

SPECIFICATION OF WORKS

FOR

Remedial Works

AT

**Anderwood End Cottages
Burley
Ringwood
BH24 4HS**

ON BEHALF OF

**The Forestry Commission
The Queen's House
Lyndhurst
Hants
SO43 7NH**



**The Chocolate Works
Bishopthorpe Road
York
YO23 1DE**

Job No. Y-JD-MP-6290-18
Date: 09 March 2018
Issue Status: DRAFT
Checked By: HA

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Anderwood End Cottages Remedial Works

A JCT 2016 Intermediate Building Contract with Contractor's Design

A10 PROJECT PARTICULARS

110 THE PROJECT

- Name: Anderwood End Cottages.
- Nature: Remedial Works.
- Location: Anderwood End Cottages, Burley, Ringwood, BH24 4HS.
- Length of contract: 10 Weeks.

120 EMPLOYER (CLIENT)

- Name: The Forestry Commission.
- Address: The Queen's House, Lyndhurst, Hants, SO43 7NH .
- Contact: Ian Langford.
- Telephone: 0300 067 4600.
- E-mail: ian.langford@forestry.gov.uk.

130 PRINCIPAL CONTRACTOR (CDM)

- Name: tbc.
- Address: tbc.
- Contact: tbc.
- Telephone: tbc.
- E-mail: tbc.

140 ARCHITECT/ CONTRACT ADMINISTRATOR

- Name: LHL Group Ltd.
- Address: Stanley Harrison House, The Chocolate Works, Bishopthorpe Road, York, YO23 1DE
- Contact: John Denton.
- Telephone: 01904 690699.
- E-mail: john.denton@lhlgroup.co.uk.

150 PRINCIPAL DESIGNER

- Name: LHL Group Ltd.
- Address: Stanley Harrison House, The Chocolate Works, Bishopthorpe Road, York, YO23 1DE
- Contact: John Denton.
- Telephone: 01904 690699.
- E-mail: john.denton@lhlgroup.co.uk.

160 QUANTITY SURVEYOR

- Name: LHL Group Ltd.
- Address: Stanley Harrison House, The Chocolate Works, Bishopthorpe Road, York, YO23 1DE
- Contact: Harry Atkin.
- Telephone: 01904 690699.
- E-mail: harry.atkin@lhlgroup.co.uk.

A11 TENDER AND CONTRACT DOCUMENTS

110 TENDER DRAWINGS

- The tender drawings are:
Y-MP-6290-18-Existing Site Plan SK01
Y-MP-6290-18-Ground Floor Plan (Demolition marked on)SK02
Y-MP-6290-18-First Floor Plan SK03
Y-MP-6290-18-Section A-A -SK04
Y-MP-6290-18-Section B-B-SK05
Y-MP-6290-18-Section C-C-SK06
Y-MP-6290-18-Location Plan-SK07
Y-MP-6290-18-Proposed Site Plan-SK08
Y-MP-6290-18-New Floor Detail-SK09

120 CONTRACT DRAWINGS

- The Contract Drawings: The same as the tender drawings.

160 PRECONSTRUCTION INFORMATION

- Format: The Preconstruction information is described in these preliminaries in Section A34.
It refers to information given elsewhere in the preliminaries and other tender documents.

A12 THE SITE/ EXISTING BUILDINGS

110 THE SITE

- Description: Anderwood End Cottages are located within the New Forest. The cottages are located down a single gravel road off Lyndhurst Road.

120 EXISTING BUILDINGS ON/ ADJACENT TO THE SITE

- Description: The House is a semi detached dwelling with the adjoining property occupied during the works.

180 HEALTH AND SAFETY FILE

- Availability for inspection: The Health and Safety File for the site/ building may be seen by appointment during normal office hours at: Forestry Commission.
- Other documents: -.
- Arrangements for inspection: Via Contract Administrator.

200 ACCESS TO THE SITE

- Description: Access to site is off Lyndhurst Road down a part gravel part tarmacadam single track road.
- Limitations: Contractor to reinstate any pot holes, damages as a result of construction traffic.

210 PARKING

- Restrictions on parking of the Contractor's and employees' vehicles: Specific parking to be agreed at pre-start meeting.

220 USE OF THE SITE

- General: Do not use the site for any purpose other than carrying out the Works.
- Limitations: Access to site only allowed between the hours of 7:30 - 17:00hrs Monday to Friday.

230 SURROUNDING LAND/ BUILDING USES

- General: Adjacent or nearby uses or activities are as follows:
 - The site is surrounded by Residential dwellings which are assumed to be fully occupied during these works.

240 HEALTH AND SAFETY HAZARDS

- General: The nature and condition of the site/ building cannot be fully and certainly ascertained before it is opened up. However the following hazards are or may be present:
 - Exposed pits, concealed services .
- Information: The accuracy and sufficiency of this information is not guaranteed by the Employer or the Employer's representative. Ascertain if any additional information is required to ensure the safety of all persons and the Works.
- Site staff: Draw to the attention of all personnel working on the site the nature of any possible contamination and the need to take appropriate precautionary measures.

250 SITE VISIT

- Assessment: Ascertain the nature of the site, access thereto and all local conditions and restrictions likely to affect the execution of the Works.
- Arrangements for visit: May be made by prior arrangement with the CA. Allow a minimum 48 hours notice. .

A13 DESCRIPTION OF THE WORK

120 THE WORKS

- Description: The remedial works comprise of taking out the existing defective timber floor and replacing with a new concrete ground bearing slab including associated finishings, internal walls and M&E works .

A20 JCT INTERMEDIATE BUILDING CONTRACT WITH CONTRACTOR'S DESIGN (ICD)

INTERMEDIATE BUILDING CONTRACT WITH CONTRACTOR'S DESIGN (ICD)

- The Contract: JCT Intermediate Building Contract with Contractor's Design 2016 Edition.
- Requirement: Allow for the obligations, liabilities and services described.

THE RECITALS

First - THE WORKS

- Comprise: Remedial works to ground floor.
- Location: Anderwood End Cottages, Burley, Ringwood, BH24 4HS.

Second - CONTRACTOR'S DESIGNED PORTION

- The Works include the design and construction of:
 - Mechanical and Electrical Installations.

Third - CONTRACT DRAWINGS

- The Contract Drawings: As listed in clause A11/120.

Fifth A - PRICING BY THE CONTRACTOR

- Option A will apply: Option B will be deleted.
- Priced document: Within Option A the following words will be deleted:
 - Work Schedules.

- Priced Activity Schedule: The words 'and has provided the Employer with a priced schedule of activities annexed to this Contract (the Activity Schedule)' will not be deleted.

Ninth - INFORMATION RELEASE SCHEDULE

- The Ninth Recital will be deleted.

Eleventh - DIVISION OF THE WORKS INTO SECTIONS

- The Eleventh Recital will be deleted.

ARTICLES

3 - ARCHITECT/ CONTRACT ADMINISTRATOR

- Architect/ Contract Administrator: See clause A10/140.

4 - QUANTITY SURVEYOR

- Quantity Surveyor: See clause A10/160.

5 - PRINCIPAL DESIGNER

- Principal Designer: See clause A10/150.

6 - PRINCIPAL CONTRACTOR

- Principal Contractor: See clause A10/130.

9 - LEGAL PROCEEDINGS

- Amendments: None.

CONTRACT PARTICULARS

Fourth Recital - EMPLOYER'S REQUIREMENTS

- Comprise: Mechanical and Electrical Performance specification.

Sixth Recital - CONTRACTOR'S PROPOSALS/ CDP ANALYSIS

- Comprise: To be completed by the Contractor.
- Specific Requirements: -.

Eighth Recital and Clause 4.6 - CONSTRUCTION INDUSTRY SCHEME

- Employer at Base Date is not a 'contractor' for the purposes of the CIS.

Tenth Recital - CDM REGULATIONS

- The project is notifiable.

Thirteenth Recital and Schedule 5 - SUPPLEMENTAL PROVISIONS

- Collaborative working: Supplemental Provision 1 applies.
- Health and safety: Supplemental Provision 2 applies.
- Cost savings and value improvements: Supplemental Provision 3 applies.
- Sustainable development and environmental considerations: Supplemental Provision 4 applies.
- Performance indicators and monitoring: Supplemental Provision 5 does not apply.
- Notification and negotiation of disputes: Supplemental Provision 6 applies.
- Where Supplemental Provision 6 applies, the respective nominees of the parties are:
 - Employer's nominee: tbc.
 - Contractor's nominee: tbc. Or such replacement as each party may notify to the other from time to time.

Article 8 - ARBITRATION

- Article 8 and clauses 9.3 to 9.8 (arbitration) do not apply.

Clause 1.1 - BASE DATE

- Base Date: 30th April 2018.

Clause 1.1 - BIM PROTOCOL

- BIM Protocol (where applicable): Not Applicable.

Clause 1.1 - DATE FOR COMPLETION OF THE WORKS

- Date for completion of the Works (where completion by sections does not apply): 10th of August 2018.

Clause 1.7 - ADDRESSES FOR SERVICE OF NOTICES

- Employer:
 - Address: The Queen's House, Lyndhurst, Hants, SO43 7NH.
 - Fax number: -.
- Contractor:
 - Address: _____.
 - Fax Number: _____.

Clause 2.4 - DATE OF POSSESSION OF THE SITE

- Date of Possession of the site: 4th June 2018.

Clause 2.5 - DEFERMENT OF POSSESSION OF THE SITE

- Clause 2.5 applies.
- Where clause 2.5 applies, maximum period of deferment (if less than six weeks) is Two weeks

Clause 2.23.2 - LIQUIDATED DAMAGES

- Damages: At the rate of £50.00 per Calendar day.

Clause 2.30 - RECTIFICATION PERIOD

- Period: Twelve months from the date of practical completion of the Works.

Clause 2.34.3 - CONTRACTOR'S DESIGNED PORTION

- Limit of Contractor's liability for loss of use: unlimited.

Clause 4.3 and 4.9 - FLUCTUATIONS PROVISION

- Fluctuations Provision: No Fluctuations Provision applies.
- Where Schedule 4 applies, percentage addition (paragraph 12): -.

Clause 4.7 - ADVANCE PAYMENT AND ADVANCE PAYMENT BOND

- Advance payment: Clause 4.7 does not apply.

Clause 4.8.1 - INTERIM PAYMENTS - INTERIM VALUATION DATES

- The first Interim Valuation Date is: One month after the date of possession, and thereafter the same date in each month or the nearest Business Day in that month.

Clause 4.9.1 - INTERIM PAYMENTS - PERCENTAGE OF VALUE

- Not achieved practical completion: Where the Works, or those works in a section, have not achieved practical completion, the percentage of total value in respect of the works that have not achieved practical completion is 95%.
- Completed works: Where the Works, or those works in a section, have achieved practical completion, the percentage in respect of the completed works is 97.5%.

Clause 4.10.4 - LISTED ITEMS - UNIQUELY IDENTIFIED

- The Contract Particulars item for clause 4.10.4 will be deleted.

4.10.5 - LISTED ITEMS - NOT UNIQUELY IDENTIFIED

- Listed items: The Contract Particulars entry for Clause 4.10.5 will be deleted.

Clause 6.4.1 - CONTRACTOR'S PUBLIC LIABILITY INSURANCE: INJURY TO PERSONS OR PROPERTY

- Insurance cover for any one occurrence or series of occurrences arising out of one event: 5,000,000.00.

Clause 6.5.1 - INSURANCE - LIABILITY OF EMPLOYER

- Insurance may be required.
- Minimum amount of indemnity for any one occurrence or series of occurrences arising out of one event: 5,000,000.00.

Clause 6.7 and Schedule 1 - WORKS INSURANCE - INSURANCE OPTIONS

- Schedule 1: Insurance option c applies.
- Percentage to cover professional fees: 15 per cent.
- If option A applies, annual renewal date (as supplied by the Contractor): _____.
- Where Insurance Option C applies, Paragraph C1: applies.

Clause 6.10 and Schedule 1 - TERRORISM COVER

- Details of the required cover:

- _____.

Clause 6.15 - JOINT FIRE CODE

- The Joint Fire Code: Does not apply.

Clause 6.18 - JOINT FIRE CODE - AMENDMENTS/ REVISIONS

- Joint Fire Code - Amendments/ revisions: The cost, if any, of compliance with amendments or revisions to the Joint Fire Code shall be borne by the Contractor.

Clause 6.19 - CONTRACTOR'S DESIGN PORTION - PROFESSIONAL INDEMNITY INSURANCE

- Level of cover: Amount of indemnity required:
 - relates to claims or series of claims arising out of one even;
 - and is £ 500,000.00.
- Cover for pollution and contamination claims: Is required, with a sub-limit of indemnity of £500,000.00.
- Expiry of required period of CDP Professional Indemnity Insurance: 12 years.

Clause 7.3 - COLLATERAL WARRANTIES

- Details: As set out in the following documents: Included in Tender Documents.

Clause 8.9.2 - PERIOD OF SUSPENSION (TERMINATION BY CONTRACTOR)

- Period of suspension: Two months.

Clauses 8.11.1.1 to 8.11.1.5 - PERIOD OF SUSPENSION (TERMINATION BY EITHER PARTY)

- Period of suspension: Two months.

Clause 9.2.1 - ADJUDICATION

- The Adjudicator is: The Royal Institution of Chartered Surveyors.
- Nominating body - where no Adjudicator is named or where the named Adjudicator is unwilling or unable to act (whenever that is established): The Royal Institution of Chartered Surveyors.

THE CONDITIONS

SECTION 1: DEFINITIONS AND INTERPRETATION

1.5 - RECKONING PERIODS OF DAYS

- Amendments: None.

1.12 - APPLICABLE LAW

- Amendments: -.

SECTION 2: CARRYING OUT THE WORKS

SECTION 3: CONTROL OF THE WORKS

SECTION 4: PAYMENT

SECTION 5: VARIATIONS

SECTION 6: INJURY, DAMAGE AND INSURANCE

SECTION 7: ASSIGNMENT AND COLLATERAL WARRANTIES

SECTION 8: TERMINATION

SECTION 9: SETTLEMENT OF DISPUTES

EXECUTION

- The Contract: Will be executed as a deed.

A30 TENDERING/ SUBLETTING/ SUPPLY

MAIN CONTRACT TENDERING

110 SCOPE

- General: These conditions are supplementary to those stated in the Invitation to Tender and on the form of tender.

145 TENDERING PROCEDURE

- General: In accordance with the principles of: JCT Practice Note 6 (Series 2) Main Contract Tendering.
- Arithmetical errors: Pricing document is dominant.

160 EXCLUSIONS

- Inability to tender: Immediately inform if any parts of the work as defined in the tender documents cannot be tendered.

- Relevant parts of the work: Define those parts, stating reasons for the inability to tender.

170 ACCEPTANCE OF TENDER

- Acceptance: No guarantee is offered that any tender will be recommended for acceptance or be accepted, or that reasons for non acceptance will be given.
- Costs: No liability is accepted for any cost incurred in the preparation of any tender.

190 PERIOD OF VALIDITY

- Period: After submission or lodgement, keep tender open for consideration (unless previously withdrawn) for not less than 90 days.
- Date for possession/ commencement: See section A20.

PRICING/ SUBMISSION OF DOCUMENTS

210 PRELIMINARIES IN THE SPECIFICATION

- Measurement rules: Preliminaries/ General Conditions must not be relied on as having been prepared in accordance with RICS NRM.

220 PRICING OF PRELIMINARIES

- Abbreviations: The following have been used:
 - F = Fixed charge item.
 - TR = Time related charge item.

250 PRICED DOCUMENTS

- Alterations: Do not alter or qualify the priced documents without written consent. Tenders containing unauthorised alterations or qualifications may be rejected.
- Measurements: Where not stated, ascertain from the drawings.
- Deemed included: Costs relating to items, which are not priced, will be deemed to have been included elsewhere in the tender.
- Submit: With tender.

