises.
3. Cut masonry units: Where cut faces or edges are exposed cut with table masonry saw.
4. Coursing brickwork and concrete blockwork: Evenly spaced using gauge rods. To produce satisfactory junctions and joints with built-in elements and components.

## 60 Alterations/ Extensions

1. Coursing: Line up with existing work.
2. Block bonding new walls to existing: Unless agreed otherwise cut pocket requirements as follows:
   - 2.1. Width: Full thickness of new wall.
   - 2.2. Depth (minimum): 100 mm.
   - 2.3. Vertical spacing: As follows:
   - 2.4. Brick to brick: 4 courses high at 8 course centres.
   - 2.5. Block to block: Every other course.
   - 2.6. Pocket joints: Fully filled with mortar.
3. New and existing facework in the same plane: Bonded together at every course to achieve continuity of bond and coursing.
4. Support of existing work: Fully consolidate joint above inserted lintel or masonry with semidry mortar to support existing structure.

## 66 Fire stopping

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

## 90 Cracked bricks in existing facework

1. Replacement: Prior to repointing adjacent cracked joints, cut out and replace with matching sound bricks to approval.
2. Jointing mortar: As section Z21.

## 91 Cracked joints in existing facework which is not to be repointed

1. Crack width determining need for joint remedial work: 2.0 mm
2. Preparation: Cut out joints to form a rectangular recess of 15-20 mm depth. Clean and dampen joints sufficiently to control suction.
3. Joint profile: To match existing.
4. Repointing mortar: As section Z21.

## 95 Repointing

1. Preparation: Cut out joints to form a rectangular recess of 15-20 mm depth. Clean and dampen joints sufficiently to control suction.
2. Mortar: As section Z21.

Ω End of Section

# G10
# Structural steel framing

## Clauses

### 15 Specification standard

1. Standard: Comply with latest edition of National Structural Steelwork Specification.
2. References to Engineer in NSSS: For the purpose of this contract, interpret such references as being to the person named as administering the Contract on behalf of the Employer.

### 17 General steel sections

1. Certification: Provide European Technical Assessment (ETA) with CE marking and a Declaration of Performance (DoP).
2. Source: Obtain steel from a source accredited to a national or internationally accepted quality standard.

### 55 Mortar filling/ Bedding of column bases

1. Mortar
   1.1. Cement: Portland cement BS EN 197-1 - CEM I 42.5 or 52.5.
      1.1.1. Certification: Provide European Technical Assessment (ETA) with CE marking and a Declaration of Performance (DoP).
   1.2. Fine aggregate: To BS EN 12620, grade 0/4 or 0/2 (MP).
2. Bolt pockets: Completely filled with neat cement slurry.
3. Spaces beneath base plates: Completely filled with 1:1 cement:fine aggregate mortar, just fluid enough to pour, tamped well as filling proceeds. Provide temporary shuttering as necessary.

### 60 Galvanizing

1. Preparation: Chemical cleaning.
2. Galvanizing: To BS EN ISO 1461.
   2.1. Minimum mean coating thickness: 85 micrometres.

Ω End of Section

# G20
# Carpentry/ timber-framing/ first fixing

## Clauses

### 2 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 in accordance with chain of custody certification scheme requirements:
   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.
3. Chain of Custody Certification scheme: Contractor's choice, in accordance with UK Government Timber Procurement Policy (UKTPP), i.e. FSC, GiB or PEFC.

### 5 Structural softwood

1. Grading standard: To the appropriate BS EN 14081-1-compliant standard.
   1.1. Grade: GS to BS 4978

### 7 Structural hardwood

1. Grading standard: To the appropriate BS EN 14081-1-compliant standard.
   1.1. Grade: STH to BS EN 16737.

### 10 Ungraded softwood

1. Quality of timber: Free from decay, insect attack (except pinhole borers) and with no knots wider than half the width of the section.

### 12 Wood trim

1. Standard: To BS 1186-3.

### 15 Plywood

1. Standard: To an approved national standard.

### 30 Selection and use of timber

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

### 32 Notches, holes and joints in timber

1. Notches and holes: Position in relation to knots or other defects so that the strength of members will not be reduced.
2. Scarf joints, finger joints and splice plates: Do not use without approval.

## 35 Processing treated timber

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

## 40 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%.

## 41 Bolt/ screw assemblies

1. Nuts and washers: Material grade and finish to suit bolts
2. 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 0.25 times bolt diameter.

## 43 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.
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. Tighten as necessary.

## 50 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: Timber to be of adequate size and have the same treatment as adjacent timber supports.

## 55 Joists generally

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

## 60 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 at each end. Rebated to lie flush with underside of hangers.
3. Fixing to hangers: A nail in every hole.

## 65 Joist hangers

1. Description: GENERAL USE

2. Size: To suit joist, design load and crushing strength of supporting construction.

## 70 Trimming openings

1. Trimmers and trimming joists: Not less than 25 mm wider than general joists.

## 75 Trussed rafter installation

1. Erection: To Trussed Rafter Association site installation guide.
2. Trusses generally: Do not modify without approval.
3. Damaged trusses: Do not use.
4. Fixing: With truss clips. Bottom chords of standard trusses and rafters of raised tie trusses bearing fully on wall plates.
5. Bottom chords of standard trusses: Do not fix to internal walls until roofing is complete and cisterns are installed and filled.

## 95 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.
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. Not projecting beyond top and bottom edges of joists.
3. Outer joists: Blocked solidly to perimeter walls.

Ω End of Section

# H31
# Metal profiled/ flat sheet self-supporting cladding/ roof covering

## To be read with preliminaries/ general conditions.

### 10 Metal

1. Fire performance: As clause 34.
2. Fragility: To ACR(M)001, Class C.
3. External sheets
   - 3.1. Standards, generally: To BS EN 14782.
   - 3.2. Material: BS EN 10346.
   - 3.3. Thickness (nominal): Manufacturer's standard
4. Thermal insulation: As clause 50.
5. Air and vapour control layer: As clause 45.
6. Lining sheets: As clause 40.
7. Profile fillers: As clause 65.
8. Cavity fire barriers: As clause 66.

## Performance requirements

### 34 Fire performance

1. Reaction to fire
   - 1.1. External wall surfaces: To BS EN 13501-1, Class A1
   - 1.2. External roof surfaces: To BS EN 13501-5, Class Broof(t4)
   - 1.3. Substrate: To BS EN 13501-1, Class A1.
   - 1.4. Internal (cavity) surfaces: To BS EN 13501-1, Class A1
   - 1.5. Insulation: To BS EN 13501-1, Class A1
2. Fire resistance of cavity fire barriers
   - 2.1. Standard: To BS EN 13501-2
   - 2.2. Requirement: To resist the passage of flame and smoke for not less than 60 minutes' integrity, 60 minutes' insulation.

### 36 Painting structure

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

### 37 Fasteners

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

### 55 Breather membrane

1. Standard: To BS EN 13859-1
2. Continuity: No breaks. Minimise joints.
   - 2.1. Penetrations and abutments: Fully bond to breather membrane with tape.
   - 2.2. Laps: Not less than 150 mm, fully bond with tape.
3. Tape: As recommended by breather membrane manufacturer.

4. Repairs: Lapped patch of breather membrane material continuously bonded with tape.
5. Junctions at flashings, sills, gutters, etc.: Overlap and allow free drainage to exterior.

## 66 Cavity fire barriers

1. Location: As indicated on drawings.
2. To accurately match sheet profile
3. Fixing method: Adhesive recommended by profile filler manufacturer to fully fill void between surfaces of inner and outer sheet.

## 70 Fixing generally

1. Cut edges: Clean true lines.
2. Penetrations: Cut openings to minimum size necessary.
   2.1. Edge reinforcement: Sections to details.
3. Sheet orientation: Exposed joints of side laps away from prevailing wind.
4. Sheet ends, laps and raking cut edges: Fully supported and with fixings at top of lap.
5. Fasteners: Drill holes. Position at regular intervals in straight lines, centred on support bearings.
   5.1. Position of fasteners in oversized drill holes: Central.
   5.2. Fasteners torque: Sufficient to correctly compress washers.
6. Debris: Remove dust and other foreign matter before finally fixing sheets.
7. Completion: Check fixings to ensure watertightness and that sheets are secure.
8. Cut edges: Paint to match face finish.

## 71 Fixing plastics sheets

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

## 76 Structural movement joints

1. Type: Cover flashing fixed on one side over gap between sheets.
2. Location: Coincident with structural movement joint.
3. Width of gap: To match structural movement joint requirements.
4. Requirement: Weathertight.

## 80 Flashing/ trims

1. Method of fixing: To structure in conjunction with adjacent sheeting. Otherwise to sheeting.

## 90 Safety signs

1. Fixing locations of signs: In accordance with BS 5499-10.
2. Signs description: Warning sign to BS EN ISO 7010, code W036 with supplementary text warning, 'Warning; Fragile roof'

Ω End of Section

# K10
# Gypsum board dry linings/ partitions/ ceilings

## To be read with preliminaries/ general conditions.

### 15 Lining on timber

1. Description: STUD PARTITIONS
2. Substrate: Studs at 600mm centres.
3. Metal resilient (acoustic) bars: At 600 mm centres
4. Fire performance
   - 4.1. Reaction to fire: To BS EN 13501-1, Class B-s3, d2 or better
   - 4.2. Fire resistance of complete lining assembly: To BS EN 13501-2, REI 30 or better
5. Linings: 12.5 mm plasterboard.
   - 5.1. Fixing: Contractor's choice.
6. Finishing: .Skim coat plaster.
   - 6.1. Primer/ Sealer: As recommended by board manufacturer for vapour control.
7. Accessories: Metal beads/ stops recommended by board manufacturer.
8. Other requirements: Fire-stopping around service penetrations as section P12.

### 25 Ceiling lining on timber

1. Metal resilient (acoustic) bars: At 450 mm centres.
2. Fire performance
   - 2.1. Reaction to fire: To BS EN 13501-1, Class B-s3, d2 or better.
   - 2.2. Fire resistance of complete ceiling assembly: To BS EN 13501-2, REI 30 or better.
3. Linings: 12.5 mm plasterboard.
   - 3.1. Fixing: Contractor's choice.
4. Finishing: Skim coat plaster.
   - 4.1. Primer/ Sealer: As recommended by board manufacturer for vapour control.
5. Accessories: Metal beads/ stops recommended by the board manufacturer.
6. Other requirements: Fire-stopping around services as section P12.

## Installation

### 60 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.

### 61 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.

## 65 Dry lining generally

1. General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.
2. Standard:
3. Gypsum plasterboard to BS EN 520.
4. Gypsum fibre board to BS EN 15283-2.
5. Evidence of compliance: Submit Declaration of Performance (DoP).
6. Cutting gypsum boards: Neatly and accurately without damaging core or tearing paper facing.
7. Cut edges: Minimize and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.
8. Two layer boarding: Stagger joints between layers.
9. Finishing: Neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.

## 67 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.

## 69 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.

## 70 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.

## 75 New wet laid bases

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

## 85 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: Size accordingly.
   2.2. Ceilings: Cut insulation around electrical fittings, etc.

## 86 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.

## 87 Sealing gaps and air paths

1. Sealing: Apply sealant to perimeter abutments and around openings as a continuous bead with no gaps.
2. Application: To clean, dry and dust free surfaces as a continuous bead with no gaps.
   2.1. Gaps greater than 6mm between floor and underside of gypsum board: After sealing, fill with joint compound.

## 88 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.

## 91 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.

## 92 Horizontal joints

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.

## 93 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.

## 94 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.

## 95 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. 9.5 mm thick board, 1200 mm wide to have dab centres at 400 mm (min).
      3.2.2. 9.5 or 12.5 mm thick board, 900 mm wide to have dab centres at 450 mm (min).
      3.2.3. 12.5 mm thick board, 1200 mm wide to have dab centres at 600 mm (min).
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

## 97 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.

## 98 Repairs to existing gypsum board

1. Performance of repairs must match original specified performances.
2. Filling small areas with broken cores: Cut away paper facing, remove loose core material and fill with jointing compound.
   2.1. Finish: Flush, smooth surface suitable for redecoration.
3. Large patch repairs: Cut out damaged area and form neat hole with rectangular sides. Replace with matching gypsum board.
   3.1. Fixing: Use methods to suit type of dry lining, ensuring full support to all edges of existing and new gypsum board.
   3.2. Finishing: Fill joints, tape and apply jointing compound to give a flush, smooth surface suitable for redecoration.

Ω End of Section

# K20
# Timber board flooring/ sarking/ linings/ casings

## To be read with preliminaries/ general conditions.

### 15 Timber board flooring

1. Substrate: Timber joists at 600 mm centres.
2. Boards
   - 2.1. Standard: BS EN 14342.
     - 2.1.1. Evidence of compliance: Submit.
   - 2.2. Quality: To BS EN 13990, Grade A.

### 25 Timber board sarking

1. Boards: Tongued-and-grooved softwood boards.
   - 1.1. Reaction to fire: Class A2-s3, d2 or better.
   - 1.2. Wood species: Contractor's choice.
   - 1.3. Quality: Blue stain, fissures, knot holes and loose or unsound knots not permitted on exposed face (underside) of boards.

### 30 Timber board

1. Boards
   - 1.1. Fire performance
     - 1.1.1. Reaction-to-fire classification: Class A2-s3, d2 or better.
     - 1.1.2. Fire resistance: To BS EN 13501-2, REI 30.
   - 1.2. Quality of timber: To BS 1186-3, Class: CSH

## Workmanship

### 40 Moisture content of new concrete/ screed substrate for floating floors

1. Test for moisture content
   - 1.1. Standard: To BS 8201, annex A, using an accurately calibrated hygrometer.
   - 1.2. Readings: Take in corners, along edges, and at random points over the area being tested.
2. Acceptability: Do not lay flooring until all readings show 75% relative humidity or less.

### 41 Treated timber

1. Surfaces exposed by minor cutting and/ or drilling: Treat with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.

### 42 Installing vapour control membrane to floating floors

1. Location: Immediately below the floating layer.
2. Joints: Overlap by at least 150 mm and seal with vapour-resistant tape.
3. Perimeter/ upstands: Turn membrane up around perimeter of flooring and around any upstands and seal to top face of boards using : polyethylene double-sided adhesive tape.
   - 3.1. Excess material: Trim off neatly after fixing skirting boards/ cover beads.
4. Membrane condition: Intact, clean and dry prior to laying flooring.

## 45 Battens for floating floors

1. Quality of timber: Free from decay, insect attack (except ambrosia beetle damage) and with no knots wider than half the width of the section.
2. Treatment: Preservative impregnation.
   2.1. Standard: To section Z12 'Preservative/ flame-retardant treatment' and the Wood Protection Association (WPA) publication Code of Practice: Industrial Wood Preservation.

## 50 Fixing boards

1. Protection during and after installation: Keep boards dry, clean and undamaged.
2. Boards to be used internally: Do not install until building is weathertight.
3. Moisture content of timber supports at time of fixing boards: Not more than 18%.
4. Fixing: Fix boards securely to each support to give flat, true surface free from undulations, lipping, splits and protruding fasteners.
5. Timber movement: Position boards and fixings to prevent cupping, springing, excessive opening of joints and other defects.
6. Heading joints: Tightly butted, central over supports and at least two boards widths apart on any one support.
7. Edges: Plane off proud edges.
8. Exposed nail heads: Neatly punch below surface.

Ω End of Section

# L10
# Windows/ rooflights/ screens/ louvres

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

## 3 PVC-U windows

1. Standard: Fire-rated and/ or smoke-rated opening windows to BS EN 14351-1, BS EN 16034 and BS 7412
2. Thermal performance (U-value maximum): Manufacturer's standard.
3. Acoustic performance rating: Manufacturer's standard.
4. Fire performance
   - 4.1. Fire resistance: . To BS EN 13501-2, EI 30 or better.
   - 4.2. Reaction to fire: To BS EN 13501-1, Class B or better.
   - 4.3. Fire egress: Manufacturer's standard.
5. Glazing details: Manufacturer's standard.
   - 5.1. Beading: Manufacturer's standard.
6. Ironmongery/ accessories: As per Schedule.
7. Fixing: Manufacturer's standard.
   - 7.1. Fastener spacing: When not pre-drilled or specified otherwise, position fasteners 150-250 mm from ends of each jamb, adjacent to each hanging point of opening lights, but no closer than 150 mm to a transom or mullion centre line, and at maximum 600 mm centres.

## 5 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 in accordance with chain of custody certification scheme requirements:
   - 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. Chain of custody certification scheme: In accordance with UK Timber Procurement Policy (UKTPP), i.e. FSC, GiB or PEFC)

## 25 Aluminium windows

1. Standard: Fire-rated and/ or smoke-rated opening windows to BS EN 14351-1, BS EN 16034 and BS 4873
2. Finish as delivered: As per General Notes.
3. Thermal performance (U-value maximum): As per General Notes.
4. Acoustic performance rating: Manufacturer's standard.
5. Fire performance
   - 5.1. Fire resistance: To BS EN 13501-2, EI 30 or better
   - 5.2. Reaction to fire: To BS EN 13501-1, Class B or better
   - 5.3. Fire egress: Manufacturer's standard.

6. Glazing details: Manufacturer's standard.
   6.1. Beading: Manufacturers standard.
7. Ironmongery/ accessories: As per Schedules.
8. Fixing: Manufacturer's standard.
   8.1. Fastener spacing: When not pre-drilled 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.

## 40 PVC-U subframes

1. Fire performance: Manufacturer’s standard.
2. Fixing: Use lugs and ties supplied by subframe manufacturer; install to manufacturer's recommendations.

## 65 Priming/ sealing

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

## 80 Ironmongery

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.

## 90 Replacement window installation

1. Standard: To BS 8213-4.

Ω End of Section

# L20
# Doors/ shutters/ hatches

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

## 10 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 in accordance with chain of custody certification scheme requirements:
   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.
3. Chain of custody certification scheme: Not applicable.
   3.1. Other evidence: None.

## 25 Wood panelled doors

1. Preservative treatment: Required.
2. Fire performance
   2.1. Fire resistance: To BS EN 13501-2, EIW 30 or better.
   2.2. Smoke leakage: Manufacturer's standard.
   2.3. Reaction to fire: To BS EN 13501-1, Class B or better.
3. Thermal performance (U-value maximum): As per Schedules.

## 45 Doors

1. Ironmongery: As per Schedules.
2. Fire performance
   2.1. Fire resistance: To BS EN 13501-2, EIW 30 or better.
   2.2. Smoke leakage: Manufacturer's standard.
   2.3. Reaction to fire: To BS EN 13501-1, Class B or better.
3. Thermal performance (U-value maximum): As per Schedules.

## 50 Wood door frames

1. Fire performance
   1.1. Fire resistance: To BS EN 13501-2, EIW 30 or better.
   1.2. Smoke leakage: Manufacturer's standard.
   1.3. Reaction to fire: To BS EN 13501-1, Class B or better.
2. Thermal performance: Manufacturer's standard.
3. Fixing: Plugged and screwed, as section Z20.
   3.1. Spacing of fixings (frames not predrilled): Maximum 150 mm from ends of each jamb, adjacent to each hanging point and at 600 mm maximum centres.

## 55 Doorsets

1. Ironmongery: As per Schedules.
2. Perimeter seals: Fire and smoke seal.
3. Thermal performance (U-value maximum): As per Schedules.
4. Fire performance
   - 4.1. Fire resistance: To BS EN 13501-2, EIW 30 or better.
   - 4.2. Smoke leakage: Manufacturer's standard.
   - 4.3. Reaction to fire: To BS EN 13501-1, Class B or better.
5. Fixing: Plugged and screwed.
   - 5.1. Spacing of fixings (frames not predrilled): Maximum 150 mm from ends of each jamb and at 600 mm maximum centres.

## 75 Fire-resisting/ smoke control doors/ doorsets

1. Gaps between frames and supporting construction: Filled as necessary in accordance with door/ doorset manufacturer's instructions.

## 85 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.

Ω End of Section

# L40
# General glazing

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

## 10 Workmanship and positioning generally

1. Glazing
   1.1. Generally: In accordance with BS 6262 series.
   1.2. Integrity: Wind and watertight under all conditions. Make full allowance for deflections and other movements.
2. Glass
   2.1. Standards: Generally to BS 952-1, BS 952-2 and to the relevant parts of:
      2.1.1. BS EN 572-9 for basic soda lime silicate glass.
      2.1.2. BS EN 1096-1 for coated glass.
      2.1.3. BS EN 12150-2 for thermally toughened soda lime silicate glass.
      2.1.4. BS EN 14449 for laminated glass.
   2.2. Quality: Free from scratches, bubbles and other defects.
   2.3. Dimensional tolerances: Panes/ sheets to be accurately sized.
   2.4. Material compatibility: Glass/ plastics, surround materials, sealers primers and paints/ clear finishes to be compatible. Comply with glazing/ sealant manufacturers' recommendations.
   2.5. Protection: Keep materials dry until fixed. Protect insulating glass units and plastics glazing sheets from the sun and other heat sources.

## 20 Removal of glass/ Plastics for reuse

1. Existing glass/ plastics, glazing compound, beads, etc.: Remove carefully, avoiding damage to frame, to leave clean, smooth rebates free from obstructions and debris. Clean glazing, beads and other components that are to be reused.
2. Deterioration of frame/ surround: Submit report on defects revealed by removal of glazing.
   2.1. Affected areas: Do not reglaze until instructed.

## 30 Preparation

1. Surrounds, rebates, grooves and beads: Clean and prepare before installing glazing; ensure compliance with any certified installation requirements.

Ω End of Section

# M20
# Plastered/ rendered/ roughcast coatings

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

## 60 Cements for mortars

1. Cement: To BS EN 197-1.
   1.1. Types: Portland cement, CEM I.
2. Portland slag cement, CEM II.
3. Portland fly ash cement, CEM II.
   3.1. Strength class: 32.5, 42.5 or 52.5.
4. Sulfate resisting cement: To BS EN 197-1.

## 61 Lime for cement gauged mortars

1. Standard: To BS EN 459-1.
   1.1. Type: CL 90S.

## 62 Admixtures for cement gauged mortars

1. Suitable admixtures: Select from:
   1.1. Air entraining (plasticizing) admixtures: To BS EN 934-2 and compatible with other mortar constituents.
   1.2. Other admixtures: Submit proposals.
2. Prohibited admixtures: Calcium chloride and admixtures containing calcium chloride.

## 63 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.

## 65 Mixing

1. Render mortars (site-made)
   1.1. Batching: By volume using 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.
3. Contamination: Prevent intermixing with other materials.

## 67 Cold weather

1. General: Do not use frozen materials or apply coatings on frozen or frost bound substrates.
2. Internal work: Take precautions to prevent damage to internal coatings when air temperature is below 3°C.
3. External work: Avoid when air temperature is at or below 5°C and falling or below 3°C and rising.

## 69 Ready prepared lime putty

1. Type: Slaked directly from CL 90 quicklime to BS EN 459-1, using an excess of water.

1.1. Maturation: In pits/ containers that allow excess water to drain away.

1.2. Density of matured lime putty: 1.3-1.4 kg/L.

2. Maturation period before use (minimum): 90 days.
3. Storage: Prevent drying out or wetting. Protect from frost.

## 71 Suitability of substrates

1. General: Suitable to receive coatings. Sound, free from contamination and loose areas.
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.

## 74 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. Drying out substrates: Establish drying conditions.
4. Faults in substrate (structural deficiencies, additional sources of damp, etc.): Submit proposals.

## 76 Removing defective existing plaster

1. Plaster for removal: Loose, hollow, 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 substrate (structural deficiencies, additional sources of damp, etc.): Submit proposals.
5. Cracks

5.1. Fine hairline cracking/ crazing: Leave.

5.2. Other cracks:

6. Dust and loose material: Remove from exposed substrates and edges.

## 78 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 (other than hairline cracks): Cut out to a width of 75 mm (minimum).
4. Dust and loose material: Remove from exposed substrates and edges.