300 QUANTITIES IN THE PRICED DOCUMENT

- Quantities: Where included in the priced document, these have been prepared in accordance with SMM7/ NRM2 only where and to the extent stated.
- Other items, descriptions and measurements not prepared in accordance with SMM7/ NRM2: Must be priced taking account of the information given elsewhere in the tender documents, including for all associated and ancillary work shown or clearly apparent as being necessary for the complete and proper execution of the work.

310 TENDER

- General: Tenders must include for all work shown or described in the tender documents as a whole or clearly apparent as being necessary for the complete and proper execution of the Works.

480 PROGRAMME

- Programme of work: Prepare a summary showing the sequence and timing of the principal parts of the Works and periods for planning and design. Itemize any work which is excluded.
- Submit: With tender.

500 TENDER STAGE METHOD STATEMENTS

- Method statements: Prepare, describing how and when the following is to be carried out:
 - _____.
- Statements: Submit _____.

515 ALTERNATIVE TIME TENDERS

- General: In addition to and at the same time as tendering based upon the date or period specified in section A20, an alternative tender based upon a different date for completion or period may be submitted.
- Date for completion: If any such tender is accepted the date for completion inserted in the Contract will be the date stated in the alternative tender or determined from the period stated in the alternative tender.

520 DESIGN DOCUMENTS

- Scope: Include the following in the Contractor's Proposals:
 - Design drawings: For all elements of Mechanical and Electrical Installations / alterations.
 - Technical information: For all elements of Mechanical and Electrical Installations / alterations.
- Submit: With tender.

530 SUBSTITUTE PRODUCTS

- Details: If products of different manufacture to those specified are proposed, submit details with the tender giving reasons for each proposed substitution. Substitutions, which have not been notified at tender stage, may not be considered.
- Compliance: Substitutions accepted will be subject to the verification requirements of clause A31/200.

550 HEALTH AND SAFETY INFORMATION

- Content: Describe the organisation and resources to safeguard the health and safety of operatives, including those of subcontractors, and of any person whom the Works may affect.
- Include:
 - A copy of the contractor's health and safety policy document, including risk assessment procedures.
 - Accident and sickness records for the past five years.

- Records of previous Health and Safety Executive enforcement action.
- Records of training and training policy.
- The number and type of staff responsible for health and safety on this project with details of their qualifications and duties.

- Submit: Within one week of accepted tender.

570 OUTLINE CONSTRUCTION PHASE HEALTH AND SAFETY PLAN

- Content: Submit the following information within one week of request:
- Method statements on how risks from hazards identified in the pre-construction information and other hazards identified by the contractor will be addressed.
- Details of the management structure and responsibilities.
- Arrangements for issuing health and safety directions.
- Procedures for informing other contractors and employees of health and safety hazards.
- Selection procedures for ensuring competency of other contractors, the self-employed and designers.
- Procedures for communications between the project team, other contractors and site operatives.
- Arrangements for cooperation and coordination between contractors.
- Procedures for carrying out risk assessment and for managing and controlling the risk.
- Emergency procedures including those for fire prevention and escape.
- Arrangements for ensuring that all accidents, illness and dangerous occurrences are recorded.
- Arrangements for welfare facilities.
- Procedures for ensuring that all persons on site have received relevant health and safety information and training.
- Arrangements for consulting with and taking the views of people on site.
- Arrangements for preparing site rules and drawing them to the attention of those affected and ensuring their compliance.
- Monitoring procedures to ensure compliance with site rules, selection and management procedures, health and safety standards and statutory requirements.
- Review procedures to obtain feedback.

SUBLETTING/ SUPPLY

630 DOMESTIC SUBCONTRACTS

- General: Comply with the Construction Industry Board 'Code of Practice for the selection of subcontractors'.
- List: Provide details of all subcontractors and the work for which they will be responsible.
- Submit: With tender.

A31 PROVISION, CONTENT AND USE OF DOCUMENTS

DEFINITIONS AND INTERPRETATIONS

110 DEFINITIONS

- Meaning: Terms, derived terms and synonyms used in the preliminaries/ general conditions and specification are as stated therein or in the appropriate British Standard or British Standard glossary.

120 COMMUNICATION

- Definition: Includes advise, inform, submit, give notice, instruct, agree, confirm, seek or obtain information, consent or instructions, or make arrangements.
- Format: In writing to the person named in clause A10/140 unless specified otherwise.
- Response: Do not proceed until response has been received.

130 PRODUCTS

- Definition: Materials, both manufactured and naturally occurring, and goods, including components, equipment and accessories, intended for the permanent incorporation in the Works.
- Includes: Goods, plant, materials, site materials and things for incorporation into the Works.

135 SITE EQUIPMENT

- Definition: All appliances or things of whatsoever nature required in or about the construction for completion of the Works but not materials or other things intended to form or forming part of the Permanent Works.
- Includes: Construction appliances, vehicles, consumables, tools, temporary works, scaffolding, cabins and other site facilities.

140 DRAWINGS

- Definitions: To BSRIA BG 6 A design framework for building services. Design activities and drawing definitions.
- CAD data: In accordance with BS 1192.

145 CONTRACTOR'S CHOICE

- Meaning: Selection delegated to the Contractor, but liability to remain with the specifier.

150 CONTRACTOR'S DESIGN

- Meaning: Design to be carried out or completed by the Contractor and supported by appropriate contractual arrangements, to correspond with specified requirements.

155 SUBMIT PROPOSALS

- Meaning: Submit information in response to specified requirements.

160 TERMS USED IN SPECIFICATION

- Remove: Disconnect, dismantle as necessary and take out the designated products or work and associated accessories, fixings, supports, linings and bedding materials. Dispose

of unwanted materials. Excludes taking out and disposing of associated pipework, wiring, ductwork or other services.

- Fix: Receive, unload, handle, store, protect, place and fasten in position and disposal of waste and surplus packaging including all labour, materials and site equipment for that purpose.
- Supply and fix: As above, but including supply of products to be fixed. All products to be supplied and fixed unless stated otherwise.
- Keep for reuse: Do not damage designated products or work. Clean off bedding and jointing materials. Stack neatly, adequately protect and store until required by the Employer/ Purchaser or for use in the Works as instructed.
- Make good: Execute local remedial work to designated work. Make secure, sound and neat. Excludes redecoration and/ or replacement.
- Replace: Supply and fix new products matching those removed. Execute work to match original new state of that removed.
- Repair: Execute remedial work to designated products. Make secure, sound and neat. Excludes redecoration and/ or replacement.
- Refix: Fix removed products.
- Ease: Adjust moving parts of designated products or work to achieve free movement and good fit in open and closed positions.
- Match existing: Provide products and work of the same appearance and features as the original, excluding ageing and weathering. Make joints between existing and new work as inconspicuous as possible.
- System: Equipment, accessories, controls, supports and ancillary items, including installation, necessary for that section of the work to function.

170 MANUFACTURER AND PRODUCT REFERENCE

- Definition: When used in this combination:
 - Manufacturer: the person or legal entity under whose name or trademark the particular product, component or system is marketed
 - Product reference: the proprietary brand name and/ or identifier by which the particular product, component or system is described.
- Currency: References are to the particular product as specified in the manufacturer's technical literature current on the date of the invitation to tender.

200 SUBSTITUTION OF PRODUCTS

- Products: If an alternative product to that specified is proposed, obtain approval before ordering the product.
- Reasons: Submit reasons for the proposed substitution.
- Documentation: Submit relevant information, including:
 - manufacturer and product reference;
 - cost;
 - availability;
 - relevant standards;
 - performance;
 - function;
 - compatibility of accessories;
 - proposed revisions to drawings and specification;
 - compatibility with adjacent work;
 - appearance;
 - copy of warranty/ guarantee.
- Alterations to adjacent work: If needed, advise scope, nature and cost.
- Manufacturers' guarantees: If substitution is accepted, submit before ordering products.

210 CROSS REFERENCES

- Accuracy: Check remainder of the annotation or item description against the terminology used in the section or clause referred to.
- Related terminology: Where a numerical cross-reference is not given the relevant sections and clauses of the specification will apply.
- Relevant clauses: Clauses in the referred to specification section dealing with general matters, ancillary products and execution also apply.
- Discrepancy or ambiguity: Before proceeding, obtain clarification or instructions.

220 REFERENCED DOCUMENTS

- Conflicts: Specification prevails over referenced documents.

230 EQUIVALENT PRODUCTS

- Inadvertent omission: Wherever products are specified by proprietary name the phrase 'or equivalent' is to be deemed included.

240 SUBSTITUTION OF STANDARDS

- Specification to British Standard or European Standard: Substitution may be proposed complying with a grade or category within a national standard of another Member State of the European Community or an international standard recognised in the UK.
- Before ordering: Submit notification of all such substitutions.
- Documentary evidence: Submit for verification when requested as detailed in clause

A31/200. Any submitted foreign language documents must be accompanied by certified translations into English.

250 CURRENCY OF DOCUMENTS AND INFORMATION

- Currency: References to published documents are to the editions, including amendments and revisions, current on the date of the Invitation to Tender.

260 SIZES

- General dimensions: Products are specified by their co-ordinating sizes.
- Timber: Cross section dimensions shown on drawings are:
 - Target sizes as defined in BS EN 336 for structural softwood and hardwood sections.
 - Finished sizes for non-structural softwood or hardwood sawn and further processed sections.

DOCUMENTS PROVIDED ON BEHALF OF EMPLOYER

410 ADDITIONAL COPIES OF DRAWINGS/ DOCUMENTS

- Additional copies: Issued on request and charged to the Contractor.

440 DIMENSIONS

- Scaled dimensions: Do not rely on.

450 MEASURED QUANTITIES

- Ordering products and constructing the Works: The accuracy and sufficiency of the measured quantities is not guaranteed.
- Precedence: The specification and drawings shall override the measured quantities.

460 THE SPECIFICATION

- Coordination: All sections must be read in conjunction with Main Contract Preliminaries/ General conditions.

DOCUMENTS PROVIDED BY CONTRACTOR/ SUBCONTRACTORS/ SUPPLIERS

620 AS BUILT DRAWINGS AND INFORMATION

- Contractor designed work: Provide drawings/ information:
 - M&E layout, Floor Plan.
- Submit: At least two weeks before date for completion.

630 TECHNICAL LITERATURE

- Information: Keep on site for reference by all supervisory personnel:
 - Manufacturers' current literature relating to all products to be used in the Works.
- Relevant British, EN or ISO Standards.

640 MAINTENANCE INSTRUCTIONS AND GUARANTEES

- Components and equipment: Obtain or retain copies, register with manufacturer and hand over on or before completion of the Works.
- Information location: In Building Manual.
- Emergency call out services: Provide telephone numbers for use after completion. Extent of cover: twenty four hours seven days a week.

650 ENERGY RATING CALCULATION

- Calculation documentation:
 - Number of copies: 2.
 - Deliver to: Energy Performance Certificate Assessor and also lodge in the Building Manual.

A32 MANAGEMENT OF THE WORKS

GENERALLY

110 SUPERVISION

- General: Accept responsibility for coordination, supervision and administration of the Works, including subcontracts.
- Coordination: Arrange and monitor a programme with each subcontractor, supplier, local authority and statutory undertaker, and obtain and supply information as necessary for coordination of the work.

120 INSURANCE

- Documentary evidence: Before starting work on site submit details, and/ or policies and receipts for the insurances required by the Conditions of Contract.

130 INSURANCE CLAIMS

- Notice: If any event occurs which may give rise to any claim or proceeding in respect of loss or damage to the Works or injury or damage to persons or property arising out of the Works, immediately give notice to the Employer, the person named in clause A10/140 and the Insurers.
- Failure to notify: Indemnify the Employer against any loss, which may be caused by failure to give such notice.

140 CLIMATIC CONDITIONS

- Information: Record accurately and retain:
 - Daily maximum and minimum air temperatures (including overnight).
 - Delays due to adverse weather, including description of the weather, types of work affected and number of hours lost.

150 OWNERSHIP

- Alteration/ clearance work: Materials arising become the property of the Contractor except where otherwise stated. Remove from site as work proceeds.

PROGRAMME/ PROGRESS

210 PROGRAMME

- Master programme: When requested and before starting work on site, submit in an approved form a master programme for the Works, which must include details of:
 - Design, production information and proposals provided by the Contractor/ Subcontractors/ Suppliers, including inspection and checking (see section A31).
 - Planning and mobilization by the Contractor.
 - Earliest and latest start and finish dates for each activity and identification of all critical activities.
 - Running in, adjustment, commissioning and testing of all engineering services and installations
 - Work resulting from instructions issued in regard to the expenditure of provisional sums (see section A54)
 - Work by or on behalf of the Employer and concurrent with the Contract (see section A50). The nature and scope of which, the relationship with preceding and following work and any relevant limitations are suitably defined in the Contract Documents.
- Exclusions: Where and to the extent that the programme implications for work which is not so defined are impossible to assess, the Contractor should exclude it and confirm this when submitting the programme.
- Submit: three copies.

230 SUBMISSION OF PROGRAMME

- Further information: Submission of the programme will not relieve the Contractor of the responsibility to advise of the need for further drawings or details or instructions in accordance with the Contract.

240 COMMENCEMENT OF WORK

- Notice: Before the proposed date for commencement of work on site give minimum notice of one month.

260 SITE MEETINGS

- General: Site meetings will be held to review progress and other matters arising from administration of the Contract.
- Frequency: Every two weeks.
- Location: On site .
- Accommodation: Ensure availability at the time of such meetings.
- Attendees: Attend meetings and inform subcontractors and suppliers when their presence is required.
- Chairperson (who will also take and distribute minutes): Contract Administrator.

265 CONTRACTOR'S PROGRESS REPORT

- General: Submit a progress report at least 2 days before the site meeting.
- Content: Notwithstanding the Contractor's obligations under the Contract the report must include:
 - A progress statement by reference to the master programme for the Works.
 - Details of any matters materially affecting the regular progress of the Works.
 - Subcontractors' and suppliers' progress reports.
 - Any requirements for further drawings or details or instructions to fulfil any obligations under the Conditions of Contract.

270 CONTRACTOR'S SITE MEETINGS

- General: Hold meetings with appropriate subcontractors and suppliers shortly before main site meetings to facilitate accurate reporting of progress.

280 PHOTOGRAPHS

- Number of locations: Each Room .
- Frequency of intervals: Weekly.
- Image format: JPEG.
- Number of images from each location: 4.
- Other requirements: Photograph floor build at each stage

290 NOTICE OF COMPLETION

- Requirement: Give notice of the anticipated dates of completion of the whole or parts of the Works.
- Associated works: Ensure necessary access, services and facilities are complete.
- Period of notice (minimum): Two weeks.

310 EXTENSIONS OF TIME

- Notice: When a notice of the cause of any delay or likely delay in the progress of the works is given under the contract, written notice must also be given of all other causes which apply concurrently.
- Details: As soon as possible submit:
 - Relevant particulars of the expected effects, if appropriate, related to the concurrent causes.
 - An estimate of the extent, if any, of the expected delay in the completion of the Works beyond the date for completion.
- All other relevant information required.

CONTROL OF COST

410 CASH FLOW FORECAST

- Submission: Before starting work on site, submit a forecast showing the gross valuation of the Works at the date of each Interim Certificate throughout the Contract period. Base on the programme for the Works.

420 REMOVAL/ REPLACEMENT OF EXISTING WORK

- Extent and location: Agree before commencement.
- Execution: Carry out in ways that minimize the extent of work.

430 PROPOSED INSTRUCTIONS

- Estimates: If a proposed instruction requests an estimate of cost, submit without delay and in any case within 7 days.
- Include:
 - A detailed breakdown of the cost, including any allowance for direct loss and expense.
 - Details of any additional resources required.
 - Details of any adjustments to be made to the programme for the Works.
 - Any other information as is reasonably necessary to fully assess the implications of

issuing such an instruction.

- Inability to comply: Inform immediately if it is not possible to comply with any of the above requirements.

440 MEASUREMENT

- Covered work: Give notice before covering work required to be measured.

450 DAYWORK VOUCHERS

- Before commencing work: Give reasonable notice to person countersigning daywork vouchers.
- Content: Before delivery each voucher must be:
 - Referenced to the instruction under which the work is authorised.
 - Signed by the Contractor's person in charge as evidence that the operatives' names, the time daily spent by each and the equipment and products employed are correct.
- Submit: By the end of the week in which the work has been executed.

470 PRODUCTS NOT INCORPORATED INTO THE WORKS

- Ownership: At the time of each valuation, supply details of those products not incorporated into the Works which are subject to any reservation of title inconsistent with passing of property as required by the Conditions of Contract, together with their respective values.
- Evidence: When requested, provide evidence of freedom of reservation of title.

475 LISTED PRODUCTS STORED OFF SITE

- Evidence of Title: Submit reasonable proof that the property in 'listed items' is vested in the Contractor.
- Include for products purchased from a supplier:
 - A copy of the contract of sale and a written statement from the supplier that any conditions of the sale relating to the passing of property have been fulfilled and the products are not subject to any encumbrance or charge.
- Include for products purchased from a supplier by a subcontractor or manufactured or assembled by any subcontractor:
 - Copies of the subcontract with the subcontractor and a written statement from the subcontractor that any conditions relating to the passing of property have been fulfilled.

480 LABOUR AND EQUIPMENT RETURNS

- Records: Provide for verification at the beginning of each week in respect of each of the previous seven days.
- Records must show:
 - The number and description of craftsmen, labourers and other persons directly or indirectly employed on or in connection with the Works or Services, including those employed by subcontractors.
 - The number, type and capacity of all mechanical, electrical and power-operated equipment employed in connection with the Works or Services

A33 QUALITY STANDARDS/ CONTROL

STANDARDS OF PRODUCTS AND EXECUTIONS

110 INCOMPLETE DOCUMENTATION

- General: Where and to the extent that products or work are not fully documented, they are to be:
 - Of a kind and standard appropriate to the nature and character of that part of the Works where they will be used.
 - Suitable for the purposes stated or reasonably to be inferred from the project documents.

Contract documents: Omissions or errors in description and/ or quantity shall not vitiate the Contract nor release the Contractor from any obligations or liabilities under the Contract.

120 WORKMANSHIP SKILLS

- Operatives: Appropriately skilled and experienced for the type and quality of work.
- Registration: With Construction Skills Certification Scheme.
- Evidence: Operatives must produce evidence of skills/ qualifications when requested.

130 QUALITY OF PRODUCTS

- Generally: New. (Proposals for recycled products may be considered).
- Supply of each product: From the same source or manufacturer.
- Whole quantity of each product required to complete the Works: Consistent kind, size, quality and overall appearance.
- Tolerances: Where critical, measure a sufficient quantity to determine compliance.
- Deterioration: Prevent. Order in suitable quantities to a programme and use in appropriate sequence.

135 QUALITY OF EXECUTION

- Generally: Fix, apply, install or lay products securely, accurately, plumb, neatly and in alignment.
- Colour batching: Do not use different colour batches where they can be seen together.
- Dimensions: Check on-site dimensions.
- Finished work: Not defective, e.g. not damaged, disfigured, dirty, faulty, or out of tolerance.

- Location and fixing of products: Adjust joints open to view so they are even and regular.

140 COMPLIANCE

- Compliance with proprietary specifications: Retain on site evidence that the proprietary product specified has been supplied.
- Compliance with performance specifications: Submit evidence of compliance, including test reports indicating:
 - Properties tested.
 - Pass/ fail criteria.
 - Test methods and procedures.
 - Test results.
 - Identity of testing agency.
 - Test dates and times.
 - Identities of witnesses.
- Analysis of results.

150 INSPECTIONS

- Products and executions: Inspection or any other action must not be taken as approval unless confirmed in writing referring to:
 - Date of inspection.
 - Part of the work inspected.
 - Respects or characteristics which are approved.
 - Extent and purpose of the approval.
 - Any associated conditions.

160 RELATED WORK

- Details: Provide all trades with necessary details of related types of work. Before starting each new type or section of work ensure previous related work is:
 - Appropriately complete.
 - In accordance with the project documents.
 - To a suitable standard.
 - In a suitable condition to receive the new work.
- Preparatory work: Ensure all necessary preparatory work has been carried out.

170 MANUFACTURER'S RECOMMENDATIONS/ INSTRUCTIONS

- General: Comply with manufacturer's printed recommendations and instructions current on the date of the Invitation to tender.
- Changes to recommendations or instructions: Submit details.
- Ancillary products and accessories: Use those supplied or recommended by main product manufacturer.
- Agrément certified products: Comply with limitations, recommendations and requirements of relevant valid certificates.

180 WATER FOR THE WORKS

- Mains supply: Clean and uncontaminated.
- Other: Do not use until:
 - Evidence of suitability is provided.
 - Tested to BS EN 1008 if instructed.

SAMPLES/ APPROVALS

210 SAMPLES

- Products or executions: Comply with all other specification requirements and in respect of the stated or implied characteristics either:
 - To an express approval.
 - To match a sample expressly approved as a standard for the purpose.

220 APPROVAL OF PRODUCTS

- Submissions, samples, inspections and tests: Undertake or arrange to suit the Works programme.
 - Approval: Relates to a sample of the product and not to the product as used in the Works.
- Do not confirm orders or use the product until approval of the sample has been obtained.
- Complying sample: Retain in good, clean condition on site. Remove when no longer required.

230 APPROVAL OF EXECUTION

- Submissions, samples, inspections and tests: Undertake or arrange to suit the Works programme.
- Approval: Relates to the stated characteristics of the sample. (If approval of the finished work as a whole is required this is specified separately). Do not conceal, or proceed with affected work until compliance with requirements is confirmed.
- Complying sample: Retain in good, clean condition on site. Remove when no longer required.

ACCURACY/ SETTING OUT GENERALLY

320 SETTING OUT

- General: Submit details of methods and equipment to be used in setting out the Works.
- Levels and dimensions: Check and record the results on a copy of drawings. Notify discrepancies and obtain instructions before proceeding.
- Inform: When complete and before commencing construction.

330 APPEARANCE AND FIT

- Tolerances and dimensions: If likely to be critical to execution or difficult to achieve, as early as possible either:

- Submit proposals; or
- Arrange for inspection of appearance of relevant aspects of partially finished work.
- General tolerances (maximum): To BS 5606, tables 1 and 2.

350 LEVELS OF STRUCTURAL FLOORS

- Maximum tolerances for designed levels to be:
- Floors to be self-finished, and floors to receive sheet or tile finishes directly bedded in adhesive: +/- 10 mm.
- Floors to receive dry board/ panel construction with little or no tolerance on thickness: +/- 10 mm.
- Floors to receive mastic asphalt flooring/ underlays directly: +/- 10 mm.
- Floors to receive mastic asphalt flooring/ underlays laid on mastic asphalt levelling coat(s): +/- 15 mm.
- Floors to receive fully bonded screeds/ toppings/ beds: +/- 15 mm.
- Floors to receive unbonded or floating screeds/ beds: +/- 20 mm.

360 RECORD DRAWINGS

- Site setting out drawing: Record details of all grid lines, setting-out stations, benchmarks and profiles. Retain on site throughout the Contract and hand over on completion.

SERVICES GENERALLY

410 SERVICES REGULATIONS

- New or existing services: Comply with the Byelaws or Regulations of the relevant Statutory Authority.

420 WATER REGULATIONS/ BYELAWS NOTIFICATION

- Requirements: Notify Water Undertaker of any work carried out to or which affects new or existing services and submit any required plans, diagrams and details.
- Consent: Allow adequate time to receive Undertaker's consent before starting work. Inform immediately if consent is withheld or is granted subject to significant conditions.

430 WATER REGULATIONS/ BYELAWS CONTRACTOR'S CERTIFICATE

- On completion of the work: Submit (copy where also required to the Water Undertaker) a certificate including:
- The address of the premises.
- A brief description of the new installation and/ or work carried out to an existing installation.
- The Contractor's name and address.
- A statement that the installation complies with the relevant Water Regulations or Byelaws.
- The name and signature of the individual responsible for checking compliance.
- The date on which the installation was checked.

435 ELECTRICAL INSTALLATION CERTIFICATE

- Submit: When relevant electrical work is completed.
- Original certificate: To be lodged in the Building Manual.

440 GAS, OIL AND SOLID FUEL APPLIANCE INSTALLATION CERTIFICATE

- Before the completion date stated in the Contract: Submit a certificate stating:
- The address of the premises.
- A brief description of the new installation and/ or work carried out to an existing installation.
- Any special recommendations or instructions for the safe use and operation of appliances and flues.
- The Contractor's name and address.
- A statement that the installation complies with the appropriate safety, installation and use regulations.
- The name, qualification and signature of the competent person responsible for checking compliance.
- The date on which the installation was checked.
- Certificate location: Building Manual.

445 SERVICE RUNS

- General: Provide adequate space and support for services, including unobstructed routes and fixings.
- Ducts, chases and holes: Form during construction rather than cut.
- Coordination with other works: Submit details of locations, types/ methods of fixing of services to fabric and identification of runs and fittings.

450 MECHANICAL AND ELECTRICAL SERVICES

- Final tests and commissioning: Carry out so that services are in full working order at completion of the Works.
- Building Regulations notice: Copy to be lodged in the Building Manual.

SUPERVISION/ INSPECTION/ DEFECTIVE WORK

510 SUPERVISION

- General: In addition to the constant management and supervision of the Works provided by the Contractor's person in charge, all significant types of work must be under the close control of competent trade supervisors to ensure maintenance of satisfactory quality and progress.
- Evidence: Submit, including details of the person proposed, their relevant skills training and knowledge; practical experience; qualifications; membership or registration with professional bodies; employment history, work related assessments and management structure.
- Submittal date: One week before start on site.
- Replacement: Give maximum possible notice before changing person in charge or site agent.

520 COORDINATION OF ENGINEERING SERVICES

- Suitability: Site organisation staff must include one or more persons with appropriate knowledge and experience of mechanical and electrical engineering services to ensure compatibility between engineering and the Works generally.
- Evidence: Submit when requested CVs or other documentary evidence relating to the staff concerned.

530 OVERTIME WORKING

- Notice: Prior to overtime being worked, submit details of times, types and locations of work to be done.
- Minimum period of notice: One week.
- Concealed work: If executed during overtime for which notice has not been given, it may be required to be opened up for inspection and reinstated at the Contractor's expense.

540 DEFECTS IN EXISTING WORK

- Undocumented defects: When discovered, immediately give notice. Do not proceed with affected related work until response has been received.
- Documented remedial work: Do not execute work which may:
 - Hinder access to defective products or work; or
 - Be rendered abortive by remedial work.

560 TESTS AND INSPECTIONS

- Timing: Agree and record dates and times of tests and inspections to enable all affected parties to be represented.
- Confirmation: One working day prior to each such test or inspection. If sample or test is not ready, agree a new date and time.
- Records: Submit a copy of test certificates and retain copies on site.

580 CONTINUITY OF THERMAL INSULATION

- Record and report: Confirm that work to new, renovated or upgraded thermal elements has been carried out to conform to specification. Include:
 - The address of the premises.
 - The Contractor's name and address.
 - The name, qualification and signature of the competent person responsible for checking compliance.
 - The date on which the installation was checked.
- Submit: Before completion of the Works.
- Copy: To be lodged in the Building Manual.

595 ENERGY PERFORMANCE CERTIFICATE

- Assessment: Undertaken by a member of an approved accreditation scheme. Submit details of scheme name and evidence of qualifications when requested.
 - Building Type: Dwelling.
 - Method: Standard Assessment Procedure for dwellings (SAP).
- Format:
 - Certificate: To be incorporated in the Building Manual.
 - Report: A4 Paper Copy.
- Submit: Before the date for completion stated in the contract.

610 PROPOSALS FOR RECTIFICATION OF DEFECTIVE PRODUCTS/ EXECUTIONS

- Proposals: Immediately any work or product is known, or appears, to be not in accordance with the Contract, submit proposals for opening up, inspection, testing, making good, adjustment of the Contract Sum, or removal and re-execution.
- Acceptability: Such proposals may be unacceptable and contrary instructions may be issued.

620 MEASURES TO ESTABLISH ACCEPTABILITY

- General: Wherever inspection or testing shows that the work, materials or goods are not in accordance with the contract and measures (e.g. testing, opening up, experimental making good) are taken to help in establishing whether or not the work is acceptable, such measures:
 - Will be at the expense of the Contractor.
 - Will not be considered as grounds for revision of the completion date.

630 QUALITY CONTROL

- Procedures: Establish and maintain to ensure that the Works, including the work of subcontractors, comply with specified requirements.
- Records: Maintain full records, keep copies on site for inspection, and submit copies on request.
- Content of records:
 - Identification of the element, item, batch or lot including location in the Works.
 - Nature and dates of inspections, tests and approvals.
 - Nature and extent of nonconforming work found.
 - Details of corrective action.

WORK AT OR AFTER COMPLETION

710 WORK BEFORE COMPLETION

- General: Make good all damage consequent upon the Works.
- Temporary markings, coverings and protective wrappings: Remove unless otherwise instructed.
- Cleaning: Clean the Works thoroughly inside and out, including all accessible ducts and voids. Remove all splashes, deposits, efflorescence, rubbish and surplus materials.

- Cleaning materials and methods: As recommended by manufacturers of products being cleaned, and must not damage or disfigure other materials or construction.
- COSHH dated data sheets: Obtain for all materials used for cleaning and ensure they are used only as recommended by their manufacturers.
- Minor faults: Touch up in newly painted work, carefully matching colour and brushing out edges. Repaint badly marked areas back to suitable breaks or junctions.
- Moving parts of new work: Adjust, ease and lubricate as necessary to ensure easy and efficient operation, including doors, windows, drawers, ironmongery, appliances, valves and controls.

720 SECURITY AT COMPLETION

- General: Leave the Works secure with, where appropriate, all accesses closed and locked.
- Keys: Account for and adequately label all keys and hand over to Employer with itemized schedule, retaining duplicate schedule signed by Employer as a receipt.

730 MAKING GOOD DEFECTS

- Remedial work: Arrange access with Contract Administrator.
- Rectification: Give reasonable notice for access to the various parts of the Works.
- Completion: Notify when remedial works have been completed.

A34 SECURITY/ SAFETY/ PROTECTION

SECURITY, HEALTH AND SAFETY

110 PRECONSTRUCTION INFORMATION

- Location: Integral with the project Preliminaries, including but not restricted to the following sections:
 - Description of project: Sections A10 and A11.
 - Client's consideration and management requirements: Sections A12, A13 and A36.
 - Environmental restrictions and on-site risks: Section A12, A35 and A34.
 - Significant design and construction hazards: Section A34.
- The Health and Safety File: Section A37.

120 EXECUTION HAZARDS

- Common hazards: Not listed. Control by good management and site practice.
- Significant hazards: The design of the project includes the following:
 - Hazard: Subfloor dig.
 - Precautions assumed: Appropriate shoring, propping and phasing..
 - Specification reference: -.
 - Drawing reference: -.

130 PRODUCT HAZARDS

- Hazardous substances: Site personnel levels must not exceed occupational exposure standards and maximum exposure limits stated in the current version of HSE document EH40: Workplace Exposure Limits.

- Common hazards: Not listed. Control by good management and site practice.
- Significant hazards: Specified construction materials include the following:
 - Hazard: Not Listed.
 - Material: Control by good management and site practice .
 - Specification reference: Preconstruction Information.