## 80 plasterboard backings

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.

6. Additional framing supports

6.1. Fixtures, fittings and service outlets: Accurately position to suit fasteners.

6.2. Board edges and perimeters: To suit type and performance of board.

7. Joints

7.1. Ceilings

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

7.1.2. Two layer boarding: Stagger joints between layers.

7.2. Partitions/ walls

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

7.2.2. Two layer boarding: Stagger joints between layers.

7.2.3. Horizontal joints:

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

7.3. Joint widths (maximum): 3 mm.

7.4. End joints: Stagger between rows.

7.5. Two layer boarding: Stagger joints between layers.

8. Joint reinforcement tape: Apply to joints and angles except where coincident with metal beads.

## 81 Beads/ stops for internal use

1. Standard: In accordance with BS EN 13914-2.

## 82 Beads/ stops for external use

1. Standard: In accordance with BS EN 13914-1.

2. Fixing: Secure and true to line and level.

2.1. Beads/ stops to external render: Fix mechanically.

## 87 Application of coatings

1. General: Apply coatings firmly and 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 localized drying out.

4. Keying undercoats: Cross scratch plaster coatings and comb render coatings. Do not penetrate undercoat.

## 93 Curing and drying of render coatings

1. General: Prevent premature setting and uneven drying of each coat.

2. Curing: Keep each coat damp by covering with polyethylene sheet and/ or spraying with water.
   2.1. Curing period (minimum): As render manufacturer's recommendations.
3. Drying: Allow each coat to dry thoroughly, with shrinkage substantially complete before applying next coat.

## 94 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.

## 97 Render final coat – scraped finish

1. Finish: Scraped to expose aggregate and achieve an even texture.

Ω End of Section

# M21
# Insulation with rendered finish

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

## 10 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.

## 20 External wall insulation systems

1. Description: As per Architect's drawings, proprietary rigid insulation with render finish.
2. Insulation: As per Schedules.
3. Cavity barriers and closers
   3.1. Material: To BS EN 13501-1, Class A1
4. Render: As per Schedules.

## 30 General requirements

1. Detailed design of system and associated features shown on drawings: Complete to meet requirements of this specification.
2. Installation requirements
   2.1. Weathertight under all anticipated conditions.
   2.2. Capable of resisting likely impact and wind loads.
3. Installer: The system manufacturer or a contractor approved by the system manufacturer.
4. Construction/ movement joints: Formed as and where shown on drawings.
   4.1. On-site modifications to joint locations/ design: Agree revisions before proceeding.

## 40 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 the air temperature is outside range recommended by manufacturer.
3. Temperature of the work: Maintained above minimum level recommended by manufacturer until adhesive/ mortar/ render has fully hardened.
4. Newly rendered surfaces: Protected against adverse weather conditions.
5. Render coatings damaged by adverse weather: Replace.

## 50 Substrates

1. Condition before pretreatment/ application of insulation system: Structurally sound, adequately true and level, dry, free from contamination by dirt and dust, efflorescence, organic growths or other deleterious substances and in a suitable condition to receive specified insulation system.

## 60 On-site pull-out tests on fixing pins

1. Objective: To prove suitability of structural substrate and determine size and number of fixings required.
2. Pull-out test load: 2 times the design load.
3. Notice
   3.1. Give notice of testing timetable to: Contract administrator.

3.2. Period of notice: Three working days.

## 90 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

# M51
# Edge fixed carpeting

## Types of carpeting

### 110 Carpeting

1. Base: Timber boarding.
2. Underlay
   2.1. Standard: To BS EN 14499.
   2.2. Type: Plastics (polymeric).
3. Method of fixing: Carpet gripper.

### 150 Carpeting for stairs

1. Base: Timber boarding.
2. Method of fixing: Adhesive.

## General/ preparation

### 210 Workmanship generally

1. Finished carpeting: Tightly seamed, accurately fitted, neatly and securely fixed, smooth and evenly tensioned.

### 250 Carpet layout – pre-order requirements

1. Setting out: Agree seam locations and pattern.

### 290 Conditioning carpet

1. Requirements: As recommended by manufacturer.

### 310 Condition of works prior to laying

1. General requirements
   1.1. Building weathertight and well dried out.
   1.2. Wet trades complete.
   1.3. Paintwork complete and dry.
   1.4. Floor service outlets, duct covers and other fixtures around which carpet is to be cut, fixed.

## Laying carpeting

### 470 Laying carpet generally

1. Appearance of laid carpet: Pieces of the same carpet type capable of being seen together to be of consistent appearance with pile lying in the same direction.
2. Carpet perimeter: Accurately and closely fitted leaving no gaps. Edges turned down and secured to grippers.
3. Carpet tension: Even, and such that carpet lies flat and will not ruck, ripple or become slack.
4. Doorways and recesses: Cut carpet in. Do not piece in without prior approval.

### 490 Doorways

1. Carpet joint: On centre line of door leaf.

## 510 Edgings and cover strips

1. Fixing: Secure with edge of carpet firmly gripped. Use matching fasteners where exposed to view.

## 530 Laying stair carpet with gripper

1. Shifting allowance: Provide a minimum additional length of carpet equivalent to one tread and riser. Conceal by substituting for underlay at top or bottom of stairs.
2. Gripper locations
   2.1. One on each tread and each riser, close to intersection.
   2.2. To edge of each winder over 300 mm deep and abutting a wall.
   2.3. Along a landing over 300 mm deep and abutting a wall.
3. Pile direction: Towards bottom of stairs and perpendicular to nosings.

## 570 Completion

1. Debris: Remove stay tacks and cut away partly loose warp and face yarns.
2. Surface irregularities and tension: Check and make necessary tension adjustments.

## 580 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

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

## 10 Water-based finishing coats Type A

1. Description: TO INTERNAL PLASTERED SURFACES
2. Manufacturer: Dulux Trade, brand of AkzoNobel
   - 2.1. Contact details
     - 2.1.1. Address: AkzoNobel Decorative Paints
       Wexham Road
       Slough
       Berkshire
       United Kingdom
       SL2 5DS
     - 2.1.2. Telephone: +44 (0)333 222 7070
     - 2.1.3. Web: https://www.duluxtradepaintexpert.co.uk/en
     - 2.1.4. Email: project.support@akzonobel.com
   - 2.2. Product reference: Dulux Trade Diamond Matt
3. Composition: Lightfast pigments (pigment), acrylic copolymer emulsion (binder), water (solvent).
4. Sheen: Matt.
5. Form: Liquid.
6. Certification: BREEAM, LEED, IAC Gold, EPD, Fire Testing report.
7. Coverage: 16 m²/L.
8. Drying time: Touch dry: dependent on temperature and humidity. Recoat: 4–6 hours.
9. Thinning: Sealing new or bare surfaces: add up to one part clean water to ten parts paint. Normal use (not to be exceeded): thinning is not usually required. Airless spray application: thinning is not usually required but can be thinned by adding up to one part clean water to ten parts paint.
10. Volume solids: White: 49% (nominal). Other colours will vary.
11. Chemical resistance: Not suitable.
12. Water resistance: Resistant to the levels of atmospheric humidity present in normal interior environments and will withstand repeated washing.
13. Application method: Manufacturer's standard (restricted).
14. VOC: Ready mixed: maximum 1 g/L VOC. Tinted colour: maximum 1 g/L VOC.
15. VOC emissions: Considered to have "Trace" elements for emissions.
16. Storage: Do not use or store in extremes of temperature and protect from frost.
17. Surface preparation: Ensure surfaces to be painted are sound, clean and dry.

## 22 Handling and storage

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

## 28 Protection

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

## 30 Preparation generally

1. Standard: In accordance with BS 6150.
2. Refer to any pre-existing CDM Health and Safety File and CDM Construction Phase Plan where applicable.
3. Risk assessments and method statements for suspected hazardous materials: Prepare for operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
4. Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
5. Substrates: Sufficiently dry in depth to suit coating.
6. Efflorescence salts, dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
7. Surface irregularities: Provide smooth finish.
8. Organic growths and infected coatings
    8.1. Remove with assistance of biocidal solution.
    8.2. Apply residual effect biocidal solution to inhibit regrowth.
9. Joints, cracks, holes and other depressions: Fill with stoppers/ fillers. Provide smooth finish.
10. Dust, particles and residues from preparation: Remove and dispose of safely.
11. Water-based stoppers and fillers
    11.1. Apply before priming unless recommended otherwise by manufacturer.
    11.2. If applied after priming: Patch prime.
12. Doors, opening windows and other moving parts
    12.1. Ease, if necessary, before coating.
    12.2. Prime resulting bare areas.

## 32 Previously coated surfaces generally

1. Preparation: In accordance with BS 6150.
2. Contaminated or hazardous surfaces: Give notice of:
    2.1. Coatings suspected of containing lead.
    2.2. Substrates suspected of containing asbestos or other hazardous materials.
    2.3. Significant rot, corrosion or other degradation of substrates.
3. Risk assessment and method statement for hazardous materials: Prepare for operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
4. Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.
5. Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.
6. Alkali affected coatings: Completely remove.
7. Retained coatings
    7.1. Thoroughly clean.
    7.2. Gloss-coated surfaces: Provide key.
8. Partly removed coatings
    8.1. Apply additional preparatory coats.
    8.2. Junctions: Provide flush surface.
9. Completely stripped surfaces: Prepare as for uncoated surfaces.

## 35 Fixtures and fittings

1. Risk assessment and method statement for hazardous materials: Prepare for operations, disposal of waste, containment and reoccupation, and obtain approval before commencing work.
2. Replacement: Refurbish as necessary, refit when coating is dry.

## 36 Ironmongery

1. Removal: Before commencing work remove ironmongery from surfaces to be coated.
2. Replacement: Refurbish as necessary; refit when coating is dry.

## 37 Wood preparation

1. General: Provide smooth, even finish with lightly rounded arrises.
2. Degraded or weathered surface wood: Take back surface to provide suitable substrate.
3. Degraded substrate wood: Repair with sound material of same species.
4. Heads of fasteners: Countersink sufficient to hold stoppers/ fillers.
5. Resinous areas and knots: Apply two coats of knotting.
6. Defective primer: Take back to bare wood and reprime.

## 39 Steel preparation

1. Areas of defective primer, corrosion and loose scale: Take back to bare metal. Reprime as soon as possible.
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 primer as soon as possible.
7. Remaining areas: Degrease.

## 41 Masonry and rendering preparation

1. Loose and flaking material: Remove.

## 43 Plaster preparation

1. Nibs, trowel marks and plaster splashes: Scrape off.
2. Overtrowelled 'polished' areas: Provide suitable key.
3. Depressions around fixings: Fill with stopper/ filler.

## 45 Previously painted window frames

1. Paint encroaching beyond glass sight line: Remove.
2. Loose and defective putty: Remove.
3. Putty cavities and junctions between previously painted surfaces and glass: Clean thoroughly.
4. Finishing
    4.1. Patch prime, reputty, as necessary and allow to harden.
    4.2. Seal and coat as soon as sufficiently hard.

## 50 External pointing to existing frames

1. Defective sealant pointing: Remove.
2. Joint depth: Approximately half joint width; adjust with backing strip if necessary.

## 52 Sealing of internal movement joints

1. General: To junctions of walls and ceilings with architraves, skirtings and other trims.
2. Sealant: Water-borne acrylic.
   2.1. Preparation and application: As section Z22.

## 55 Existing gutters

1. Dirt and debris: Remove from inside of gutters.
2. Defective joints: Clean and seal with suitable jointing material.
3. Suspected hazardous materials: submit method statement.

## 61 Coating generally

1. Application: In accordance with BS 6150,
2. Conditions: Maintain suitable temperature, humidity and air quality.
3. Surfaces: Clean and dry at time of application.
4. Thinning and intermixing: Not permitted unless recommended by manufacturer.
5. Overpainting: Do not paint over intumescent strips or silicone mastics.
6. Priming coats: Apply 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.