140 CONSTRUCTION PHASE HEALTH AND SAFETY PLAN

- Submission: Present to the Employer/ Client no later than 2 weeks before commencement on site.
- Confirmation: Do not start construction work until the Employer has confirmed in writing that the Construction Phase Health and Safety Plan includes the procedures and arrangements required by the CDM Regulations.
- Content: Develop the plan from and draw on the Outline Construction Phase Health and Safety Plan, clause A30/570, and the Pre-tender Health and Safety Plan/ Preconstruction information.

150 SECURITY

- Protection: Safeguard the site, the Works, products, materials, and any existing buildings affected by the Works from damage and theft.
- Access: Take all reasonable precautions to prevent unauthorized access to the site, the Works and adjoining property.
- Special requirements: Protect all those visiting.

160 STABILITY

- Responsibility: Maintain the stability and structural integrity of the Works and adjacent structures during the Contract.
- Design loads: Obtain details, support as necessary and prevent overloading.

170 OCCUPIED PREMISES

- Extent: Existing buildings will be occupied and/ or used during the Contract as follows: The adjoining semi-detached dwelling will be occupied during the works.
- Works: Carry out without undue inconvenience and nuisance and without danger to occupants and users.
- Overtime: If compliance with this clause requires certain operations to be carried out during overtime, and such overtime is not required for any other reason, the extra cost will be allowed, provided that such overtime is authorized in advance.

200 MOBILE TELEPHONES AND PORTABLE ELECTRONIC EQUIPMENT

- Restrictions on use:

- Roof areas, in the vicinity of heavy plant.

210 EMPLOYER'S REPRESENTATIVES SITE VISITS

- Safety: Submit details in advance, to the Employer or the person identified in clause A10/140, of safety provisions and procedures (including those relating to materials, which may be deleterious), which will require their compliance when visiting the site.
- Protective clothing and/ or equipment: Provide and maintain on site for the Employer and the person stated in clause A10/140 and other visitors to the site.

220 WORKING PRECAUTIONS/ RESTRICTIONS

- Hazardous areas: Operatives must take precautions as follows:
 - Work area: subfloor.
 - Precautions: Best practice health and safety procedures.
- Permit to work: Operatives must comply with procedures in the following areas:
 - Work area: -.
 - Procedures: -.

PROTECT AGAINST THE FOLLOWING

310 EXPLOSIVES

- Use: Not permitted

330 NOISE AND VIBRATION

- Standard: Comply with the recommendations of BS 5228-1, in particular clause 7.3, to minimize noise levels during the execution of the Works.
- Noise levels from the Works: Maximum level: - dB(A) when measured from -.
- Equipment: Fit compressors, percussion tools and vehicles with effective silencers of a type recommended by manufacturers of the compressors, tools or vehicles.
- Restrictions: Do not use:
 - Percussion tools and other noisy appliances without consent during the hours of 5:00pm -9:00am.
 - Radios or other audio equipment or permit employees to use in ways or at times that may cause nuisance.

340 POLLUTION

- Prevention: Protect the site, the Works and the general environment including the atmosphere, land, streams and waterways against pollution.
- Contamination: If pollution occurs inform immediately, including to the appropriate Authorities and provide relevant information.

350 PESTICIDES

- Use: Not permitted.

360 NUISANCE

- Duty: Prevent nuisance from smoke, dust, rubbish, vermin and other causes.
- Surface water: Prevent hazardous build-up on site, in excavations and to surrounding areas and roads.

370 ASBESTOS CONTAINING MATERIALS

- Duty: Report immediately any suspected materials discovered during execution of the Works.
- Do not disturb.

Agree methods for safe removal or encapsulation.

371 DANGEROUS OR HAZARDOUS SUBSTANCES

- Duty: Report immediately suspected materials discovered during execution of the Works.
- Do not disturb.

Agree methods for safe removal or remediation.

375 ANTIQUITIES

- Duty: Report immediately any fossils, antiquities and other objects of interest or value discovered during execution of the Works.
- Preservation: Keep objects in the exact position and condition in which they were found.
- Special requirements: -.

380 FIRE PREVENTION

- Duty: Prevent personal injury or death, and damage to the Works or other property from fire.
- Standard: Comply with Joint Code of Practice 'Fire Prevention on Construction Sites', published by Construction Industry Publications and The Fire Protection Association (The 'Joint Fire Code').

390 SMOKING ON SITE

- Smoking on site: Not permitted.

400 BURNING ON SITE

- Burning on site: Not permitted.

410 MOISTURE

- Wetness or dampness: Prevent, where this may cause damage to the Works.
- Drying out: Control humidity and the application of heat to prevent:
 - Blistering and failure of adhesion.
 - Damage due to trapped moisture.
 - Excessive movement.

420 INFECTED TIMBER/ CONTAMINATED MATERIALS

- Removal: Where instructed to remove material affected by fungal/ insect attack from the

building, minimize the risk of infecting other parts of the building.

- Testing: carry out and keep records of appropriate tests to demonstrate that hazards presented by concentrations of airborne particles, toxins and other micro organisms are within acceptable levels.

430 WASTE

- Includes: Rubbish, debris, spoil, surplus material, containers and packaging.
- General: Minimize production. Prevent accumulations. Keep the site and Works clean and tidy.
- Handling: Collect and store in suitable containers. Remove frequently and dispose off site in a safe and competent manner:
 - Non-hazardous material: In a manner approved by the Waste Regulation Authority.
 - Hazardous material: As directed by the Waste Regulation Authority and in accordance with relevant regulations.
- Recyclable material: Sort and dispose at a Materials Recycling Facility approved by the Waste Regulation Authority.
- Voids and cavities in the construction: Remove rubbish, dirt and residues before closing in.
- Waste transfer documentation: Retain on site.

440 ELECTROMAGNETIC INTERFERENCE

- Duty: Prevent excessive electromagnetic disturbance to apparatus outside the site.

450 LASER EQUIPMENT

- Construction laser equipment: Install, use and store in accordance with BS EN 60825-1 and the manufacturer's instructions.
- Class 1 or Class 2 laser equipment: Ensure laser beam is not set at eye level and is terminated at the end of its useful path.
- Class 3A and Class 3B laser equipment: Do not use without approval and subject to submission of a method statement on its safe use.

460 POWDER ACTUATED FIXING SYSTEMS

- Use: Not permitted.

470 INVASIVE SPECIES

- General: Prevent the spread of species (e.g. plants or animals) that may adversely affect the site or Works economically, environmentally or ecologically.
- Special precautions: -.
- Duty: Report immediately any suspected invasive species discovered during execution of the Works.
- Do not disturb.
- Agree methods for safe eradication or removal.

PROTECT THE FOLLOWING

510 EXISTING SERVICES

- Confirmation: Notify all service authorities, statutory undertakers and/ or adjacent owners of proposed works not less than one week before commencing site operations.
- Identification: Before starting work, check and mark positions of utilities/ services. Where positions are not shown on drawings obtain relevant details from service authorities, statutory undertakers or other owners.
- Work adjacent to services:
 - Comply with service authority's/ statutory undertaker's recommendations.
 - Adequately protect, and prevent damage to services: Do not interfere with their operation without consent of service authorities/ statutory undertakers or other owners.
- Identifying services:
 - Below ground: Use signboards, giving type and depth;
 - Overhead: Use headroom markers.
- Damage to services: If any results from execution of the Works:
 - Immediately give notice and notify appropriate service authority/ statutory undertaker.
 - Make arrangements for the work to be made good without delay to the satisfaction of service authority/ statutory undertaker or other owner as appropriate.
 - Any measures taken to deal with an emergency will not affect the extent of the Contractor's liability.
- Marker tapes or protective covers: Replace, if disturbed during site operations, to service authority's/ statutory undertakers recommendations.

520 ROADS AND FOOTPATHS

- Duty: Maintain roads and footpaths within and adjacent to the site and keep clear of mud and debris.
- Damage caused by site traffic or otherwise consequent upon the Works: Make good to the satisfaction of the Employer, Local Authority or other owner.

530 EXISTING TOPSOIL/ SUBSOIL

- Duty: Prevent over compaction of existing topsoil and subsoil in those areas which may be damaged by construction traffic, parking of vehicles, temporary site accommodation or storage of materials and which will require reinstatement prior to completion of the Works.
- Protection: Before starting work submit proposals for protective measures.

540 RETAINED TREES/ SHRUBS/ GRASSED AREAS

- Protection: Preserve and prevent damage, except those not required.

- Replacement: Mature trees and shrubs if uprooted, destroyed, or damaged beyond reasonable chance of survival in their original shape, as a consequence of the Contractor's negligence, must be replaced with those of a similar type and age at the Contractor's expense.

550 RETAINED TREES

- Protected area: Unless agreed otherwise do not:
 - Dump spoil or rubbish, excavate or disturb topsoil, park vehicles or plant, store materials or place temporary accommodation within an area which is the larger of the branch spread of the tree or an area with a radius of half the tree's height, measured from the trunk.
 - Sever roots exceeding 25 mm in diameter. If unintentionally severed give notice and seek advice. Change level of ground within an area 3 m beyond branch spread.

555 WILDLIFE SPECIES AND HABITATS

- General: Safeguard the following: -.
- Protected habitats and species: Upon discovery immediately advise. Do not proceed until instruction is received.
- Education: Ensure employees and visitors to the site receive suitable instruction and awareness training.

560 EXISTING FEATURES

- Protection: Prevent damage to existing buildings, fences, gates, walls, roads, paved areas and other site features, which are to remain in position during execution of the Works.

- Special requirements: -.

570 EXISTING WORK

- Protection: Prevent damage to existing work, structures or other property during the course of the work.
- Removal: Minimum amount necessary.
- Replacement work: To match existing.

580 BUILDING INTERIORS

- Protection: Prevent damage from exposure to the environment, including weather, flora, fauna, and other causes of material degradation during the course of the work.

600 EXISTING FURNITURE, FITTINGS AND EQUIPMENT

- Protection: Prevent damage or move as necessary to enable the Works to be executed. Reinstall in original positions.

- Extent: Before work in each room starts the Employer will remove the following:

--.

620 ADJOINING PROPERTY

- Permission: Obtain as necessary from owners if requiring to erect scaffolding on or otherwise use adjoining property.

625 ADJOINING PROPERTY RESTRICTIONS

- Precautions:
 - Prevent trespass of workpeople and take precautions to prevent damage to adjoining property.
 - Pay all charges.
 - Remove and make good on completion or when directed.
- Damage: Bear cost of repairing damage arising from execution of the Works.

630 EXISTING STRUCTURES

- Duty: Check proposed methods of work for effects on adjacent structures inside and outside the site boundary.
- Supports: During execution of the Works:
 - Provide and maintain all incidental shoring, strutting, needling and other supports as may be necessary to preserve stability of existing structures on the site or adjoining, that may be endangered or affected by the Works.
 - Do not remove until new work is strong enough to support existing structure.
 - Prevent overstressing of completed work when removing supports.
- Adjacent structures: Monitor and immediately report excessive movement.
- Standard: Comply with BS 5975 and BS EN 12812.

640 MATERIALS FOR RECYCLING/ REUSE

- Duty: Sort and prevent damage to stated products or materials, clean off bedding and jointing materials and other contaminants.
- Storage: Stack neatly and protect until required by the Employer or for use in the Works as instructed.

A35 SPECIFIC LIMITATIONS ON METHOD/ SEQUENCE/ TIMING

110 SCOPE

- General: The limitations described in this section are supplementary to limitations described or implicit in information given in other sections or on the drawings.

120 DESIGN CONSTRAINTS

- Details: All to match existing materials etc. .

130 METHOD/ SEQUENCE OF WORK

- Specific Limitations: Include the following in the programme:
 - Floor construction.

140 SCAFFOLDING

- Scaffolding: Make available to subcontractors and others at all times.

160 USE OR DISPOSAL OF MATERIALS

- Specific limitations: No fires are permitted on site.

170 WORKING HOURS

- Specific limitations: See A12/220 plus Noisy work not to start before 9:00am

A36 FACILITIES/ TEMPORARY WORK/ SERVICES

GENERALLY

110 SPOIL HEAPS, TEMPORARY WORKS AND SERVICES

- Location: Give notice and details of intended siting.
- Maintenance: Alter, adapt and move as necessary. Remove when no longer required and make good.

ACCOMMODATION

210 ROOM FOR MEETINGS

- Facilities: Provide suitable temporary accommodation for site meetings, adequately heated and lit. The room may be part of the Contractor's own site offices.
- Furniture and Equipment: Provide table and chairs for 7 people.

220 SITE ACCOMMODATION

- Purpose: Employer's site representative.
- Facilities: Provide and obtain approval of suitable lockable temporary accommodation and facilities as follows:
 - Status: May be part of the Contractor's own accommodation
 - Location: Site Cabin or suitable room within dwelling once floor construction works have been completed..
 - Floor area: To suit.
 - Furniture and equipment: -.
 - Temperature control: -.
 - Lighting: -.
 - Services: -.
 - Sanitary facilities: -.
 - Consumables: -.
 - Attendance: -.

230 TEMPORARY ACCOMMODATION

- Proposals for temporary accommodation and storage for the Works: Submit two weeks prior to starting on site.
- Details to be included: Type of accommodation and storage, its siting and the programme for site installation and removal.

260 SANITARY ACCOMMODATION

- Requirement: Provide sanitary accommodation for the Employer/ Purchaser, and other members of the consultant team, either separate or shared with the Contractor's supervisory staff. Maintain in clean condition and provide all consumables.

280 ACCOMMODATION USE/ LOCATION

- Restrictions:
 - Location tbc.
 - Timing: tbc.

290 PARKING

- Provide and maintain exclusively for use by Employer's representatives: 2 spaces.

TEMPORARY WORKS

320 TEMPORARY WORKS

- Employer's specific requirements: Provide: Fencing.

340 NAME BOARDS/ ADVERTISEMENTS

- Name boards/ advertisements: Not permitted.

SERVICES AND FACILITIES

410 LIGHTING

- Finishing work and inspection: Provide temporary lighting, the intensity and direction of which closely resembles that delivered by the permanent installation.

420 LIGHTING AND POWER

- Supply: Electricity from the Employer's mains may be used for the Works as follows:
 - Metering: Metered by the Employer and charged to the Contractor.
 - Point of supply: In House.
 - Available capacity: tbc.
 - Frequency: 50 Hz.
 - Phase: tbc.
 - Current: Alternating.
- Continuity: The Employer will not be responsible for the consequences of failure or restriction in supply.

430 WATER

- Supply: The Employer's mains may be used for the Works as follows:
 - Metering: Metered by the Employer and charged to the Contractor.
 - Source: House Supply.
 - Location of supply point: tbc.

- Conditions/ Restrictions: tbc.
- Continuity: The Employer will not be responsible for the consequences of failure or restriction in supply.

440 MOBILE TELEPHONES

- Direct communication: As soon as practicable after the start on site:
- provide the Contractor's person in charge with a mobile telephone.
- pay all charges reasonably incurred.

520 USE OF PERMANENT HEATING SYSTEM

- Permanent heating installation: May be used for drying out the Works/ services and controlling temperature and humidity levels.
- Installation: If used:
- Take responsibility for operation, maintenance and remedial work.
- Arrange supervision by and indemnification of the appropriate Subcontractors.
- Pay costs arising.

530 BENEFICIAL USE OF INSTALLED SYSTEMS

- Permanent systems: Unless specific permission is given by the Employer and installer, do not use for any purpose other than running in, testing and commissioning.
- Other uses: If permission is given for any other use of a system before the Works are accepted as complete, enter into a separate written agreement recording details of the terms and conditions of use.

540 METER READINGS

- Charges for service supplies: Where to be apportioned ensure that:
- Meter readings are taken by relevant authority at possession and/ or completion as appropriate.
- Copies of readings are supplied to interested parties.

550 THERMOMETERS

- General: Provide on site and maintain in accurate condition a maximum and minimum thermometer for measuring atmospheric shade temperature, in an approved location.

560 SURVEYING EQUIPMENT

- General: Provide on site and maintain in accurate condition: -.

570 PERSONAL PROTECTIVE EQUIPMENT

- General: Provide for the sole use of those acting on behalf of the Employer, in sizes to be specified:
- Safety helmets to BS EN 397, neither damaged nor time expired. Number required: 7.
- High visibility waistcoats to BS EN ISO 20471 Class 2. Number required: 7.
- Safety boots with steel insole and toecap to BS EN ISO 20345. Pairs required: 7.
- Disposable respirators to BS EN 149.FFP1S.
- Eye protection to BS EN 166.
- Ear protection - muffs to BS EN 352-1, plugs to BS EN 352-2
- Hand protection - to BS EN 388, 407, 420 or 511 as appropriate.

A37 OPERATION/ MAINTENANCE OF THE FINISHED WORKS

GENERALLY

110 THE BUILDING MANUAL

- Purpose: The Manual is to be a comprehensive information source and guide for owners and users of the completed Works. It should provide an overview of the main design principles and describe key components and systems to enable proper understanding, efficient and safe operation and maintenance.
- Scope:
- Part 1: General: Content as clause 120.
- Part 2: Fabric: Content as clause 130.
- Part 3: Services: Content as clause 140.
- Part 4: The Health and Safety File: Content as clause 150.
- Part 5: Building User Guide: Content as clause 151.
- Responsibility: The Building Manual is to be produced by _____ and must be complete no later than _____.
- Information provided by others: Details: _____.
- Compilation:
- Prepare all information for Contractor designed or performance specified work including as-built drawings.
- Obtain or prepare all other information to be included in the Manual.
- Reviewing the Manual: Submit a complete draft. Amend in the light of any comments and resubmit. Do not proceed with production of the final copies until authorized.
- Final copies of the Manual:
- Number of copies: _____.
- Format: _____.
- Latest date for submission: _____ weeks before the date for completion stated in the contract.
- As-built drawings and schedules:
- Number of copies: _____.
- Format: _____.

115 THE HEALTH AND SAFETY FILE

- Responsibility: the contractor.
- Content: Obtain and provide the following information: A record containing information relating to the project which is likely to be needed during any subsequent construction work to ensure the health and safety of any person. .

- Format: A4 Paper Copy
- Delivery to: Contract Administrator By (date): Practical Completion.

120 CONTENT OF THE BUILDING MANUAL PART 1: GENERAL

- Content: Obtain and Provide the following, including all relevant details not included in other parts of the manual:
- Index: list the constituent parts of the manual, together with their location in the document.
- The Works:
 - Description of the buildings and facilities.
 - Ownership and tenancy, where relevant
 - Health and Safety information – other than that specifically required by the Construction

(Design and Management) Regulations.

- The Contract:
 - Names and addresses and contact details of all significant consultants, contractors, subcontractors, suppliers and manufacturers.
 - Overall design criteria.
 - Environmental performance requirements
 - Relevant authorities, consents and approvals.
 - Third party certification, such as those made by _competent_ persons in accordance with Building Regs
- Operational requirements and constraints of a general nature:
 - Maintenance contracts and contractors.
 - Fire safety strategy for the buildings and the site. Include drawings showing emergency escape and fire appliance routes, fire resisting doors location of emergency alarm and fire fighting systems, services, shut off valves switches, etc.
 - Emergency procedures and contact details in case of emergency.
 - Other specific requirements: 2 copies 1 paper 1 CD.
- Description and location of other key documents.
- Timescale for completion: 1 week before practical completion.

130 CONTENT OF THE BUILDING MANUAL PART 2: BUILDING FABRIC

- Content: Obtain and Provide the following, including all relevant details not included in other parts of the manual:
- Detailed design criteria, including:
 - Floor and roof loadings.
 - Durability of individual components and elements.
 - Loading restrictions.
 - Insulation values.
 - Fire ratings.
 - Other relevant performance requirements.
- Construction of the building:
 - A detailed description of methods and materials used.
 - As-built drawings recording the construction, together with an index.
 - Information and guidance concerning repair, renovation or demolition/ deconstruction.
 - Periodic building maintenance guide chart.
 - Inspection reports.
 - Manufacturer's instructions index, including relevant COSHH data sheets and recommendations for cleaning, repair and maintenance of components.
- Fixtures, fittings and components schedule and index.
- Guarantees, warranties and maintenance agreements – obtain from manufacturers, suppliers and subcontractors.
- Test certificates and reports required in the specification or in accordance with legislation, including:
 - Air permeability.
 - Resistance to passage of sound.
 - Continuity of insulation.
 - Electricity and Gas safety.

- -.
- Other specific requirements: 2 copies 1 paper 1 CD.
- Timescale for completion: 1 week before practical completion.

140 CONTENT OF THE BUILDING MANUAL PART 3: BUILDING SERVICES

- Content: Obtain and Provide the following, including all relevant details not included in other parts of the manual:
- Detailed design criteria and description of the systems, including:
 - Services capacity, loadings and restrictions
 - Services instructions.
 - Services log sheets.
 - Manufacturers' instruction manuals and leaflets index.
 - Fixtures, fittings and component schedule index.

- Detailed description of methods and materials used.
- As-built drawings for each system recording the construction, together with an index, including:
 - Diagrammatic drawings indicating principal items of plant, equipment and fittings
 - Record drawings showing overall installation
 - Schedules of plant, equipment, valves, etc. describing location, design performance and unique identification cross referenced to the record drawings.
- Identification of services – a legend for colour coded services.
- Product details, including for each item of plant and equipment:
 - Name, address and contact details of the manufacturer.
 - Catalogue number or reference
 - Manufacturer's technical literature, including detailed operating and maintenance instructions.
 - Information and guidance concerning dismantling, repair, renovation or decommissioning.
- Operation: A description of the operation of each system, including:
 - Starting up, operation and shutting down
 - Control sequences
 - Procedures for seasonal changeover
 - Procedures for diagnostics, troubleshooting and faultfinding.
- Guarantees, warranties and maintenance agreements – obtain from manufacturers, suppliers and subcontractors.
- Commissioning records and test certificates list for each item of plant, equipment, valves,

etc. used in the installations – including:

- Electrical circuit tests.
- Corrosion tests.
- Type tests.
- Work tests.
- Start and commissioning tests.
- Equipment settings: Schedules of fixed and variable equipment settings established during commissioning.
- Preventative maintenance: Recommendations for frequency and procedures to be adopted

to ensure efficient operation of the systems

- Lubrication: Schedules of all lubricated items
- Consumables: A list of all consumable items and their source.
- Spares: A list of recommended spares to be kept in stock, being those items subject to wear and tear or deterioration and which may involve an extended delivery time when replacements are required.
- Emergency procedures for all systems, significant items of plant and equipment.
- Annual maintenance summary chart.
- Other specific requirements: 2 copies 1 paper 1 CD.
- Timescale for completion: 1 week before practical completion

150 CONTENT OF THE BUILDING MANUAL PART 4: THE HEALTH AND SAFETY FILE

- Content: obtain and provide the following, including all relevant details not included in other parts of the manual, including:
 - residual hazards and how they have been dealt with
 - hazardous materials used
 - information regarding the removal or dismantling of installed plant and equipment
 - health and safety information about equipment provided for cleaning or maintaining the structure;
 - the nature, location and markings of significant services,
 - information and as-built drawings of the structure, its plant and equipment

--.

- Information prepared by others: Details: -.
- Timescale for completion: 1 week before practical completion.
- Submit to: Contract Administrator.

151 CONTENT OF THE BUILDING MANUAL PART 5: THE BUILDING USER GUIDE

- Content: Obtain and provide the following:
 - Building services information.

-Emergency information.

-Energy & environmental strategy.

-Water use.

-Transport facilities.

-Materials & waste policy.

-Re-fit/ re-arrangement considerations.

-Reporting provision.

-Training.

-Links & references.

- Other specific requirements: 2 copies 1 paper 1 CD.

" Timescale for completion: 1 week before practical completion .

160 PRESENTATION OF BUILDING MANUAL

- Format: A4 size, plastics covered, loose leaf, four ring binders with hard covers, each

indexed, divided and appropriately cover titled.

- Selected drawings needed to illustrate or locate items mentioned in the Manual: Where larger than A4, to be folded and accommodated in the binders so that they may be unfolded without being detached from the rings.
- As-built drawings: The main sets may form annexes to the Manual.

220 TRAINING

- Objective: Before Completion, explain and demonstrate to designated maintenance staff the purpose, function and operation of the installations including items and procedures listed in the Building Manual.
- Level of training: Walk round site with occupier explaining new systems.
- Time allowance: Include a minimum of two days.

230 SPARE PARTS

- General: Before Completion submit a priced schedule of spare parts that the Contractor recommends should be obtained and kept in stock for maintenance of the services installations.
- Content: Include in the priced schedule for:
 - Manufacturers' current prices, including packaging and delivery to site.
 - Checking receipts, marking and numbering in accordance with the schedule of spare parts.
 - Referencing to the plant and equipment list in Part 3 of the Building Manual.
 - Painting, greasing, etc. and packing to prevent deterioration during storage.
- Latest date for submission: Two weeks before completion.

250 TOOLS

- General: Provide tools and portable indicating instruments for the operation and maintenance of all services plant and equipment (except any installed under Named Subcontracts) together with suitable means of identifying, storing and securing.
- Quantity: Two complete sets.
- Time of submission: At completion.

A40 CONTRACTOR'S GENERAL COST ITEMS: MANAGEMENT AND STAFF

A41 CONTRACTOR'S GENERAL COST ITEMS: SITE ACCOMMODATION

A42 CONTRACTOR'S GENERAL COST ITEMS: SERVICES AND FACILITIES

A43 CONTRACTOR'S GENERAL COST ITEMS: MECHANICAL PLANT

A44 CONTRACTOR'S GENERAL COST ITEMS: TEMPORARY WORKS

A50 WORK/ PRODUCTS BY/ ON BEHALF OF THE EMPLOYER

A53 WORK BY STATUTORY AUTHORITIES/ UNDERTAKERS

A54 PROVISIONAL WORK/ ITEMS

A55 DAYWORKS

A56 ADVANCE PROCUREMENT

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D20 EXCAVATING AND FILLING**GENERAL**

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Herbicide for treating topsoil before stripping

Type: Suitable translocated nonresidual herbicide.

Proposed fill materials

Details: Prior to commencing filling, submit full details and test reports of proposed fill materials demonstrating compliance with specification, including:

- Imported fill: Type and source.
- Material excavated on site: Proposals for processing and reuse.

Hazardous, aggressive or unstable fill materials

General: Do not use fill materials which would, either in themselves or in combination with other materials or ground water, give rise to a health hazard, damage to building structures or instability in the filling.

Do not use material that is:

- Frozen or containing ice.
- Organic.
- Contaminated or noxious.
- Susceptible to spontaneous combustion.
- Likely to erode or decay and cause voids.
- With excessive moisture content, slurry, mud or from marshes or bogs.
- Clay of liquid limit exceeding 80 and/ or plasticity index exceeding 55.
- Defined in Highways Agency (HA) publication 'Manual of contract documents for highway works: Volume 1: Specification for highway works', clause 601 as 'Unacceptable materials'.

Frost susceptibility of fill materials

General: Fill must not be frost-susceptible as defined in 'Specification for highway works', clause 801.

Test reports: If the following fill materials are proposed, submit a laboratory report confirming they are not frost-susceptible.

- Fine grained soil with a plasticity index less than 20%.
- Coarse grained soil or crushed granite with more than 10% retained on a 0.063 mm sieve.
- Crushed chalk.
- Crushed limestone fill with average saturation moisture content in excess of 3%.
- Burnt colliery shale.

Frost-susceptible fill: May only be used within the external walls of buildings below spaces that will be heated. Protect from frost during construction.

Compacted fill for landscape areas

Fill: Material capable of compaction by light earthmoving plant.

Highways Agency Type 1 granular fill

Fill: To 'Specification for highway works', clause 803:

- Crushed rock (other than argillaceous rock).
- Crushed concrete.
- Recycled aggregates.
- Crushed non-expansive slag.
- Well-burnt non-plastic colliery shale.

Highways Agency Type 2 granular fill

Fill: To 'Specification for highway works', clause 804:

- Crushed rock (other than argillaceous rock).
- Crushed concrete.
- Crushed non-expansive slag.
- Well-burnt non-plastic colliery shale.
- Natural gravel.
- Natural sand.

Hardcore fill

Fill: Granular material, free from excessive dust, well graded, passing a 75 mm BS sieve, 10% (minimum) fines value of 50 kN when tested in a soaked condition to BS 812-111. In each layer only one of the following groups:

- Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
- Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
- Recycled aggregates.
- Crushed non-expansive slag.
- Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
- Well-burnt non-plastic colliery shale.

- Natural gravel.
- Natural sand.

Venting hardcore layer

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 groups:

- Crushed hard rock.
- Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
- Recycled aggregates.
- Gravel.

Sand blinding

Sand for blinding: To BS EN 12620, grade 0/4 or 0/2 (MP).

Alternative fine materials: Submit proposals.

EXECUTION

Site clearance

Timing: Before topsoil stripping, if any.

General: Clear site of rubbish, debris and vegetation. Do not compact topsoil.

Removing small trees, shrubs, hedges and roots

Safety: Comply with HSE/ Arboriculture and Forestry Advisory Group Safety guides.

Felling large trees

Safety: Comply with HSE/ Arboriculture and Forestry Advisory Group Safety Guides.

Felling: As close to the ground as possible.

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.

Stripping topsoil

General: Before commencing general excavation or filling, strip topsoil from areas where there will be regrading, buildings, pavings/ roads and other areas shown on drawings.

Depth of topsoil difficult to determine: Give notice.

Around trees: Do not remove topsoil from below the spread of trees to be retained.

Handling topsoil

Aggressive weeds:

- Give notice and obtain instructions before moving topsoil containing aggressive weeds included in the Weeds Act, section 2 or the Wildlife and Countryside Act, Schedule 9, part II.
- Minimize disturbance, trafficking and compaction.

Contamination: Do not mix topsoil with the following:

- Subsoil, stone, hardcore, rubbish or material from demolition work.
- Oil, fuel, cement or other substances harmful to plant growth.
- Other grades of topsoil.

Multiple handling: Keep to a minimum. Use topsoil immediately after stripping.

Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall or when topsoil is wetter than the plastic limit as defined by BS 3882, Annex N2.

Adjacent excavations

Proximity: 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.

- Angle of line from horizontal: 45° for stable soils, 30° for wet clays.

Permissible deviations from formation levels

Beneath mass concrete foundations: ± 25 mm.

Beneath ground bearing slabs and reinforced concrete foundations: ± 15 mm.

Embankments and cuttings: ± 50 mm.

Ground abutting external walls: ± 50 mm, but finished level must be at least 150 mm below dpc.

Inspecting formations

Give notice: Make advance arrangements for inspection of formations.

Preparation: Just before inspection remove the last 150 mm of excavation. Trim to required profiles and levels, and remove loose material.

Formations: Seal with concrete within 4 hours of inspection.

Foundations

Give notice if:

- A natural bearing formation of undisturbed subsoil is not obtained at the depth shown on the drawings; or
- The formation contains soft or hard spots or highly variable material.

Trench fill foundations

Excavation: Form trench down to formation in one operation.

Safety: Prepare formation from ground level.

Inspection of formations: Give notice before excavating.

Shoring: Where inspection of formation is required, provide localised shoring to suit ground conditions.

Concrete fill: Place concrete immediately after inspection and no more than four hours after exposing the formation.

Foundations in made up ground

Depth: Excavate down to a natural formation of undisturbed subsoil.

Discrepancy: Give notice if this is greater or lesser than depth given.

Unstable ground

Generally: Keep excavation stable at all times.