## 65 Concealed joinery surfaces

1. General: After priming, apply additional coatings to surfaces that will be concealed when component is fixed in place.

## 66 Concealed metal surfaces

1. General: Apply additional coatings to surfaces that will be concealed when component is fixed in place.

## 68 Staining wood

1. Primer: Apply, if recommended by stain manufacturer.
2. Application: Apply in flowing coats and brush out excess stain to produce uniform appearance.

## 70 External doors

1. Bottom edges: Prime and coat before hanging.

## 75 Bead glazing to coated wood

1. Before glazing: Apply first two coats to rebates and beads.

Ω End of Section

# N11
# Domestic kitchen fittings, furnishings and equipment

## To be read with preliminaries/ general conditions

### 10 Fitted base units and wall units

1. Description: As per Schedules.
2. Standard: To BS EN 14749.
3. Manufacturer: Howdens.

### 20 Worktops

1. Description: As per Schedules.
2. Standard: To BS 6222-3
3. Manufacturer: Howdens.

### 30 Sinks, taps, traps and wastes

1. Description: As per Schedules.
2. Sinks
   - 2.1. Standard: To BS EN 13310
   - 2.2. Manufacturer: Howdens.
3. Taps: As per Schedules.
   - 3.1. Manufacturer: Howdens.
   - 3.2. Material: Chromed steel
4. Wastes: Plug and chain
   - 4.1. Standard: To BS EN 274-1, BS EN 274-2 and BS EN 274-3
   - 4.2. Manufacturer: Howdens.
   - 4.3. Size: To fit sink
   - 4.4. Material: Chromed steel
5. Traps: Tubular, P-type
   - 5.1. Standard: To BS EN 274-1, BS EN 274-2 and BS EN 274-3

### 50 Sealant

1. Standard: To BS EN ISO 11600, Class F20 HM
2. Type: One-part silicone.
3. Colour: To match worktop.

## Execution

### 60 Moisture content of wood and wood-based boards

1. Control and monitoring
   - 1.1. Method statement: Submit.

### 65 Installation generally

1. Fixings and adhesives: As section Z20.
2. Services: As section S90 and section V90

## 70 Installing units and worktops

1. General: Well-fitting, stable and secure.

## 75 Installing appliances

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

## 80 Installing sinks, taps and wastes

1. Water supply: According to BS EN 806-2 and BS EN 806-4.
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.

## 85 Sealant bedding and pointing

1. Application: As section Z22.

## 90 Installing trims and mouldings

1. Lengths: Unjointed between angles or ends of runs.
2. Angle joints: Mitred.

Ω End of Section

# N13
# Sanitary appliances and fittings

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

## 10 WC pans and flushing arrangements

1. Standard: To Defra WC suite performance specification or equivalent approved by the relevant water company.
2. Type: Close-coupled cistern.
   - 2.1. Material: As WC pan.
   - 2.2. Colour: White.
3. Seat: To BS 1254 and Kitemarked, colour to match pan.
4. Pan connector: To BS 5627, colour to match pan.
5. Flushing arrangement: Cistern manufacturer's standard.
   - 5.1. Operating control: Push-buttons, chrome-plated.
   - 5.2. Flush volume: Dual flush 4 or 2 L.
6. Accessories: Overflow connector.

## 12 Unisex accessible WC equipment packages (Document M)

1. Description: As per the Schedules.
2. Type approval certificate: Submit.
3. Finish/ colour
   - 3.1. Pan: Manufacturer's standard.
   - 3.2. Cistern: Plastics, white (concealed).
   - 3.3. Seat: Plastics, white.
   - 3.4. Basin: Manufacturer's standard.
   - 3.5. Handrails and grab bars: Manufacturer's standard.

## 15 Urinals and cisterns

1. Urinals: Bowl.
2. Wastes: Chrome-plated strainer waste.
3. Traps: DN 30 tubular P-type trap, 75 mm seal

## 30 Washbasins

1. Type: Pedestal
2. Colour: White.
3. Size: Manufacturers standard.
4. Wastes: Chain and plug.

## 40 Shower units

1. Tray: Acrylic resin to BS EN 14527, Class 2, white.
2. Shower fittings: Thermostatic shower mixer, exposed.
   - 2.1. Water supply temperature (maximum): 43°C.
3. Wastes: Grated.
4. Traps: DN 40, lift out dip tube type, 75 mm seal.

5. Enclosure: To BS EN 14428.

## 41 Shower heads

1. Head: Sliding.
2. Hose: Sliding.
3. Slide bar: Chromium-plated.

## 42 Shower mixer valves

1. Type: Thermostatic shower mixer for surface mounting.

## 43 Shower trays

1. Type: Accessible tray with open front for flush installation.
2. Size: As existing.
3. Colour: White.

## 70 Installation generally

1. Standards: In accordance with BS 6465-1, -2 and -3.
2. Assembly and fixing: Fix appliances securely to structure, without taking support from pipelines, level and plumb and so that surfaces designed to fall drain as intended.
3. Fasteners: Non-ferrous or stainless steel.
4. Jointing and bedding compounds: Recommended by manufacturers of appliances, accessories and pipes, to form watertight joints between appliances and backgrounds (except cisterns) and between appliances and discharge pipes.
5. Supply and discharge pipework: Fix before appliances.
6. Timing: Tiled backgrounds, other than splashbacks, complete before fixing appliances. Do not overstress tiles when fixing appliances.
7. On completion: Components and accessories working correctly with no leaks.
8. Labels and stickers: Remove.

## 73 Installing sanitary appliances and fittings

1. Extent
    1.1. Sanitary appliances: As drawings and Schedules.

## 75 Installing cisterns

1. Cistern operating components: Obtain from cistern manufacturer.
2. Inlet and flushing valves: Match to pressure of water supply.
3. Internal overflows: Into pan, to give visible warning of discharge.
4. External overflows: Fix pipes to falls, and locate to give visible warning of discharge. Agree position.

## 76 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.

## 77 Installing wastes and overflows

1. Bedding: Waterproof jointing compound.

2. Fixing: With resilient washer between appliance and backnut.

Ω End of Section

# N91
# External signage and interpretation

## Signage outline

### 120 Bespoke signage system

1. Description: TBC with Client.
2. Function: Advertising and Information.

## System performance

### 205 Design of signage systems

1. Design: Complete detailed design and submit before commencing work.
2. 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 ISO 7001.
5. Wind loads: To BS EN 1991-1-4.

### 215 Design life

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

### 220 Safety signage requirements

1. General: To relevant parts of BS ISO 3864-1.
2. Safety meaning: To BS ISO 3864-1.
3. Geometric shapes, colours and layout: To BS ISO 3864-1 and BS ISO 3864-4.
4. Water safety: To BS EN ISO 7010.
5. Escape route: To BS ISO 16069.

### 230 Accessibility

1. Design standard for disabled users: In accordance with BS 8300-1.
2. Geometric shapes, colours and layout: To BS ISO 7001.
   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.

## Materials

### 405 Adhesive vinyl

1. Description: LETTERS
2. Component thickness: 1 mm.
3. Finish: Matt.
4. Additional requirements: None.

### 410 Aluminium

1. Standards: To relevant parts of BS EN 515 and BS EN 12020-2.
   1.1. Mechanical properties of extruded rod/ bar, tube and profiles: To BS EN 755-2.
   1.2. Tolerances on dimensions and form of seamless tubes: To BS EN 755-7.
   1.3. Profiles, tolerances on dimensions and form: To BS EN 755-9.
   1.4. Structural members: In accordance with BS EN 1999-1-1.
   1.5. Aluminium sheet: To BS EN 573-3.
2. Alloy, temper and thickness: Suitable for the application and specified finish.

### 435 Glass

1. Standards: To BS 952-1 and -2 and relevant parts of:
   1.1. BS EN 572-1 and BS EN 572-2 for properties of soda lime silicate glass.
   1.2. BS EN 1863-1 and -2 for heat-strengthened soda lime silicate glass.
   1.3. BS EN 12150-1 and -2 for thermally toughened soda lime silicate glass.
   1.4. BS EN ISO 12543-1, -3, -4, -5 and -6 for laminated glass and laminated safety glass.
2. Panes/ sheets: 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.

### 440 Glazing plastics

1. Standards: In accordance with relevant parts of BS 6262-4.
   1.1. Impact strength: To BS EN 12600.

### 450 Plywood

1. General requirements: To BS EN 635-1.
2. Bonding quality and biological durability: To BS EN 636, section 9 (plywood for use in exterior conditions).
3. Strength: To BS EN 636.

### 455 Stainless steel

1. Standards

1.1. Properties of stainless steels: To BS EN 10088-1.

2. Grade: Manufacturer's standard.
3. Finish: Manufacturer's standard.
   3.1. Bars, rods and sections for general purposes: To BS EN 10088-3. Stainless steels.
   3.2. Sheet/ plate and strip for general purposes: To BS EN 10088-2.
4. Component thickness: 2 mm.
5. Perimeters: Manufacturer's standard.

## Fabrication - Not Used

## Execution/ erection/ installation

### 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.

### 615 Building signs into existing structures

1. Components being built in: Accurately position and support securely. Set in mortar and point neatly to match adjacent material.
2. Temporary support: Maintain for 48 hours (minimum) and prevent disturbance.

### 620 Fixing road signs

1. Protrusion of post top above sign: Not permitted unless supporting a luminaire.
2. Drilling of components
   2.1. Ferrous components: Drilled before the application of any finish.
   2.2. Plastics sheeting: Apply clear lacquer recommended by plastics sheet manufacturer to edges of holes to prevent ingress of moisture damaging the lamination.
3. Erection: In accordance with the DFT 'Traffic Signs Manual,' chapter 1.
4. Fixing: Austenitic stainless steel fasteners recommended for the purpose by the sign manufacturer.

### 625 Fixing signposts into concrete

1. Concrete: To BS 8500-2.
2. Mix: Designated concrete not less than GEN 1, or standard prescribed concrete not less than ST2.

2.1. Admixtures: Submit proposals.

2.1.1. Prohibited: Calcium chloride, and admixtures containing calcium chloride.

3. Depth of foundations, bedding, haunching: Appropriate to provide adequate support, and to receive overlying soft landscape or paving finishes.
4. Foundation holes: Neat vertical sides.
5. Components: Accurately positioned and securely supported.
6. Concrete fill: Compact as filling proceeds.
7. Concrete foundations exposed to view: Compact until air bubbles cease to appear on the upper surface, then weather to shed water and trowel smooth.
8. Temporary support: Maintain undisturbed for minimum 48 hours.

## 655 Workmanship for glazing generally

1. Glazing generally: To BS 6262-1,-3,-4 and -6.
2. Preparation of surrounds: ensure that the glazing surfaces are clean and smooth.
3. Integrity: Glazing must be wind-tight and watertight under all conditions, with full allowance made for deflections and other movements.
4. Dimensional tolerances: Panes/ sheets to be within ± 2 mm of specified dimensions.
5. Materials

5.1. 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.

5.2. Protection: Keep materials dry until fixed. Protect insulating glass units and plastics glazing sheets from the sun and other heat sources.

## 660 Site painting and staining

1. Timing: Prepare surfaces and apply finishes as soon as possible after installing components.

## 665 Making good galvanized surfaces

1. Minor damage in areas of up to 40 mm² (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.

## 670 Making good treated wood

1. Surfaces exposed by minor cutting and/ or drilling: Treat by immersion, or with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.
2. Heavily worked sections: Re-treat.
3. Cutting and machining: Carry out as much as possible before treatment.
4. Extensively processed wood: Retreat wood sawn lengthways, planed, ploughed, etc.

# Completion

## 905 Inspection of signs

1. Standard for timber structures: In accordance with BS EN 1995-1-1.
2. Period of notice (minimum): Three working days.
3. Access: Provide access for inspection and maintenance of luminaires and other technologies.

## 910 Testing of signs and structures

1. Standard for testing timber structures: In accordance with BS EN 1995-1-1.
2. Evaluation of conformity for road traffic signs: To BS EN 12899-1, section 10.