Give notice: Without delay, if newly excavated faces are too unstable to allow earthwork support to be inserted.

If instability is likely to affect adjacent structures or roadways: Take appropriate emergency action.

Recorded features

Recorded foundations, beds, drains, manholes, etc: Break out and seal drain ends.

Contaminated earth: Remove and disinfect as required by local authority.

Unrecorded features

Give notice: If unrecorded foundations, beds, voids, basements, filling, tanks, pipes, cables, drains, manholes, watercourses, ditches, etc. are encountered.

Existing watercourses

Diverted watercourses which are to be filled: Before filling, remove vegetable growths and soft deposits.

Topsoil & subsoil

Retained excavated material:

- Stockpile in separate temporary storage heaps.
- Spread and level surplus subsoil on site.
- Protected areas: Do not raise soil level within root spread of trees that are to be retained.

Remaining material: Remove from site.

Water

Generally: Keep excavations free from water until:

- Formations are covered;
- Below ground constructions are completed; and
- Basement structures and retaining walls are able to resist leakage, water pressure and flotation.

Drainage: Form surfaces of excavations and fill to provide adequate falls.

Removal of water: Provide temporary drains, sumps and pumping as necessary. Do not pollute watercourses.

Ground water level/ Running water

Give notice:

- If excavations are below water table.
- If springs or running water are encountered.

Pumping

General: Do not disturb excavated faces or stability of adjacent ground or structures.

Pumped water: Discharge without flooding the site or adjoining property.

Sumps: Construct clear of excavations. Fill on completion.

Placing fill

Excavations and areas to be filled: Free from loose soil, rubbish and standing water.

Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.

Adjacent structures, membranes and buried services:

- Do not overload, destabilize or damage.
- Submit proposals for temporary support necessary to ensure stability during filling.
- Allow 14 days (minimum) before backfilling against in situ concrete structures.

Layers: Place so that only one type of material occurs in each layer.

Earthmoving equipment: Vary route to avoid rutting.

Compaction

General: Compact fill as soon as possible after placing.

After compaction: Surface of each layer must be well closed, showing no movement under compaction plant, and without cracks, holes, ridges, loose material and the like.

Defective areas: Remove and recompact to full thickness of layer using new material.

Geotextile sheeting

Preparation: Before laying, remove humps and sharp projections. Fill hollows.

Protect from:

- Exposure to light, except for five hours (maximum) during laying.
- Contaminants.
- Materials listed as potentially deleterious by geotextile manufacturer.
- Damage until fully covered by fill.
- Wind uplift, by laying 15 m (maximum) before covering with fill.

Compacted filling for landscape areas

Layer thickness: 200 mm (maximum).

Laying: Lightly compact each layer to produce a stable soil structure.

Highways Agency granular filling

Filling: To 'Specification for highway works', clauses 801–804.

Compacted general filling

Excavated material: Select suitable material and keep separate.

Filling: Spread and level material in layers. As soon as possible thoroughly compact each layer.

Proposals: Well in advance of starting work submit details of proposed:

- Materials to be used, including quantities of each type.
- Type of plant.
- Maximum depth of each compacted layer.
- Minimum number of passes per layer.

Backfilling around foundations

Under oversite concrete and pavings: Spread and level in 150 mm (maximum) layers. Thoroughly compact each layer.

Under grassed or soil areas: Lay and compact in 300 mm (maximum) layers.

Hardcore filling

Filling: Spread and level in 150 mm (maximum) layers. Compact each layer thoroughly.

Venting hardcore layer

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

Blinding

Surfaces (other than venting hardcore layer) to receive sheet overlays or concrete, blind with:

- Sand or fine gravel applied to fill interstices. Moisten as necessary before final rolling to provide a flat, closed, smooth surface.
- Permissible deviations on surface level: +0 -25 mm.

E10 IN SITU CONCRETE

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Concrete

Standard: To BS EN 206-1.

Complimentary British Standard:

- Method of specifying and guidance: To BS 8500-1.
- Specification: To BS 8500-2.

Aggregates

Aggregates for concrete: To BS EN 12620.

Aggregates for exposed visual concrete:

- Limitations on contaminants: Free from absorbent particles which may cause 'popouts', and other particles such as coal and iron sulfide which may be unsightly or cause unacceptable staining.
- Colour: Consistent.
- Supply: From a single source and maintained throughout the contract.
- Samples: Submit on request.

Lightweight aggregates for concrete: To BS EN 13055-1.

Underlay

Building paper: To BS 1521, Class B1F.

Polyethylene sheet: Minimum 250 µm.

EXECUTION

Ready mixed concrete

Production plant: Currently certified by a body accredited by UKAS to BS EN 45011 for product conformity certification of ready-mixed concrete.

Source: Obtain from one source if possible, otherwise submit proposals.

Delivery notes: Retain for inspection.

Declarations of nonconformity from concrete producer: Notify immediately.

Substitution of standardized prescribed concrete for designated concrete:

- Generally: Conform to BS 8500-2, clause 8.
- Substitution: In accordance with BS 8500-1, table A.7. Submit proposals for each substitution, stating reasons.

Site mixed concrete

Application: Use where neither strength nor appearance is critical.

Water: Use mains water. Protect from contamination.

Batching by mass: Allow for water content of aggregates.

Site made standardized prescribed concrete mixes: Conform to BS 8000-2.1, sub sections 2, 3 and 4.

Admixtures:

- Calcium chloride and admixtures containing calcium chloride: Not permitted.

Construction (daywork) joints

Locations: Where not shown on drawings, submit proposals.

Preparation: While concrete is still green, remove surface laitance and expose aggregate finish.

- Condition of surface immediately before placing fresh concrete: Clean and damp.

Premature water loss

Requirement: Prevent water loss from concrete laid on absorbent substrates. Lay underlay. Lap edges 150 mm.

Placing

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

Pours: Maintain records for time, date and location.

Timing: Place as soon as practicable after mixing and while sufficiently plastic for full compaction.

Temperature limitations for concrete: 5–30°C.

Continuity of pours: Place in final position in one continuous operation up to construction joints.

Placing of concrete must not:

- cause uneven dispersal, segregation or loss of ingredients;
- adversely affect the formwork or formed finishes;
- be carried out against frozen or frost covered surfaces; or
- form cold joints.

Thickness: To suit method of compaction and achieve efficient amalgamation during compaction.

Compacting

General: Fully compact concrete to full depth. Continue until air bubbles cease to appear on the top surface.

Consecutive batches of concrete: Amalgamate without damaging adjacent partly hardened concrete.

Methods of compaction: To suit consistence class and use of concrete.

Surface regularity

Sudden irregularities: Not permitted.

Measurement: Use slip gauges to BS 8204-1 or -2.

Curing

Requirement: Keep surface layers of concrete moist throughout curing period, including perimeters and abutments, by either restricting evaporation or continuously wetting surfaces of concrete.

Surfaces covered by formwork: Retain formwork in position and, where necessary to satisfy curing period, cover surfaces immediately after striking.

Top surfaces: Cover immediately after placing and compacting.

- Removal of covering for finishing operations: Replace immediately thereafter.

Surface temperature: Maintain above 5°C for four days.

Records: Maintain details of location and timing of casting of individual batches, removal of formwork and removal of coverings. Keep on site, available for inspection.

Coverings for curing: Suitable impervious sheet materials.

- Curing compounds: Do not use without consent.

Interim covering to top surfaces of concrete: Until surfaces are in a suitable state to receive coverings in direct contact, cover with waterproof sheeting held clear of the surface and seal against draughts.

Curing periods (minimum):

- Surfaces which will be exposed in the finished work, and wearing surfaces of floors and pavements: 10 days.
- Other structural concrete surfaces: 5 days.

Protection

Prevent damage to concrete, including:

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

E30 REINFORCEMENT FOR IN SITU CONCRETE

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Reinforcement

Ribbed weldable steel reinforcement: To BS 4449.

Plain, indented and ribbed steel wire reinforcement: To BS 4482.

Stainless steel bar reinforcement: To BS 6744.

Fabric reinforcement: To BS 4483.

EXECUTION

Cutting, bending and labelling

Standard: To BS 8666.

Site bending/ reshaping: Not permitted for Grade 500 bars. Obtain instructions for other grades.

Cleanliness

General: Clean and free of substances which may adversely affect the reinforcement, concrete or bond between the two.

Laps and splices

For details not shown on drawings:

- Laps in bar reinforcement (minimum): Tension lap length to BS 8110-1, table 3.27 appropriate to the concrete strength.
- Laps in fabric reinforcement (minimum): Tension lap length to BS 8110-1, table 3.27 for the same grade bar reinforcement and appropriate to the concrete strength. Avoid four layer build-up at corners.

Fixing

Sequence: Before placing concrete, fix reinforcement in position.

General: Provide adequate support, tie securely and maintain the cover. Prevent contact between ordinary carbon steel and stainless or galvanized reinforcement

Spacers: To BS 7973-1 and -2.

Tying: Tie with 16 gauge black annealed tying wire. Do not intrude tying wire into the concrete cover. Remove loose ends.

- Stainless steel reinforcement: Tie with 16 gauge annealed stainless steel wire.

F10 BRICK AND BLOCK WALLING

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

Mortars: Read with Z21.

PRODUCTS

New masonry units

Aggregate concrete bricks and blocks: To BS EN 771-3.

Autoclaved aerated concrete (AAC) blocks: To BS EN 771-4.

Calcium silicate bricks: To BS EN 771-2.

Clay blocks: To BS EN 771-1.

- Type: LD.

Clay bricks: To BS EN 771-1.

Gypsum blocks: To BS EN 12859.

Manufactured stone blocks: To BS EN 771-5.

Standard special shape bricks: To BS 4729.

Second hand masonry units

Reclaimed facing bricks: Sound, free from mortar and deleterious matter.

EXECUTION

Workmanship generally

Standard: To BS 5628-3.

Conditioning clay and calcium silicate bricks

Bricks delivered warm from manufacturing process: Do not use until cold.

Absorbent bricks in warm weather: Wet to reduce suction. Do not soak.

Conditioning concrete bricks/ blocks

Autoclaved concrete bricks/ blocks delivered warm from manufacturing process: Do not use.

Age of nonautoclaved concrete bricks/ blocks: Do not use until at least four weeks old.

Avoidance of suction in concrete bricks/ blocks: Do not wet.

- Use of water retaining mortar admixture: Submit details.

Laying generally

Mortar joints generally: Fill vertical joints. Lay bricks, solid and cellular blocks on a full bed.

Autoclaved aerated concrete (AAC) blocks laid with thin mortar adhesive joints: Fill vertical joints. Lay blocks on a full bed.

Clay blocks with interlocking vertical joints: Dry vertical joints. Lay blocks on a full bed of thin layer mortar.

Bond where not specified: Half lap stretcher.

Vertical joints in facework: Even widths. Plumb at every fifth cross joint along course.

Height of lifts

General: Rack back when raising quoins and other advance work.

Walling using cement gauged or hydraulic lime mortar:

- Lift height: 1.2 m (maximum) above any other part of work at any time.
- Daily lift height: 1.5 m (maximum) for any one leaf.

Walling using thin joint mortar glue:

- Lift height: 1.3 m (maximum) above any other part of work at any time.

Levelling of separate leaves using cement gauged or hydraulic lime mortar

Locations for equal levelling of cavity wall leaves: As follows:

- Every course containing vertical twist type ties or other rigid ties.
- Every third tie course for double triangle/ butterfly ties.
- Courses in which lintels are to be bedded.

Coursing brickwork

Gauge for new work with bricks of 65 mm work height: Four brick courses including bed joints to 300 mm.

Tying in to existing brickwork: Line up with existing brick courses.

Laying frogged bricks

Single frogged bricks: Frog uppermost.

Double frogged bricks: Larger frog uppermost.

Frog cavity: Fill with mortar.

Laying gypsum blocks with tongues and grooves

Orientation: Tongued length uppermost.

Support of existing work

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

Block bonding new walls to existing

Pocket requirements: Formed as follows:

- Width: Full thickness of new wall.
- Depth: 100 mm (minimum).

Vertical spacing of pockets:

- Brick to brick: 4 courses high at 8 course centres.
- Block to block: Every other course.

Pocket joints: Fully filled with mortar.

Jointing

Profile: Consistent in appearance.

Accessible joints not exposed to view: Struck flush as work proceeds.

Pointing

Joint preparation: Remove debris. Dampen surface.

Fire stopping

Avoidance of fire and smoke penetration: Tight fit between cavity barriers and masonry. Leave no gaps.

Adverse weather

General: Do not use frozen materials or lay on frozen surfaces.

Air temperature requirements: Do not lay bricks/ blocks:

- In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising.
- In hydraulic lime:sand mortars when at or below 5°C and falling or below 3°C and rising.
- In thin joint/ layer mortar glue when outside the limits set by the mortar manufacturer.

Temperature of walling during curing: Above freezing until hardened.

Newly erected walling: Protect at all times from:

- Rain and snow.
- Drying out too rapidly in hot conditions and in drying winds.

Facework

Colour consistency of masonry units:

- Methods to ensure that delivered units are consistent and of an even colour range within deliveries: Submit proposals.
- Conformity: Check each delivery for consistency of appearance with previous deliveries and with approved reference panels; do not use if variation is excessive.
- Finished work: Free from patches, horizontal stripes and racking back marks.

Appearance:

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

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

Putlog scaffolding: Not permitted in facework.

Toothed bond: New and existing facework in the same plane: Bond together at every course to achieve continuity of bond and coursing.

Cleanliness:

- Facework: Keep clean.
- Mortar on facework: Allow to dry before removing.
- Removal of marks and stains: Rubbing not permitted.

F30 ACCESSORIES AND SUNDRY ITEMS FOR BRICK BLOCK AND STONE

WALLING

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Air bricks in external walling

Standard: To BS 493, Class 1.

Cavity insulation

Glass or rock wool batts: To BS EN 13162 or Agrément certified.

Expanded polystyrene (EPS) boards: To BS EN 13163 or Agrément certified.

Extruded polystyrene (XPS) boards: To BS EN 13164 or Agrément certified.

Polyisocyanurate (PIR) foam boards: To BS EN 13165 or Agrément certified.

Polyurethane (PUR) foam boards: To BS EN 13165 or Agrément certified.

Phenolic foam boards: To BS EN 13166 or Agrément certified.

Concrete fill to base of cavity wall

Standard: To BS EN 206-1 and BS 8500-2.

Coping units

Precast concrete, clayware, slate and natural stone: To BS 5642-2.

Fireplace components

Standard: To BS 1251.

Flexible damp proof courses and cavity trays

Bitumen based: To BS 6398.

Polyethylene: To BS 6515.

Pitch polymer, bitumen polymer, polypropylene, and ethylene polypropylene based: Agrément certified.

Flue blocks

Clay/ Ceramic: To BS EN 1806.

Concrete: To BS EN 1289-1.

Flue linings

Clay/ Ceramic: To BS EN 1457.

Concrete: To BS EN 1857.

Gratings/ Ventilators in internal walling

Standard: To BS 493, Class 2.

Lintels

Precast concrete and prefabricated steel: To BS EN 845-2.

Meshwork joint reinforcement

Standard: To BS EN 845-3.

Plain clay tiles

Standard: To BS EN 1304.

Sills

Precast concrete, clayware, slate and natural stone: To BS 5642-1.

Wall ties

Cavity ties: To BS 1243, DD 140-2 or BS EN 845-1.

Slip ties and slot ties: To BS EN 845-1.

EXECUTION

Air bricks in external walling and gratings/ ventilators in internal walling

Placement: Built in with no gaps at joints.

Cavities in masonry walling

Concrete fill to base of cavity wall:

- Extent: Maintain 75 mm between top of fill and external ground level and 225 mm (minimum) between top of fill and ground level dpc.
- Placement: Compact to eliminate voids.

Cleanliness: Cavity base and faces, ties, insulation and exposed dpcs free from mortar and debris.

Cavity trays

Formed in-situ:

- Joint treatment: Use unjointed wherever possible, otherwise lap 100 mm (minimum) and seal to produce a free draining and watertight installation.
- Horizontal cavity trays: Support using cavity closer.
- Sloping cavity trays: Prevent sagging.
- Cleanliness: Free from debris and mortar droppings.

Preformed:

- Placement: To provide a free draining and watertight installation.
- Joint treatment: As manufacturer's recommendations.

Over openings and other cavity bridgings:

- Length: To extend 150 mm (minimum) beyond ends of lintels/ bridgings.

Cavity trays - gas resistant

Formed in-situ:

- Joint treatment: Use unjointed wherever possible, otherwise lap 150 mm (minimum) and seal to form a gas and watertight installation.
- Joint with damp proof membrane: Overlap dpc/ cavity tray 150 mm (minimum).

Cavity wall insulation**Full fill type:**

- Placement: Continuous and free of mortar and debris.

Partial fill type:

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

Dpcs - horizontal

Placement: In continuous lengths on full even bed of fresh mortar, with 100 mm laps at joints and full laps at angles.

Width: At least full width of leaf unless otherwise specified. Edges of dpc not covered with mortar or projecting into cavity.

Overlying construction: Immediately cover with full even bed of mortar to receive next masonry course.

Overall finished joint thickness: As close to normal as practicable.

Ground level dpcs:

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

Stepped dpcs in external walls:

- External walls on sloping ground: Install dpcs 150 mm (minimum) above adjoining finished ground level.

Sill dpcs: In one piece and turned up at back when sill is in contact with inner leaf.

Coping/ Capping dpcs:

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

Dpcs - vertical

Form: In one piece wherever possible.

Joints: Upper part overlapping lower 100 mm (minimum).

Jamb dpcs at openings:

- Joint with cavity tray/ lintel at head: Full underlap.
- Joint with sill/ horizontal dpc at base: Full overlap.
- Projection into cavity: 25 mm (minimum).
- Relationship with frame: In full contact.

Jamb dpcs to built in timber frames:

- Fixing: Securely fastened to back of frame.
- Fasteners: Galvanized clout nails or staples.

Flues - block system

Block placement: Finish joints flush to ensure a smooth, unrestricted flueway.

- Starter, offset and transfer blocks: Use.
- Coursing: As adjacent masonry.
- Non-bonded blocks: Support.
- Joints between blocks: Seal.

Testing flue system:

- Core ball test and smoke test to BS 6461-1: On completion, carry out each test. If obstructions or leaks are revealed, submit proposals for making good.

Flues - clay/ ceramic lining system

Linings placement: Fully bed with socket or rebate uppermost using correct starters, adaptors, bends etc.

- Joints: Flush to provide an unrestricted flueway with smooth interior surfaces.

Testing flue system:

- Core ball test and smoke test to BS 6461-1: On completion, carry out each test. If obstructions or leaks are revealed, submit proposals for making good.

Frames

Built in frames: Remove horns and provide support.

- Fixing cramps: Fully bed in mortar.

Frames in prepared openings:

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

Lintels

Placement: Bed on mortar used for adjacent work.

- Bearing: 100 mm (minimum).

Precast concrete lintels: Use slate packing pieces.

Meshwork joint reinforcement

Placement: Lay on an even bed of mortar in a continuous strip.

Laps:

- Joints: 225 mm (minimum).
- Angles: Full.

Keep edges back from face of work:

- External: 20 mm.
- Internal: 12 mm.

Joint finish: Normal thickness.

Movement joints with sealant

Joint preparation and sealant application: As section Z22.

Filler:

- Thickness: To match design width of joint.
- Placement: Build in as work proceeds with no projections into cavities and to correct depth to receive sealant system.

Movement joints without sealant

Filler to standard joints:

- Thickness: To match design width of joint.
- Placement: Build in as work proceeds filling the joint but without projecting into cavities.

Filler to fire resistant joints:

- Placement: Compress and insert into place in open joint.
- Adhesives and accessories: Types recommended by filler manufacturer.

Pinning up to soffits

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

Pointing in flashings

Joint preparation: Free of debris and lightly wetted.

Pointing mortar: As for adjacent walling.

Placement: Fill joint and finish flush.

Precast concrete, clayware, slate and natural stone coping units

Joints: Full and finished flush.

Placement: Lay on a full bed of mortar to line and level.

Precast concrete, clayware, slate and natural stone sills

Joints: Flush.

Bedding one piece sills: Leave bed joints open except under end bearings and masonry mullions.

Pointing on completion: To match adjacent work.

Preformed dpc/ cavity tray junction cloaks/ stop ends

Placement: To provide a free draining and watertight installation.

Site formed dpc/ cavity tray junctions/ stop ends

- Three dimensional changes in shape: Form to provide a free draining and watertight installation. Seal laps.
- Alternative use of preformed junction cloaks/ stop ends: Submit proposals.

Ties in masonry cavity walls

Embedment in mortar beds: 50 mm (minimum).

Placement: Sloping slightly downwards towards outer leaf, without bending.

- Drip: Centred in the cavity and pointing downwards.

Provision of additional ties in cavity walls with full fill cavity insulation: One row to support lowest row of insulation batts.

Additional ties at openings and movement joints: 300 mm (maximum) centres vertically within 225 mm of vertical

movement joints and reveals of unbonded openings.

Ties in masonry cladding to timber frames

Embedment in mortar beds: 50 mm (minimum).

Placement: Slope downwards away from timber frame, without bending.

Additional ties at openings and movement joints: 300 mm (maximum) centres vertically within 225 mm of vertical movement joints and reveals of unbonded openings.

Tile creasing

Placement: Two courses, broken jointed.

- Mortar: As adjacent work, full bed.

Joints: Full and finished flush.

Tile sills

Placement: Two courses, broken jointed, true to line and level on full bed of mortar.

Joints: Full and finished flush.

Tops of restrained nonloadbearing walls

Restraints: Secure to soffit.

Filler placement: Full, no gaps.

Ventilation ducts in external walling

Placement: Across cavity, sloping away from inner leaf.

- Cavity seal: Full mortar joints.

Protection from water penetration to inner leaf: Where barrier is not integral to duct, form stepped dpc cavity tray with stop ends above duct, extending 150 mm on each side.

Wall plates

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

Weep holes

Locations: Through outer leaf immediately above base of cavity, at cavity trays, stepped dpcs and external openings.

- Position: 75 mm above top of cavity fill at base of cavity.

Provision: 1000 mm (maximum) centres and not less than two over each opening.

G12 ISOLATED STRUCTURAL METAL MEMBERS

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Steel sections

Hot rolled structural sections: To BS 4-1.

- Steel: To BS EN 10025-2, grade S275JR.

Structural steel equal and unequal angles: To BS EN 10056.

- Steel: To BS EN 10025-2, grade S275JR.

Hot finished structural hollow sections: To BS EN 10210.

Surface condition: Free from heavy pitting and rust, burrs, sharp edges and flame cutting dross.

Bolt assemblies

Black bolts: To BS 4190.

- Nuts and washers: Material grade and finish to suit bolts.

EXECUTION

Fabrication of steel members

Cuts and holes: Accurate and neat.

Welding: Metal arc method to BS EN 1011-2.

- Welded joints: Fully fused, with mechanical properties not less than those of the parent metal.
- Site welding: Obtain approval before planning work.

Shop priming

Preparation: To BS EN ISO 12944-4. Remove fins, burrs, sharp edges and weld spatter and clean out crevices.

Primer application: To BS EN ISO 12944-7.

Installation

Accuracy: Members positioned true to line and level using, if necessary steel packs of sufficient area to allow full transfer of loads to bearing surfaces.

Fixing: Use washers under bolt heads and nuts.

- Tapered washers: Provide under bolt heads and nuts bearing on sloping surfaces. Match taper to slope angle and align correctly.

G20 CARPENTRY AND TIMBER FRAMING

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Timber procurement

Timber (including timber for wood based products): Obtained from well managed forests/ plantations in accordance with:

- The laws governing forest management in the producer country or countries.
- International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).

Documentation: Provide either:

- Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied, or
- Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.

Strength grading

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

Grading and marking of softwood

- Timber of target/ finished thickness less than 100 mm and not specified for wet exposure: Graded at an average moisture content not exceeding 20% and no reading greater than 24% and clearly marked as 'DRY' or 'KD' (kiln dried).

Timber graded undried (green) and specified for installation at higher moisture contents: Clearly marked as 'WET' or 'GRN'.

Structural timber members cut from large graded sections: Regraded to approval and marked accordingly.

Timber products

Structural softwood (graded direct to strength class):

- Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
- Strength class: To BS EN 338.

Structural softwood (strength class not specified):

- Grading standard: To the appropriate standard or rules for the specified grade and so marked.

Structural hardwood (strength class not specified):

- Grading standard: To BS 5756 and so marked.

Ungraded softwood:

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

Wood trim for fascias, bargeboards and the like:

- Standard: To BS 1186-3.

Nonstructural plywood:

- Standard: To an approved national standard.
- Surface appearance: To BS EN 635.
- Bonding quality: To BS EN 314-2.

Trussed rafters:

- Design and fabrication: To BS 5268-3 and BS EN 14250.
- Manufacturer: A firm currently registered under a third party quality assurance scheme.

Structural softwood and hardwood cross section dimensions

Target sizes: To BS EN 336.

Maximum permitted deviations from target sizes: Tolerances to BS EN 336, clause 4.3.

- Sawn surfaces: Tolerance class 1 (T1).
- Further processed surfaces: Tolerance class 2 (T2).

Nonstructural softwood cross section dimensions

Cross section dimensions specified are finished sizes.

Maximum permitted deviations from finished sizes: To BS EN 1313-1 and National Annex.

- Sawn surfaces: Clause 6.
- Further processed surfaces: Clause NA2.

Nonstructural hardwood cross section dimensions

Cross section dimensions specified are finished sizes.

Maximum permitted deviations from finished sizes: To BS EN 1313-2 and National Annex.

- Sawn surfaces: Clause 6.
- Further processed surfaces: Clause NA3.

Warping of timber

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

Preservative treatment

Standard: To Wood Protection Association (WPA) Commodity Specifications.

- Softwood soffits, fascias and bargeboards: Commodity Specification C5.
- Constructional timbers: Commodity Specification C8.
- Timber frame housing (only applicable to structural framing to external walls): Commodity Specification C9.

Pre-finishing

Structural timber to be painted: Prime before delivery to site.

Structural timber to be clear finished: Keep clean and apply first coat of finish before delivery to site.

Joist hangers

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

EXECUTION

Selection and use of timber

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

Notches and holes: Position in relation to knots or other defects such that the strength of members will not be reduced.

Scarf joints, finger joints and splice plates: Do not use without approval.

Processing treated timber

Cutting and machining: Carry out as much as possible before treatment.

Extensively processed timber: Re-treat timber sawn lengthways, thickened, planed, ploughed, etc.

Surfaces exposed by minor cutting and drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

Moisture content

Moisture content of wood and wood based products at time of installation: Maximum:

- Covered and generally unheated spaces: 24%.
- Covered and generally heated spaces: 20%.
- Internal in continuously heated spaces: 20%.

Protection

Generally: Keep timber dry and do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.

Timber and components: Store under cover, clear of the ground and with good ventilation. Support on regularly spaced, level bearers on a dry, firm base. Open pile to ensure free movement of air through the stack.

Trussed rafters: Keep vertical during handling and storage.

Exposed end grain

Components: Seal exposed end grain of timber components before delivery to site.

Exposed timber

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

Jointing and fixing

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

Framing anchors:

- Fasteners: Galvanized or sherardized square twist nails. Size, not less than size recommended by anchor manufacturer.
- Fixing: Secure using not less than number/ type of fasteners recommended by anchor manufacturer.

Bolt/ Screw assemblies:

- Nuts and washers: Material grade and finish to suit bolts.
- Washer dimensions: Diameter/ side length in contact with timber surfaces to be minimum 3 times bolt diameter, with a thickness not less than 0.25 times bolt diameter.
- Bolted joints:
- Bolt spacings (minimum): To BS 5268-2, table 81.
- 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.
- Washers: Placed under bolt heads and nuts that would otherwise bear directly on timber. Use spring washers in locations which will be hidden or inaccessible in the completed building.
- Bolt tightening: So that washers just bite the surface of the timber. Ensure that at least one complete thread protrudes from the nut. Check at agreed regular intervals up to Completion. Tighten as necessary.

Anticorrosion finishes for fasteners:

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

Temporary bracing

Provision: As necessary to maintain structural timber components in position and to ensure complete stability during construction.

Additional supports

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.

Material properties: Additional studs, noggings and battens to be of adequate size and have the same treatment as adjacent timber supports.

Wall plates

Position and alignment: To give correct span and level for trusses, joists, etc.

Bedding: Fully in fresh mortar.

Joints: At corners and elsewhere where joints are unavoidable use nailed half lap joints. Do not use short lengths of timber.

Installing joists

Generally:

- Centres: Equal, not exceeding designed spacing.
- Bowed joists: Install with positive camber.
- End joists: Positioned approximately 50 mm from masonry walls.

Joists on hangers:

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

Trimming openings

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

Trussed rafter installation

Erection: To BS 5268-3, clause 9.3 and Trussed Rafter Association (TRA) site installation guide.

Trusses generally: Do not modify without approval.

Damaged trusses: Do not use.

Fixing: Truss clips and bottom chords of standard trusses and rafters of raised tie trusses bearing fully on wall plates.

- Bottom chords of standard trusses: Do not fix to internal walls until roofing is complete and cisterns are installed and filled.

Permanent bracing:

- Method of fixing: To every rafter, strut or tie with not less than two fasteners.
- Lap joints: Extended over and nailed to at least two truss members.

Lateral restraint straps

Fixing to top of joists/ rafters/ ties: Ensure that cranked end is in tight contact with cavity face of wall inner leaf and is not pointing upwards.

Straps spanning joists/ rafters/ ties running parallel to wall: Fix noggings and packs tightly beneath straps.

- Size of noggings and packs: Minimum three quarters of joist/ rafter/ tie depth and 38 mm (minimum) thick.
- Notching: Notch joists so that straps fit flush with surface. Do not notch rafters/ ties.

Strutting to floor joists

Fixing: Strutting must not project beyond top and bottom edges of joists.

Outer joists: Blocked solidly to perimeter walls.

K10 PLASTERBOARD DRY LININGS FOR WALLS, PARTITIONS AND

CEILINGS

GENERAL REQUIREMENTS

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Insulation

Mineral wool: To BS EN 13162.

Gypsum plasterboards to BS EN 520

Type A:

- Face suitable for gypsum plasters or decoration to be applied.

Type H (plasterboard with reduced water absorption):

- Types H1, H2 and H3 have different water absorption performance.

Type E (gypsum sheathing board):

- Manufactured to be used as sheathing board in external walls.
- Not intended to receive decoration.
- Not designed to be permanently exposed to external weather conditions.
- Has reduced water absorption rates.

Type F (gypsum plasterboard with improved core adhesion at high temperatures):

- Face suitable for gypsum plasters or decoration to be applied.

Type P (gypsum baseboard):

- Face intended to receive gypsum plaster.
- May be perforated during manufacture.

Type D (gypsum plasterboard with controlled density):

- Face suitable for gypsum plasters or decoration to be applied.

Type R (gypsum plasterboard with enhanced strength):

- For applications where higher strength is required.
- Increased longitudinal and transverse breaking loads.
- Face suitable for gypsum plasters or decoration to be applied.

Type I (gypsum plasterboard with enhanced surface hardness):

- Face suitable for gypsum plasters or decoration to be applied.
- Designated Type I3.3 for edge and end profiles.

Edges:

- Normally square cut, but can be bevelled, tapered, half rounded, rounded or a combination of each.
- Type P – square or rounded.