## 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 logbooks.
2. Submission: Two weeks prior to date when principal contractor expects work to be complete.

Ω End of Section

# P21
# Door/ window ironmongery

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

## 12 Controlled door closers

1. Standard: To BS EN 1154.
2. Operational adjustment
   - 2.1. Variable power: Matched to size, weight and location of doors. Fully closing latched doors and holding unlatched doors closed.
   - 2.2. Closing against smoke seals of fire doors: Positive. No gaps.

## 92 Weatherstrip to windows

1. Type: Elastomeric compression strip in metal carrier.
2. Size: To suit window.

Ω End of Section

# Q10
# Kerbs/ edgings/ channels/ paving accessories

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

## 10 Precast concrete

1. Standard: To BS EN 1340.
2. Colour: Natural.

## 25 Concrete block

1. Standard: To BS EN 1338.
2. Finish: As cast.
3. Colour: Natural.

## 40 Laying kerbs, edgings and channels

1. Standard: To BS 7533-6.
2. Cutting: Neat and accurate and without spalling. Form neat junctions.
   2.1. Long units' (450 mm and over) minimum length after cutting: 300 mm.
   2.2. Short units' minimum length after cutting: The lower of one third of their original length or 50 mm.
3. 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.
4. 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.

## 41 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.

## 42 Cement mortar bedding

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.

## 44 Drainage channel systems

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.

## 45 Accuracy

1. Deviations (maximum)
   1.1. Level: ± 6 mm.
   1.2. Horizontal and vertical alignment: 3 mm in 3 m.

## 50 Tooled mortar joints

1. Jointing: Ends of units buttered with bedding mortar as laying proceeds. Joints completely filled and tooled to a neat flush profile.
    1.1. Joint width: 6 mm.

## 80 Regularity of paved surfaces

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.

Ω End of Section

# Q20
# Granular sub-bases to roads/ pavings

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

## 10 Thicknesses of sub-base/ subgrade improvement layers

1. Thicknesses: See sections: Q21 In situ concrete roads/ pavings/ bases.

## 20 Herbicides

1. Type: Contractor's choice
2. Application: To subgrade of Areas as per ST-PL-A-301 A0 - Proposed Site Plan .

## 30 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:
4. Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilized.

## 35 Preparation and compaction of subgrades

1. Timing: Immediately before placing sub-base.
2. Soft or damaged areas:
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.

## 40 Granular material

1. Quality: Of a known suitability for use in sub-bases, free from excessive dust, well graded, all pieces less than 75 mm in any direction, minimum 10% fines value of 50kN 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 hoggin 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.

## 43 Placing granular material generally

1. Preparation: Loose soil, rubbish and standing water removed.
2. Structures, membranes and buried services: Ensure stability and avoid damage.

## 45 Laying granular sub-bases . . . . . .

1. Description: To areas shown on ST-PL-A-301 A0 - Proposed Site Plan
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.

## 50 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:
      1.2.2. Footways and recreation areas:

## 60 Surfaces to receive sand bedding for paving . . . . . .

1. Description: Areas as detailed on ST-PL-A-301 A0 - Proposed Site Plan
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: Sand

## 70 Protection

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

# Q21
# In situ concrete roads/ pavings/ bases

## Types of paving

### 117 Proprietary concretes Type A

1. Manufacturer: Tarmac
   1.1. Contact details
      1.1.1. Address: Ground Floor, T3 Building, Trinity Park
      Bickenhill Lane
      Solihull
      Birmingham
      West Midlands
      United Kingdom
      B37 7ES
      1.1.2. Telephone:
      1.1.3. Web: https://tarmac.com/contact/
      1.1.4. Email: centralwestsales@tarmac.com
   1.2. Product reference: Topforce (Topforce MF)
2. Ready mixed concrete producer
   2.1. Third party accreditation: BSI Kitemark.
3. Standards: To BS EN 14889-2 and BS 8500.
4. Compressive strength
   4.1. Compressive strength class:
   4.2. Target compressive strength of foamed concrete: 35 N/mm² at 28 days.
5. Design chemical class:
6. Exposure class:
7. Consistence class:
8. Aggregates
   8.1. Nominal size (maximum):
   8.2. Colour:
   8.3. Texture: Smooth.
9. Additional mix component requirements: Macro synthetic polypropylene fibres to BS EN 14889-2:2006 class II.
10. Properties of foamed concrete
    10.1. Dry density (maximum): 2400 kg/m3.

## General/ preparation

### 240 Sub-base preparation

1. Description: As detailed within ST-PL-A-301 A0 - Proposed Site Plan
2. Surface: Sound, free of debris, mud and soft spots, and suitably close-textured
3. Levels and falls: Within specified tolerances:
4. Kerbs and edgings: Complete, adequately bedded and haunched, and to required levels

### 265 Timber permanent formwork

1. Side forms:

1.1. Size:

1.2. Fixing:

2. Preservative treatment:

2.1. Type:

2.2. Desired service life:

## Laying concrete

### 320 Laying concrete generally

1. Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction. After discharge from the mixer, do not add water or retemper
2. Temperature of concrete at point of delivery

2.1. In hot weather (maximum): 30°C.

2.2. In cold weather (minimum): 5°C.

3. Cold weather

3.1. Do not use frozen materials.

3.2. Do not place concrete against frozen or frost covered surfaces.

3.3. Do not place concrete when air temperature is below 3°C on a falling thermometer. Do not resume placing until rising air temperature has reached 3°C.

4. Surfaces on which concrete is to be placed: Free from debris and standing water
5. Placing in final position: Place in one continuous operation up to construction joints.

5.1. Do not place concrete simultaneously on both sides of movement joints.

6. Spreading: Spread and strike off with surcharge sufficient to obtain required compacted thickness
7. Adjacent work: Form neat junctions and prevent damage. Keep clean all channels, kerbs, inspection covers, etc.

### 330 Compacting

1. General: Fully compact concrete to full depth (until air bubbles cease to appear on the surface) especially around reinforcement, cast-in accessories, into corners and at joints
2. Poker vibrators: Do not use to make concrete flow into position. Do not allow to come into contact with fabric reinforcement
3. Wet-formed joint grooves: Rectify any irregularities by means of a vibrating float
4. Finish: A dense, even textured surface free from laitance or excessive water

### 350 Levels

1. Lines and levels of finished surface: Smooth and even, with regular falls to prevent ponding

## Joints - Not Used

## Surface finish - Not Used

## Curing/ protection/ finishing - Not Used

Ω End of Section

# Q40
# Fencing

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

## 25 Metal palisade fencing

1. Height: 2400mm.
2. Palisades and rails: 75 x 22 mm with pointed tops and arris rails.
3. Posts: Concrete.
4. Maximum centres of posts: 3 m.

## 70 Setting posts in concrete

1. Standard: To BS 8500-2.

Ω End of Section

# R10
# Rainwater drainage systems

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

## 11 Aluminium gutters

1. Profile: Half round.
2. Finish: Self colour plastics coating.
3. Colour: Black.

## 16 PVC-U gutters

1. Standard: To the relevant parts of BS EN 607 and BS EN 1462, Kitemark certified.
2. Profile: Half round.
3. Nominal size: 100 mm.
4. Colour: Black.
5. Brackets: Galvanized steel top rafter type.
   5.1. Fixings: Stainless steel screws.
6. Fixing: PVC-U clips at 600 mm centres.

## 30 Aluminium pipework

1. Standard: Agrément certified.
2. Section: Round.
3. Nominal sizes: 102 mm.
4. Finish: Self coloured plastics coating.
5. Colour: Black.
6. Brackets: Extruded aluminium pipe clips coated as pipes.
   6.1. Fixings: Stainless steel screws.

## 35 PVC-U pipework

1. Standard: To BS EN 1329-1 or BS 4514 and Kitemark certified.
2. Colour: Black.
3. Brackets: PVC-U clips, black.
   3.1. Fixings: Stainless steel screws.

## 50 Installation generally

1. Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
2. Discharge of rainwater: Complete, and without leakage or noise nuisance.
3. Components: Obtain from same manufacturer for each type of pipework and guttering.
4. Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
5. Fixings and fasteners: As section Z20.
6. Protection
   6.1. Fit purpose made temporary caps to prevent ingress of debris.
   6.2. Fit access covers, cleaning eyes and blanking plates as the work proceeds.

## 60 Gutters laid to fall

1. Setting out: To true line and even gradient to prevent ponding or backfall. Position high points of gutters as close as practical to the roof and low points not more than 50 mm below the roof.
2. Joints: Watertight.
3. Roofing underlay: Dressed into gutter.

## 65 Gutters laid level

1. Setting out: Level and as close as practical to roof.
2. Joints: Watertight.
3. Roofing underlay: Dressed into gutter.

## 70 Pipework

1. Fixing: Securely, plumb and/ or true to line with additional supports as necessary to support pipe collars, particularly at changes in direction.
2. Cut ends of pipes and gutters: Clean and square with burrs and swarf removed.

## 75 Fixing insulation to internal pipelines and gutters

1. Fixing: Secure and neat. Provide continuity at supports and leave no gaps. Fix split pipe insulation with the split on 'blind' side of pipeline.
   1.1. Method: Mechanical fasteners.
2. Timing: Do not fit insulation until completion of pipe airtightness or leakage testing.

## 80 Internal pipework test –England,Wales,IrelandandNorthern Ireland

1. Preparation: Temporarily seal open ends of pipework with plugs.
2. Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug.
3. Testing: Pump air into pipework until gauge registers 38 mm.
4. Required performance
   4.1. Allow a period for temperature stabilization, after which the pressure of 38 mm is to be maintained without loss for not less than 3 minutes.

## 92 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

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

## 11 Plastics branch pipework

1. Materials and standards: Plastics to BS EN 1451-1, BS EN 1455-1 or BS EN 1566-1, Kitemark certified.
2. Colour: Black.
3. Jointing: Contractor's choice.
4. Fixing: Plastics brackets at 500 mm centres.
5. Accessories: Access fittings.

## 21 PVC-U soil/ vent pipework and wc branches

1. Standard
   1.1. To BS EN 1329-1, Kitemark certified; or
   1.2. To BS 4514, Kitemark certified.
2. Colour: Black.
3. Fixing: Plastics brackets at 1800 mm centres.
4. Accessories: Air admittance valves. Access fittings.

## 45 Air admittance valves

1. Standard: To BS EN 12380 or Agrément certified.
2. Minimum air flow rate: To BS EN 12056-2.
3. Position: Vertical.
4. Unheated locations: Fit manufacturer's insulating cover.

## 46 Grease traps and converters

1. Standards: In accordance with BS EN 1825-1 and to BS EN 1825-2 and Kitemark or Agrément certified

## 50 Installation generally

1. Standards: To BS EN 12056-5.
2. Components: From same manufacturer for each type of pipework.
3. Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
4. Plastics and galvanized steel pipes: Do not bend.
5. Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
6. Concealed or inaccessible surfaces: Decorate before starting work specified in this section.
7. Protection
   7.1. Purpose made temporary caps: Fit to prevent ingress of debris.
   7.2. Access covers, cleaning eyes and blanking plates: Fit as the work proceeds.
8. Drainage from appliances: Quick, quiet and complete, without blockage, crossflow, backfall, leakage, odours, noise nuisance or risk to health.
9. Access: Provide access fittings in convenient locations to permit cleaning and testing of pipework.

## 60 Fixing pipework

1. Pipework: Fix securely plumb and/ or true to line. Fix discharge stack pipes at or just below socket collar or coupling.
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 at junctions and changes in direction.
5. Vertical pipes: Provide a load bearing support not less than every storey level. Tighten fixings as work proceeds so that every storey is self-supporting.
6. Wall and floor penetrations: Isolate pipework from structure, e.g. with pipe sleeves.
   6.1. Masking plates: Fix at penetrations if visible in the finished work.
7. Expansion joint sockets: Fix rigidly to the building.
8. Fixings: Allow the pipe to slide.
9. Cut ends of pipes: Clean and square with burrs and swarf removed.

## 65 Electrical continuity

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

## 66 Identification of internal foul drainage pipework

1. Markings: To BS 1710.
   1.1. Type: Black bands, with arrows to indicate direction of flow.
   1.2. Wording: White lettering 'FOUL DRAINAGE' on a black background.
2. Type: Integral lettering on pipe wall, self-adhesive bands or identification clips.
3. Locations: At 500 mm centres, junctions and both sides of slabs, valves, appliances, bulkheads and wall penetrations.

## 69 Installing air admittance valves

1. Position: Vertical, above flood level of highest appliance served and clear of insulation materials (other than the manufacturer's insulating cover).
2. Connection to discharge stack: Allow removal for rodding, e.g. ring seal.
3. Roof spaces and other unheated locations: Fit manufacturer's insulating cover.

## 70 Pipework airtightness test

1. Preparation
   1.1. Open ends of pipework: Temporarily seal using plugs.
   1.2. Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug or through trap of an appliance.
2. Testing: Pump air into pipework until gauge registers 38 mm.
3. Required performance: Pressure of 38 mm is to be maintained without loss for at least three minutes.

## 72 Pre-handover checks

1. Temporary caps: Remove.
2. Permanent blanking caps, access covers, rodding eyes, floor gratings and the like: Secure complete with fixings.

## 74 Submittals

1. Manufacturer's instructions for grease traps: Handover at completion.

Ω End of Section

# R12
# Below ground drainage systems

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

## 3 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.

## 4 Concrete

1. Standard: To BS 8500-2.

## 11 Pipes, bends and junctions – Clay – Flexible joints

1. Material and standard: Vitrified clay to BS EN 295-1, Kitemark-certified.
2. Jointing type: Polypropylene sleeve.

## 14 Pipes, bends and junctions – PVC-U – solid wall

1. Standard: To BS EN 1401-1, with flexible joints.
2. Class: SN4 or SN8.
3. Recycled content: 0% (minimum) to BS EN ISO 14021.
4. Application area code: UD.

## 17 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.

## 18 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.

## 19 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.

## 21 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.

## 22 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.

## 41 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.

## 44 Bends at base of soil stacks

1. Type: Two nominal 45° bends.
2. Radius to centreline of the pipe (minimum): 200 mm.
3. Height of invert of horizontal drain at base of stack below centreline of lowest branch pipe (minimum): 750 mm.
4. Bedding: Do not impair flexibility of pipe couplings.
   4.1. Material: Concrete.

## 47 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.

## 49 One piece gullies

1. Standards: To BS EN 1253-1, -2, -3, -4 and -5; or
   1.1. Cast iron: To BS 437 and Kitemark-certified, or Agrément-certified.
   1.2. Clay: To BS EN 295-1 and Kitemark-certified, or Agrément-certified.
   1.3. Concrete: To BS 5911-6 and Kitemark-certified, or Agrément-certified.
   1.4. Plastics: To BS 4660 and Kitemark-certified, or Agrément-certified.
   1.5. Polypropylene: To BS EN 1852-1.
2. Material: Plastics.

## 50 One piece gullies and covers

1. Standards: To BS EN 1253-1, -2, -3, -4 and -5; or
   1.1. Cast iron: To BS 437 and Kitemark-certified, or Agrément-certified.
   1.2. Clay: To BS EN 295-1 and Kitemark-certified, or Agrément-certified.
   1.3. Concrete: To BS 5911-6 and Kitemark-certified, or Agrément-certified.
   1.4. Plastics: To BS 4660 and Kitemark-certified, or Agrément-certified.
   1.5. Polypropylene: To BS EN 1852-1.
2. Material: Plastics.

## 52 Composite gullies

1. Standards: To BS EN 1253-1, -2, -3, -4 and -5; or
   1.1. Cast iron: To BS 437 and Kitemark-certified, or Agrément-certified.
   1.2. Clay: To BS EN 295-1 and Kitemark-certified, or Agrément-certified.
   1.3. Plastics: To BS 4660 and Kitemark-certified, or Agrément-certified.
   1.4. Polypropylene: To BS EN 1852-1.

## 54 Access points – plastics

1. Standard: To BS 4660 and Kitemark-certified, to BS EN 13589-1, or Agrément-certified.
2. Bases
   2.1. Product reference: Submit proposals.
3. Raising pieces
   3.1. Product reference: Submit proposals.
4. Access covers and frames
   4.1. Product reference: Submit proposals.

## 58 Installation of access covers and frames

1. Bedding and haunching of frames: Continuously.
   1.1. Material: 1:3 cement:sand mortar.
   1.2. Top of haunching: 30 mm below surrounding surfaces.
2. Horizontal positioning of frames
   2.1. Centred over openings.
   2.2. Square with joints in surrounding paving.
3. Vertical positioning of frames
   3.1. Level; or
   3.2. Marry in with levels of surrounding paving.
4. Permissible deviation in level of external covers and frames:: +0 to -6 mm.

## 62 Manholes and inspection chambers – concrete

1. Standards
   1.1. To BS 5911-3 and BS EN 1917 and Kitemark-certified; or
   1.2. To BS 5911-4 and BS EN 1917.
2. Shape: Rectangular.
3. Cement type and content: To BS 5911-3 and BS EN 1917 and Kitemark-certified; or to BS 5911-4 and BS EN 1917.

## 64 Inspection chambers – plastics

1. Standard: To BS EN 13598-1, BS EN 13598-2 or Agrément-certified.
2. Diameter: 400 mm.
3. Access covers and frames
   3.1. Product reference: Submit proposals.

## 69 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 sloping upwards at 10% to walls.

2.3. Topping

2.3.1. Material: 1:3 Cement:sand mortar.

2.4. Application: Before benching concrete has set, and with dense smooth uniform finish.

## 71 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: 1:3 Cement:sand mortar.

3.4. Application: Before benching concrete has set, and with dense smooth uniform finish.

## 85 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.

## 89 Water testing of manholes and inspection chambers

1. Timing: Before backfilling.

2. Standard

2.1. Exfiltration: To BS EN 1610.

2.2. Method: Testing with water (method W).

2.3. Infiltration: No identifiable flow of water penetrating the chamber.

## 91 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.

## 94 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.

## 97 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.

Ω End of Section

# T90
# Heating systems

## General

### 110 Heating system

1. Description: Sports Club.
2. System: Existing to be replaced with electric heating & hot water
3. Primary heat source: Boilers, electric Submit design and cost proposals
4. System control: Thermostats.
5. Completion: Documentation and testing.

### 110 Heating system Type A

1. Description: Depot.
2. System: Existing to be replaced with electric heating & hot water
3. Primary heat source: Boilers, electric Submit design and cost proposals
4. System control: Thermostats.
5. Completion: Documentation and testing.

## System performance

### 210 Design of heating systems

1. Design: Complete the design and detailing of the heating system.
2. Standards: To BS EN ISO 11855-1, BS EN ISO 11855-2, BS EN ISO 11855-3, BS EN ISO 11855-5, BS ISO 11855-6 and BS EN ISO 11855-7
3. Proposals: Submit drawings (showing equipment positions and pipework routes and sizes), technical information, calculations and manufacturer's literature

### 250 System control

1. Temperature and time control : Fully automatic and independent.
2. Controls: Compatible with each other and with central heating boiler.

## Products

### 312 Boilers, gas-fired condensing

1. Standard: Heat-only boiler to BS EN 15502-1 and BS EN 15502-2-1
2. Type: Wall-mounted.
3. Integral controls: Seven-day digital timer and thermostat.
4. Integral accessories: Temperature gauge, Safety valve, Pressure gauge.
5. Integral flues: Submit proposals.

### 322 Boilers, electric

1. Description:
2. Standards:
3. Thermal performance testing:
4. Type:
5. Manufacturer:

5.1. Product reference:

6. Integral cylinder:
7. Output:
8. Energy efficiency rating:
9. Mounting:
10. Operating pressure:
11. Flow rate (minimum):
12. Heat exchanger:
13. Relay type:
14. Electrical supply type:
15. Casing material:
16. Integral controls:
17. Accessories:
18. Verification:
    18.1. Submittals:
    18.2. Timing:

## 425 Valves generally

1. Types: Approved for the purpose by local water supply undertaker and of appropriate pressure and temperature ratings.
2. Control of valves: Fit with handwheels for isolation and lockshields for isolation and regulation of circuits or equipment.

## 430 Manual radiator valves

1. Standard: To BS 2767
2. Material: Copper alloy.
3. Finish: Chrome-plated.

## 435 Motorized valves

1. Standards: To BS EN 60730-1, BS EN 60730-2-10, BS EN IEC 60730-2-7, BS EN IEC 60730-2-8, BS EN IEC 60730-2-9, BS EN IEC 60730-2-14 and BS EN IEC 61058-1, BS EN IEC 61058-2-5. British Electrotechnical Approvals Board (BEAB)-approved
2. Type: Two-port.

## 440 Thermostatic radiator valves

1. Standard: To BS EN 215 and capable of providing isolation.
2. Features: Built-in sensor.
3. Finish: Chrome-plated copper alloy.
4. Lockshield valves: To BS 2767, with matching finish fitted to the return side of the radiator.

## 442 Automatic air vents

1. Standard: Air release valve to BS EN 1074-1 and BS EN 1074-4. Isolating valve to BS EN 1074-2.

## 444 Check valves

1. Standard: To BS EN 13959.

### 445 Circulating pumps

1. Standards: To BS EN 16297-1, BS EN 16297-2 and BS EN 60335-2-51

### 465 Radiators

1. Standards: To BS EN 442-1 and BS EN 442-2
2. Sizes: To achieve design space temperatures.
3. Finish: Prime for painting.

### 470 Towel rails

1. Standards: Electric-heated towel rail to BS EN 60335-1 and BS EN IEC 60335-2-43

### 485 Thermostats

1. Standards: To BS EN 60730-1 and BS EN IEC 60730-2-9. British Electrotechnical Approvals Board (BEAB)-approved

### 490 Timers

1. Standards: To BS EN 60730-1 and BS EN IEC 60730-2-7. British Electrotechnical Approvals Board (BEAB)-approved
2. Features: Analogue display; 24-hour manual override.

## Execution

### 610 Installation generally

1. Standard: To BS EN 14336
2. Performance: Free from leaks and the audible effects of expansion, vibration and water hammer.
3. Fixing of equipment, components and accessories: Fix securely, parallel or perpendicular to the structure of the building.
4. Preparation: Immediately before installing tanks and cisterns on a floor or platform, clear the surface completely of debris and projections.
5. Corrosion resistance: In locations where moisture is present or may occur, use corrosion-resistant fittings/ fixings and avoid contact between dissimilar metals by use of suitable washers, gaskets, etc.

### 612 Installation of gas-fired and oil-fired boilers

1. Standards: As below.
   1.1. Gas-fired boilers: In accordance with BS 6798 or BS 6644.
   1.2. Oil-fired boilers: In accordance with BS 5410-1 or BS 5410-2.
2. Preparation: Pressure-test joints immediately before installing lagging and casing. Submit test results.
3. Fixing of equipment, components and accessories: Fix securely to purpose-made bases or supports.
4. Access: Provide for inspection and servicing of boilers and ancillary equipment.

### 630 Pipework installation

1. Appearance: Install pipes straight, and parallel or perpendicular to walls, floors, ceilings, and other building elements.
2. Pipework finish: Smooth, consistent bore, clean, free from defects, e.g. external scratching, toolmarks, distortion, wrinkling, and cracks.
3. Concealment: Generally conceal pipework within floor, ceiling and/ or roof voids.

4. Access: Locate runs to facilitate installation of equipment, accessories and insulation and allow access for maintenance.
5. Arrangement of hot and cold pipework: Run hot pipework above cold where routed together horizontally. Do not run cold water pipework near to heating pipework or through heated spaces.
6. Electrical equipment: Install pipework clear of electrical equipment. Do not run pipework through electrical enclosures or above switch gear distribution boards or the like.
7. Insulation allowance: Provide space around pipework to fit insulation without compression.

### 640 Pipework fixing

1. Fixing: Secure and neat.
2. Joints, bends and offsets: Minimise.
3. Pipework support: Prevent strain, e.g. from the operation of taps or valves.
4. Drains and vents: Fix pipework to falls. Fit draining taps at low points and vents at high points.
5. Thermal expansion and contraction: Allow for thermal movement of pipework. Isolate from structure. Prevent noise or abrasion of pipework caused by movement. Sleeve pipework passing through walls, floors or other building elements..
6. Dirt, insects or rodents: Prevent ingress.

### 650 Joints in copper pipework

1. Preparation: Cut pipes square. Remove burrs.
2. Joints: Neat, clean and fully sealed. Install pipe ends into joint fittings to full depth.
3. Bends: Do not use formed bends on exposed pipework, except for small offsets. Form changes of direction with radius fittings.
4. Adaptors for connecting dissimilar materials: Purpose designed.
5. Substrate and plastics pipes and fittings: Do not damage, e.g. by heat when forming soldered joints.
6. Flux residue: Clean off.

### 660 Joints in thermoplastics pipework

1. Fittings and accessories for joints: Purpose-designed.
2. Preparation: Cut pipes square. Remove burrs.
3. Joints: Neat, clean and fully sealed. Install pipe ends into joint fittings to full depth.
4. Compression fittings: Do not overtighten.

## Completion

### 810 Testing

1. Standard: To BS EN 14336
2. Notice (minimum): Three days.
3. Preparation: Secure and clean pipework and equipment. Fit cistern/ tank covers.
4. Leak testing: Start boiler and run the system until parts are at normal operating temperatures and then allow to cool to cold condition for a period of three hours.
5. Pressure testing: For systems fed directly from the mains and systems downstream of a booster pump: At both hot and cold conditions, joints, fittings and components must be free from leaks and signs of physical distress when tested for at least one hour when applying a test pressure equal to 1.5 times the maximum pressure that the installation or relevant part is designed to be subjected to in operation.

## 820 Setting to work and commissioning

1. Equipment: Check and adjust operation of equipment, controls and safety devices.
2. Outlets: Check operation of outlets for satisfactory rate of flow and temperature.

## 830 Testing gas pipework

1. Testing and purging: To BS 6891

## 840 Documentation

1. Manufacturers' operating and maintenance instructions: Submit for equipment and controls.
2. System operating and maintenance instructions: Submit for the system as a whole, giving optimum settings for controls.
3. Record drawings: Submit drawings showing the location of circuits and operating controls.

## 850 Labels

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

Ω End of Section

# U90
# General ventilation

## General

### 110 Ventilation for heating appliances

1. Ventilators: Ventilators for heating appliances.

### 120 Passive stack ventilation

1. Air inlet terminals: Window trickle ventilators.
2. Room extract terminals: Room extract grilles.
3. Air ductwork: Flexible ductwork.
4. Controls: Sensors, humidity. Sensors, thermal.
5. Completion: Operation and maintenance.

### 130 Mechanical extract fan ventilation

1. Room extract terminals: On the fan.
2. Fan units: Ventilation fan units.
3. Air ductwork: Flexible ductwork.
4. Controls: Pull cord switches with overrun device.
5. Completion: Operation and maintenance.

## System performance

### 210 Design

1. Design: Complete the design of the ventilation system.
2. Proposals: Issue design proposals.

## Products

### 340 Through wall ventilator ducts

1. Type: Circular telescopic duct, with external cowl, and internal hit and miss ventilator with integral flyscreen, fire-protected.
2. Colour: Natural.
3. Finish: Satin anodized aluminium.

### 350 Window trickle ventilators

1. Type: Frame-mounted.

### 420 Flexible ductwork and fittings

1. Type: Aluminium foil/ polyester on steel wire helix.
2. Classification to BS EN 13501-1: A1.
3. Diameter: 100 mm.
4. Jointing: Submit proposals.
5. Accessories: Submit proposals.

### 425 Rigid ductwork and fittings

1. Standard:: Circular sheet metal ducts to BESA DW/144, BS EN 1506, and BS EN 12237
2. Type:: Pre-galvanized steel.
3. Sleeves: Sheet metal.
    3.1. Gap sealing material: Acrylic filler.

## Execution

### 610 Passive stack ventilation systems

1. Installation: Install ductwork in runs that are as short and straight as possible, with smooth curvature to offsets.
2. Arrangement: Do not install ducts at more than 45° from vertical.
3. Air leakage: Prevent leakage where ducts enter rooms and around inlet grilles.

### 620 Installing ventilators for heat appliances

1. Free area: Do not fit with insect mesh, or any means of adjusting or restricting the opening.

### 660 Flexible ductwork

1. Installation: Fully extend without overstretching.
2. Support: Form smooth flowing curves without kinking, sagging or slumping.

### 670 Rigid ductwork generally

1. Joints: Seal. Provide a robust, airtight installation.
2. Support: Do not distort ductwork or reduce cross-sectional area. Do not strain joints.
3. Falls: Fall away from fans, dampers and other in-line accessories.
4. Sleeves: Locate where ducts pass through building fabric. Bed solidly to the surrounding construction. Leave a gap of 10–20 mm between sleeve and duct and fill completely.
5. Fire-rated ductwork sleeves: Install in accordance with ASFP Blue book.

### 690 Site-applied insulation

1. Location: Fit insulation to ductwork in unheated spaces.
2. Installation: Fix securely. Leave no gaps. Make continuous.

## Completion

### 910 Commissioning

1. Standard: In accordance with BS EN 14134.
2. Ventilation system: Balance airflow using methods recommended by the system manufacturer.
3. Operation: Examine ductwork for leakage. Test the operation of fans, equipment, controls and sensors. Verify correct operation. Submit report. Monitor room temperature and relative humidity for one week with calibrated data logging equipment.

### 915 Spares and consumables

1. Filters: As below.
    1.1. Filter media: Provide one spare fan filter of each type at handover.

## 920 Operation and maintenance

1. Operating and maintenance instructions: Submit copies of manufacturers' operating and maintenance instructions for equipment and controls. Provide a full operation and maintenance manual for the completed ventilation system.
2. Documentation: Include all test and fire certificates. Hazard data sheets Warranty information Commissioning reports and system settings
3. Drawings: Provide a system schematic indicating location of major plant and safety isolation points. Provide a 2D layout drawing of the ventilation system.
4. Tools: Supply tools for operation, maintenance and cleaning purposes, including specialist spanners and screwdrivers.

Ω End of Section

# V90
# Electrical systems

## General

### 110 Low-voltage supply

1. Nature of current: Alternating.
2. Phase: Three.
3. Voltage: 400 V
4. Source: Existing.
5. Metering: Single meter per phase.

### 115 Low-voltage electrical installation

1. Connection to low-voltage supply: Submit design and cost proposals.
2. Switchgear: Submit design and cost proposals.

## System performance

### 210 Design of low-voltage electrical installation generally

1. Design and detailing: Complete for the electrical installation.
2. Standards: In accordance with BS 7671, as amended, and the requirements of the electricity distributor.
3. Distribution circuits
   - 3.1. Spare capacity: 20% of current carrying capacity.
   - 3.2. Conductor sizes (minimum): Submit design and cost proposals.
4. Spare capacity of distribution equipment: 20% of total DB ways free.
5. Protective devices: Coordinate the selection and adjustment of protective device settings to achieve discrimination throughout the fault level range. Grade so that a fault on any outgoing branch circuit is cleared by the switching device installed in the faulted branch circuit without affecting the other outgoing branch circuits.
6. Final circuits
   - 6.1. Spare capacity: 10% of current carrying capacity.
   - 6.2. Conductor sizes (minimum): Submit design and cost proposals.
7. Selection of cables, conduit, trunking and ducting: Submit sizes where not stated.
8. Equipment: Provide electrical supplies to equipment requiring power.
9. Proposals: Submit drawings, technical information, and manufacturers' literature.

### 220 Design of low-voltage incoming supply

1. Design and detailing: Complete for the low-voltage incoming supply.
2. Spare capacity: 10% of connected electrical load.
3. Proposals: Submit drawings showing equipment positions and routes, technical information and calculations.
4. Evidence of agreement with electricity distributor: Submit.

### 240 Design of general lighting system

1. Design and detailing: Complete for the general lighting system.
2. Standard: To BS EN 12464-1

3. Maintenance: Submit proposals for the maintenance regime.

## 250 Design of emergency lighting system

1. Design and detailing: Complete for the emergency lighting system.
2. Standards
   2.1. Emergency escape lighting: In accordance with BS 5266-1
   2.2. Escape route, open area, high-risk task area and standby lighting: To BS EN 1838 and BS EN 50172

## 260 Design of external lighting system

1. Design and detailing: Complete for the external lighting system.
2. Standards: To SLL Code for lighting and BS 5489-1

## 270 Control of external luminaires

1. Individual control: Occupancy detectors.

## 275 Small power system design

1. Small power outlets: Provide to serve the building and its equipment.
2. Fixed equipment: Provide supplies.

# Products

## 350 Cable trunking and cable ducting for wall and ceiling mounting

1. Standards: To BS EN 50085-1 and BS EN 50085-2-1
2. Installation position: Surface-mounted on the wall.

## 353 Cable trunking and cable ducting for floor mounting

1. Standards: To BS EN 50085-1 and BS EN 50085-2-2
2. Installation position: Flush with floor.

## 430 Electrical accessories

1. Standards
   1.1. Generally: To BS 5733
   1.2. Switches: To BS EN 60669-1
2. Finish: White plastic.
3. Mounting: Surface.

## 432 Ceiling power switches

1. Standards: To BS EN 60669-1 and BS EN 60669-2-4
2. Flag indicator: Mechanical on/ off indication.
3. Mounting: Surface.
4. Material: Plastics.
5. Colour: White.

## 433 Double-pole switches

1. Standards: To BS EN 60669-1 and BS EN 60669-2-4
2. Indicator lamp: Required.

3. Mounting: Surface.

### 440 Standard socket outlets

1. Standard: To BS 1363-2
2. Control
   2.1. Type: Double-pole, switched.
   2.2. Switch position: Outboard.
   2.3. Indicator lamp: Required.
   2.4. Interlock: Three-pin equal pressure.
3. Mounting: Surface.

### 445 Electric vehicle charging points

1. Standard: To BS EN IEC 61851-1
2. Charging mode: 3
3. Power output: 7 kW
4. Impact protection (minimum): To BS EN 62262, IK10
5. Ingress protection (minimum): To BS EN 60529, IP65

### 455 Lighting switches

1. Standard: To BS EN 60669-1
2. Mounting: Surface.

### 510 General-purpose luminaires

1. Standards: To BS EN IEC 60598-1 and BS EN IEC 60598-2-1
2. Third-party certification: Kitemark-certified.
3. Photometric performance: To BS EN 13032-1
4. Lamp: Light-emitting diodes (LEDs)

### 511 Lamps generally

1. Standards
   1.1. Light-emitting diodes (LEDs): To BS EN IEC 62031

## Execution

### 610 Electrical installation generally

1. Standard: In accordance with BS 7671, as amended

### 615 Installing connection to incoming supply

1. Main switchboard/ distribution board: Connect to main incoming metering equipment.
2. Nature of connection: Liaise with the DNO to ensure the correct size, quantity and type of cable is provided for connection to their equipment.

### 620 Installing photovoltaic systems

1. Standards: In accordance with ENA EREC G98
2. Installer: Microgeneration Certification Scheme-accredited installer

## 630 Installing switchgear

1. Orientation: Accurate and square to vertical and horizontal axis. Align adjacent items of switchgear on the same horizontal axis.
2. Clearance in front of switchgear (minimum): 1 m.
3. Labelling: Permanently label each way, identifying circuit function, rating and cable size.
4. Padlock identification: Stamp padlock describing its function.

## 635 Installing cables directly in the ground

1. Cables: Lay on newly prepared bedding.
2. Cable bedding: 75 mm of sand.
3. Cable pulling: Prevent kinks and twisting of the cable.
4. Installation method: Submit proposals.
5. Cable formation within trench: Space cables apart by at least half the cable diameter.
6. Cables below roads and hard-standings: Duct and derate if longer than 10 m. Extend ducts 1 m each side of hardstanding.
7. Cable marker tape: Lay continuously at a distance of 200–300 mm above each underground cable and cable duct.
8. Backfilling: 75 mm of sand over cables, then as-dug material.

## 636 Installing above-ground warning markers

1. Installation: Bed firmly level, flush with finished surface.
2. Locations: At each change of cable direction.

## 640 Installing cables entering buildings from below ground

1. Pipe ducts: Seal at both ends.
2. Proposals: Submit drawings.

## 680 Cable routes

1. Cables generally: Conceal wherever possible.
    1.1. Concealed cable runs to wall switches and outlets: Align vertically or horizontally with the accessory.
2. Exposed cable runs: Submit proposals.
    2.1. Orientation: Straight, vertical and/ or horizontal and parallel to walls.
3. Distance from other services running parallel: 150 mm minimum.
    3.1. Heating pipes: Position cables below.

## 685 Installing cables

1. General: Install cables neatly and securely. Protect against accidental damage, adverse environmental conditions, mechanical stress and deleterious substances.
2. Timing: Do not start internal cabling until building enclosure provides permanently dry conditions.
3. Jointing: At equipment and terminal fittings only.
4. Cables passing through walls: Sleeve with conduit bushed at both ends.
5. Cables surrounded or covered by thermal insulation: Derate accordingly.
6. Cable guards: Fit where cables are vulnerable to mechanical damage.

## Completion

### 810 Final fix

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

### 820 Cleaning

1. Electrical equipment: Clean immediately before handover.
2. Equipment not supplied but installed under the electrical works: Clean immediately before handover.

### 830 Inspection and testing generally

1. Standard: In accordance with BS 7671, as amended
2. Notice before commencing tests (minimum): 24 hours.
3. Labels and signs: Fix securely before system is tested.
4. Certificates: Submit.
   4.1. Number of copies: Two.

### 860 Inspection and testing of emergency lighting systems

1. Standard: In accordance with BS 5266-1
2. Certificate of testing: Submit.

### 880 Documentation

1. Timing: Submit at practical completion.
2. Contents: As-installed drawings showing circuits and their ratings and locations of fittings and apparatus. Manufacturers' guarantees and warranties. Manufacturers' operating and maintenance instructions for fittings and apparatus including relamping instructions for luminaire types. Identify hazardous lamps that require specialist disposal. Recommended frequency of testing and inspection, both for electrical safety and for matters such as the corrosion and security of lighting columns and luminaire fixings.

Ω End of Section

# W90
# Communications and security systems

## General

### 125 Fire detection and alarm systems in non-domestic premises

1. System type: Conventional.
2. Equipment interconnectivity: Thermosetting-insulated and thermoplastic-sheathed (LSHF) armoured cables.
3. Detection devices: Manual call points. Point heat detectors. Point smoke detectors.
4. Alarms: Sounders.
5. Supplementary devices: Visual alarm devices.
6. Remote alarm: Supervised premises transceivers.
7. Controls: Fire detection and alarm control and indicating equipment.
8. System accessories: Electrically powered hold-open devices.

## System performance - Not Used

## Products

### 325 Fire detection and alarm control and indicating equipment

1. Standard: To BS EN 54-2
2. Third-party certification: LPCB-approved
3. Standby power supply
   3.1. Standard: To BS EN 54-4.

### 326 Point flame detectors

1. Standard: To BS EN 54-10.
2. Third-party certification: LPCB-approved

### 327 Point heat detectors

1. Standard: To BS EN 54-5
2. Third-party certification: LPCB-approved

### 328 Point smoke detectors

1. Standard: To BS EN 54-7
2. Third-party certification: LPCB-approved

### 330 Smoke alarms

1. Standards: Submit proposals.
2. Third-party certification: BSI Kitemark-approved.
3. Manufacturer's warranty (minimum): Ten years.
4. Alarm interlink: Suitable for interlinking with up to 20 smoke or heat alarms.

### 331 Carbon monoxide alarms

1. Standard: To BS EN 50291-1.
2. Third-party certification: LPCB-approved

3. Detector type: A
4. Control features: Downloadable data including time in use, battery level, sensor status, peak CO level.
5. Power source
   5.1. Primary: 230 V a.c., 50 Hz.
6. Manufacturer's warranty (minimum): Ten years.
7. Alarm interlink: Suitable for interlinking with up to 20 smoke or heat alarms.

### 332 Combined smoke and carbon monoxide detectors

1. Third-party certification: LPS 1282

### 335 Heat alarms

1. Standards: To BS 5446-2
2. Third-party certification: BSI Kitemark-approved.
3. Manufacturer's warranty (minimum): Ten years.

### 336 Manual call points

1. Standard: To BS EN 54-11
2. Third-party certification: LPCB-approved

## Execution

### 605 Installing cables generally

1. Standard: In accordance with BS 7671 as amended by BS 7671 Corrigendum.
2. General: Install cables neatly and securely. Conceal wherever possible. Protect against accidental damage, adverse environmental conditions, mechanical stress and deleterious substances.
   2.1. Concealed cable runs to outlets: Align vertically with the accessory.
3. Exposed cable runs: Submit proposals.
   3.1. Orientation: Straight, vertical and/ or horizontal and parallel to walls.
4. Distance from other services running parallel: 150 mm minimum.
   4.1. Heating pipes: Position cables below.
5. Timing: Do not start internal cabling until building enclosure provides permanently dry conditions.
6. Jointing: At equipment and terminal fittings only.
7. Cables passing through walls: Sleeve with conduit bushed at both ends.
8. Cables running across ceiling joists: Clip to timber battens that are securely fixed on top of joists.
9. Length of final connection: Sufficient for equipment removal and maintenance.

### 610 Installing outlets and equipment generally

1. Location: Coordinate with other wall or ceiling-mounted equipment.
2. Positioning: Accurate and square to vertical and horizontal axes.
3. Alignment: Align adjacent accessories on the same vertical or horizontal axis.

### 645 Installing fire detection and alarm systems in non-domestic premises

1. Installation: In accordance with BS 5839-1.
2. Cable route: Segregate from other cabling. Where installed in trunking, locate in a dedicated fire cabling compartment.
3. Cable topology: Loop circuits without spurs or tees.

4. Cable pulling: Submit proposals.
5. Timing: Do not start internal cabling until building enclosure provides permanently dry conditions.
6. Fastening cables
   6.1. To building fabric: Metal P-clips with red plastics coating.
   6.2. To cable supports: Metal bands with red plastics coating.
7. Cables passing through the building fabric: Sleeve and seal to prevent transmission of gas and dust.
8. Jointing: At equipment and terminal fittings only.
9. Maximum circuit resistance: Measure before concealment. Submit results.

## Completion

### 815 Testing and commissioning fire detection and alarm systems in non-domestic premises

1. Standard: In accordance with BS 5839-1.
2. Notice before commencing tests (minimum): Two weeks.

### 882 Documentation for fire detection and alarm systems in non-domestic premises

1. Standard: In accordance with BS 5839-1.
2. Operating and maintenance instructions
   2.1. Scope: Submit for the system giving optimum settings for controls.
   2.2. Product information: Include product description, date of purchase, performance characteristics, application (suitability for use), method of operation and control, and cleaning and maintenance requirements.
   2.3. Format: Electronic.
3. Logbook: Submit one copy in accordance with BS 5839-1, annex F.
4. Record drawings
   4.1. Content: General arrangement drawings showing the location of all control and indicating equipment, manual call points, detectors, radio transmitters and aerials, sounders, visual alarm devices, short circuit isolators, end of line devices, remote indicators, interface units connecting to other equipment, and automatic door hold-open devices
   4.2. Drawing format: Electronic drawing.
   4.3. Submittal date: At handover.
5. Fire evacuation plan: Submit electronic colour CAD layout.

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.

## 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

# Z12
# Preservative/ flame-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: WPA benchmark-accredited for the specified treated components

## 120 Preservative treatment performance

1. Standard: In accordance with Table 5 of the WPA Code of practice
2. Desired service life: 30 years.

## 130 Preservative treatment solution strengths/ treatment cycles

1. General: Select to achieve specified service life and to suit treatability of specified wood species.

## 210 Flame-retardant treatment

1. Standard: In accordance with the WPA publication Flame Retardant Treatments - An Overview and supporting guidance notes.
2. Reaction to fire performance: To BS EN 13501-1, Class B

## 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

1. Flame-retardant: Compatible with off-site treatment.
2. Application: In accordance with flame-retardant manufacturer's recommendations.

Ω End of Section

# Z20
# Fixings and adhesives

## To be read with preliminaries/ general conditions.

## 20 General requirements for fixings

1. Materials need to have:
   1.1. Atmospheric corrosion resistance appropriate to fixing location.
   1.2. Bimetallic corrosion resistance appropriate to items being fixed.
   1.3. Fire resistance appropriate to fixing location and application.
   1.4. Material safety and data sheets (MSDS).
2. Appearance: Submit samples on request.

## 21 General requirements for adhesives

1. Adhesives need to have:
   1.1. Fire resistance appropriate to location and application.
   1.2. Material safety and data sheets (MSDS).

## Products - Not Used

## Execution - Not Used

Ω End of Section

# Z21
# Mortars

## 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.

### 131 Ready-Mixed lime:sand for cement gauged masonry mortars

1. Standard: To BS EN 998-2.
2. Lime: Nonhydraulic to BS EN 459-1.
   2.1. Type: CL 90S.
3. Pigments for coloured mortars: To BS EN 12878.

### 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.
2. Portland limestone cement, CEM II/A-L or CEM II/A-LL.
3. Portland slag cement, CEM II/B-S.
4. Portland fly ash cement, CEM II/B-V.
   4.1. Strength class: 32.5, 42.5 or 52.5.
5. White cement: To BS EN 197-1 and CE marked.
   5.1. Type: Portland cement, CEM I.
   5.2. Strength class: 52.5.
6. Sulfate resisting Portland cement
   6.1. Types: To BS EN 197-1 Sulfate resisting Portland cement, CEM I/SR and CE marked.
7. To BS EN 197-1 fly ash cement, CEM II/B-V and CE marked.
   7.1. Strength class: 32.5, 42.5 or 52.5.

8. Masonry cement: To BS EN 413-1 and CE marked.
   8.1. 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 glygol and any admixture containing calcium chloride.

## 190 Retarded ready to use cement gauged masonry mortars

1. Standard: BS EN 998-2.
2. Lime for cement:lime:sand mortars: Nonhydraulic to BS EN 459-1.
   2.1. Type: CL 90S.
3. Pigments for coloured mortars: To BS EN 12878.
4. Time and temperature limitations: Use within limits prescribed by mortar manufacturer.
   4.1. Retempering: Restore workability with water only within prescribed time limits.

## 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.

## 345 Admixtures for hydraulic lime:sand mortars

1. Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.
2. Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

## 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.

## 370 Site prepared nonhydraulic lime:sand mortars

1. Mixing: Mix materials thoroughly by compressing, beating and chopping. Do not add water.
   1.1. Equipment: Roller pan mixer or submit proposals.

## 380 Ready to use nonhydraulic lime:sand mortars

1. Materials: Select from:
   1.1. Lime putty slaked directly from quicklime to BS EN 459-1 and mixed thoroughly with sand.
   1.2. Quicklime to BS EN 459-1 slaked directly with sand.

## 390 Knocking up nonhydraulic lime:sand mortars

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

## 400 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.

Ω End of Section

# Z22
# Sealants

## Products

### 310 Joints

1. Primer, backing strip, bond breaker: Types recommended by sealant manufacturer.
2. Fire performance
   2.1. Fire resistance: To BS EN 13501-2, EI 30 or better or Manufacturer's standard.
   2.2. Reaction to fire (for rateable products): Manufacturer's standard.

## 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

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

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

Specification created using NBS Chorus