Designation of plasterboards:

- _Gypsum plasterboard/ type letter/ BS EN 520 – width/ length/ thickness/ edge profile_.
- E.g. _Gypsum plasterboard/ Type A/ BS EN 520 – 1200/ 2400/ 12.5/ tapered edge_

Rigid beads/ stops

Standard: Galvanized steel: To BS EN ISO 1461.

EXECUTION

New wet laid bases

DPCs: Install under full width of partitions/ freestanding wall linings.

Metal framing for partitions/ wall linings

Setting out: Accurately aligned and plumb.

- Frame/ Stud positions: Equal centres to suit specified linings, maintaining sequence across openings.
- Additional studs: To support vertical edges of boards.

Fixing centres at perimeters (maximum): 600 mm.

Openings: Form accurately:

- Doorsets: Use sleeved/ or boxed metal studs and/ or suitable timber framing to achieve strength grade requirements for framing assembly and adequately support weight of door.
- Services penetrations: Allow for associated fire stopping.

Additional supports

Framing: Accurately position and securely fix to give full support to:

- Partition heads: Running parallel with, but offset from main structural supports.
- Fixtures, fittings and service outlets. Mark framing positions clearly and accurately on linings.
- Board edges and lining perimeters: As recommended by board manufacturer to suit type and performance of lining.

Metal furrings for wall linings

Setting out:

- Vertical furring positions: Equal vertical centres to suit specified linings, maintaining sequence across openings.
- Position adjacent to angles and openings.
- Additional vertical furrings: To support vertical edges of boards and at junctions with partitions.
- Horizontal furring positions: To provide continuous support to edges of boards.

Adhesive bedding to furrings:

- Dabs: Length 200 mm (minimum). Located at ends of furrings and thereafter at 450 mm (maximum) centres.
- Junctions with partitions: Continuous bed with no gaps across cavity.

Suspended ceiling grids

Grid members and hangers: Centres to suit specified linings and imposed loads.

Additional grid members: To provide bracing and stiffening as necessary at upstands, partition heads, access hatches, etc.

Dry lining generally

General: Use fixing, jointing, sealing and finishing materials, components and installation methods recommended by board manufacturer.

Cutting plasterboard: Neatly and accurately without damaging core or tearing paper facing.

- Cut edges: Minimize and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.

Fixing boards: Fix securely and firmly to suitably prepared and accurately levelled backgrounds.

Finishing: Neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.

Dry lining ceilings

Sequence: Fix boards to ceilings before dry lining walls and partitions.

Orientation of boards: Fix with bound edges at right angles to supports and with ends staggered in adjacent rows.

Two layer boarding: Stagger joints between layers.

Installing mineral wool insulation

Fitting insulation: Closely butted joints and no gaps. Use fasteners to prevent slumping or displacement.

Services:

- Electrical cables overlaid by insulation. Sized accordingly.
- Ceilings: Do not lay over luminaires.

Sealing gaps and air paths

Location of sealant: To perimeter abutments and around openings.

- Pressurised shafts and ducts: At board-to-board and board-to-metal frame junctions.

Application: To clean, dry and dust free surfaces as a continuous bead with no gaps.

- Gaps greater than 6 mm between floor and underside of plasterboard: After sealing, fill with jointing compound.

Cavity fire barriers

Installation: Form accurately and fix securely with no gaps to provide a complete barrier to smoke and flame.

Within suspended ceilings: Fixing at perimeters and joints: Secure, stable and continuous with no gaps, to provide a complete barrier to smoke and flame.

Service penetrations: Cut and pack to maintain barrier integrity. Sleeve flexible materials. Adequately support services passing through barriers.

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

Fire stopping at perimeters of dry lining systems

Material: Tightly packed mineral wool or intumescent mastic/ sealant.

Application: Provide a complete barrier to smoke and flame.

Joints between boards

Tapered edged plasterboard:

- Bound edges: Lightly butted.
- Cut/ unbound edges: 3 mm gap.

Square edged plasterboard: 3 mm gap.

Square edged fibre reinforced gypsum board: 5 mm gap.

Vertical joints

Joints: Centre on studs/ framing.

Partitions: Stagger joints on opposite sides of studs.

Two layer boarding: Stagger joints between layers.

Horizontal joints

Surfaces exposed to view: Horizontal joints not permitted. Seek instructions where height of partition/ lining exceeds maximum available length of board.

Two layer boarding: Stagger joints between layers by at least 600 mm.

Edges of boards: Support using additional framing.

- Two layer boarding: Support edges of outer layer.

Insulation backed plasterboard

General: Do not damage or cut away insulation to accommodate services.

Installation at corners: Carefully cut back insulation or plasterboard as appropriate along edges of boards to give a continuous plasterboard face, with no gaps in insulation.

Fixing plasterboard to metal framing:

Screw fixing to framing/ furrings:

- Position of screws from edges of boards (minimum): 10 mm.
- Screw heads: Set in a depression. Do not break paper or gypsum core.
- Fixing insulation backed plasterboard to metal furrings: In addition to screw fixings, apply continuous beads of adhesive sealant to furrings.

Fixing plasterboard to timber framing:

Position of nails/ screws from edges of boards (minimum):

- Bound edges: 10 mm.
- Cut/ unbound edges: 13 mm.

Position of nails/ screws from edges of timber supports (minimum): 6 mm.

Fixing plasterboard with adhesive dabs

Setting out boards: Accurately aligned and plumb.

Fixing to background: Securely using adhesive dabs.

Dab spacing to each board horizontally: One row along top edge and one continuous dab along bottom edge.

Dab spacing to each board vertically: One row along each edge and at intermediate spacings to suit size of board:

- Boards 9.5 x 1200 mm: 400 mm centres.
- Boards 9.5/ 12.5 x 900 mm: 450 mm centres.
- Boards 12.5 x 1200 mm: 600 mm centres.

Adhesive dab dimensions (width x length): At least 50–75 mm x 250 mm.

- Position of dabs from edges/ ends of boards (minimum): 25 mm.

Fixing insulation backed plasterboard with adhesive dabs: In addition to adhesive dab fixings, secure boards with nailable plugs in locations recommended by board manufacturer.

Fixing insulation backed plasterboard with adhesive spots

Setting out boards: Accurately aligned and plumb.

Fixing to background: Securely using adhesive spots and mechanical fastenings.

Adhesive spot spacings to each board: Four vertical rows, at 400 mm centres in each row.

Adhesive spot diameters: 25 mm (minimum).

Mechanical fasteners: Nailable plugs in locations recommended by board manufacturer.

Level of dry lining across joints

Sudden irregularities: Not permitted.

Joint deviations: Measure from faces of adjacent boards using methods and straightedges (450 mm long with feet/ pads) to BS 8212, clause 3.3.5.

- Tapered edge joints: Permissible deviation (maximum) across joints when measured with feet resting on boards: 3 mm.
- External angles: Permissible deviation for both faces, 4 mm (maximum).
- Internal angles: Permissible deviation for both faces, 5 mm (maximum).

Seamless jointing to plasterboard

Cut edges of boards: Remove paper burrs.

Filling and taping: Fill joints, gaps and internal angles with jointing compound and cover with continuous lengths of paper tape, fully bedded.

Protection of edges/ corners: Reinforce external angles, stop ends, etc. with specified edge/ angle bead.

Finishing: Apply jointing compound. Feather out each application beyond previous application to give a flush, smooth, seamless surface.

Nail/ screw depressions: Fill with jointing compound to give a flush surface.

Minor imperfections: Remove by light sanding.

Installing beads/ stops

Cutting: Neatly using mitres at return angles.

Fixing: Use longest possible lengths, plumb, square and straight, ensuring full contact of wings with substrate.

Finishing: After joint compounds/ plasters have been applied, remove surplus material while still wet from surfaces of beads exposed to view.

Repairs to existing plasterboard

Filling small areas with broken cores: Cut away paper facing, remove loose core material and fill with jointing compound.

- Finish: Flush, smooth surface suitable for redecoration.

Large patch repairs: Cut out damaged area and form neat hole with rectangular sides. Replace with matching plasterboard.

- Fixing: Use methods to suit type of dry lining, ensuring full support to all edges of existing and new plasterboard.
- Finishing: Fill joints, tape and apply jointing compound to give a flush, smooth surface suitable for redecoration.

L20 DOORS/ SHUTTERS/ HATCHES

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

Purpose made joinery: Read with Z10.

Preservative/ fire retardant treatment: Read with Z12.

Fixings/ adhesives: Read with Z20.

Sealants: Read with Z22.

PRODUCTS

Aluminium framed sliding glass doors

Standard: To BS 5286.

Door facings: laminate

Standard: To BS EN 438-1.

Grade: Horizontal:

- Standard general purpose: HGS.
- Flame retardant general purpose: HGF.
- Post forming general purpose: HGP.

Door facings: plywood

Bonding quality: To BS EN 314.

Surface appearance:

- Hardwood: To BS EN 635-2.
- Softwood: To BS EN 635-3.

Conditions of use:

- Dry conditions: To BS EN 636-1.
- Humid conditions: To BS EN 636-2.
- Exterior conditions: To BS EN 636-3.

External wood matchboarded doors

Standard: Generally to BS 459.

Fire performance

Fire resistant doorsets and shutter assemblies:

- Type testing: To BS 476-22 or BS EN 1634-1.

Smoke control doorsets and shutter assemblies:

- Type testing: To BS 476-31.1 or BS EN 1634-3.

Intumescent seals:

- Type testing: To BS 476-23.

Testing authority: UKAS accredited.

Metal door frames

Steel frames: Generally to BS 1245.

Metric internal and external wood doorsets, door leaves and frames

Coordinated sizes: To BS 4787.

Safety glazing to door leaves and sidelights

Standard: To BS 6206.

Location: To BS 6262-4.

Single leaf external doorsets to dwellings

Security: To BS 8220-1.

- General performance requirements: To British Standards Institute (BSI) publication, PAS 23-1.
- Enhanced security requirements: To BSI publication, PAS 24-1.

Wood framed panel doors

Timber quality: To BS EN 942.

Wood preservative treatment

Service life: Not less than 30 years.

External softwood doors and frames: British Wood Preserving and Damp Proofing Association (BWPDA) commodity specification C5.

External hardwood doors and frames: BWPDA commodity specification C10.

Adhesives for wood doors and frames

- Polyvinyl acetate (PVAC) to BS EN 204.
- Thermosetting resin to BS EN 12765, class C4.

EXECUTION

Protection of components

General: Do not deliver to site components that cannot be installed immediately or placed in clean, dry, floored and covered storage.

Stored components: Stacked on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

Protection of timber surfaces inaccessible after installation

Protective coating: Primed or sealed before fixing components.

Protection of metallic surfaces inaccessible after installation

Relevant conditions: External or damp (high humidity) internal.

Copper alloys: Avoid direct contact with aluminium, iron, steel or zinc (including galvanizing).

Aluminium alloys: Avoid direct contact with:

- Timber treated with copper, zinc or mercury based preservatives.
- Unseasoned oak, sweet chestnut, Douglas fir, western red cedar.
- Iron and steel unless galvanized.
- Copper, copper alloys and rainwater run off from these materials.
- Concrete, mortars, plasters or soil, especially when embedded.
- Paints containing copper or mercury based fungicides, graphite or lead.

Protective coating as separating layer: Two coats of bitumen solution to BS 6949, an approved mastic impregnated tape or submit proposals.

- Timing: Before fixing components.
- Constraint: Only to surfaces not exposed on completion.

Building in

General: Not permitted except where specifically stated.

Components specified for building in:

- Bracing and protection: Prevent distortion and damage of built-in frames during erection of adjacent structure.
- Damp proof courses associated with built in wood frames: Fixed to backs of frames using galvanized clout nails.

Fixing of wood frames

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

Fire resisting and/ or smoke control doors/ doorsets

Installation: In accordance with instructions supplied with the product conformity certificate, test report or engineering assessment.

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

L30 STAIRS LADDERS AND BALUSTRADES

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

Purpose made joinery: Read with Z10.

Purpose made metalwork: Read with Z11.

Preservative and fire retardant treatment: Read with Z12.

Fasteners and methods of fixing: Read with Z20.

PRODUCTS

Adhesives

PVAC: To BS EN 204.

Loft ladders

Standard: To BS EN 14975.

Stairs

Generally:

- Straight stairs: To BS 5395-1.
- Helical and spiral stairs: To BS 5395-2.
- Industrial stairs, permanent ladders and walkways: To BS 5395-3.
- Closed riser wood stairs: To BS 585-1 and -2 (both obsolescent but still current).

Wood components

Standard: Classification of quality to BS EN 942.

EXECUTION

Moisture content of wood components

Temperature and humidity: Monitor and control internal conditions to achieve specified moisture content in wood components at time of installation.

Priming, sealing and painting

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

Corrosion protection of dissimilar metals

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

Installation generally

Structural members: Do not modify, cut, notch or make holes in structural members, except as indicated on drawings.

Temporary support: Do not use stairs, walkways or balustrades as temporary support or strutting for other work

M40 STONE, QUARRY AND CERAMIC TILING OR MOSAIC

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Tiles

Ceramic floor and wall tiles (including quarry tiles and ceramic mosaics): To BS EN 14411.

Natural stone calibrated modular tiles: To BS EN 12057.

Natural stone not calibrated modular tiles: To BS EN 12057.

Natural stone slabs: To BS EN 12058.

Bedding adhesive

Standard: To BS EN 12004.

Mortar bedding mix

Cement: Portland to BS EN 197-1, type CEM I/42.5.

Sand:

- For bedding to walls: To BS EN 13139, with grading designation 0/2 (CP or MP) category 2 fines.
- For bedding to floors: To BS EN 13139, with grading designation 0/4 (MP) category 1 fines and between 20%–66% passing a 0.5 sieve.

Ready mixed lime:sand (coarse stuff) for bedding to floors: To BS EN 998-2.

Cement:sand grouting mix

Cement: Portland to BS EN 197-1, type CEM I/42.5.

Sand:

- Joint widths of 6 mm or more: To BS EN 13139, with grading designation 0/2 (FP or MP), category 2 fines.
- Joint widths of 3–6 mm: To BS 5385-5, table 1.

Mixing: Mix thoroughly. Use the minimum of clean water needed for workability.

Sealants

Standard: To BS EN ISO 11600, type F.

Crack control reinforcement

Standard: To BS 4483.

EXECUTION

Adverse weather

Temperatures below 5°C or damp conditions: Do not fix tiles.

Frozen materials: Do not use.

Frozen or frost bound substrates: Do not apply finishes.

Inclement weather, frost and premature drying out: Protect work.

Suitability of backgrounds/ bases

Background/ base tolerances: To permit specified flatness/ regularity of finished surfaces given the permissible minimum and maximum thicknesses of bedding.

Background/ base drying times (minimum) before tiling:

- Concrete slabs, concrete walls and brick/ block walls: 6 weeks.
- Cement: sand screeds: 3 weeks.
- Rendering: 2 weeks.
- Gypsum plaster: 4 weeks.

Falls in bases

General: Give notice if falls are inadequate.

Existing backgrounds/ bases

Efflorescence, laitance, dirt and other loose material: Remove.

Deposits of oil, grease and other materials incompatible with the bedding: Remove.

Tile, paint and other nonporous surfaces: Clean.

Wet substrates: Dry before tiling.

Loose or hollow portions: Cut out.

Plaster which is loose, soft, friable, badly cracked or affected by efflorescence: Remove. Cut back to straight horizontal and vertical edges.

- Making good: Use plaster or nonshrinking filler.

Defective areas of glazed brick: Cut out.

Loose or hollow sounding tiles: Remove.

Paint with unsatisfactory adhesion: Remove so as not to impair bedding adhesion.

New in situ concrete

Mould, oil, surface retarders and other materials incompatible with bedding: Remove.

New plaster

Plaster: Dry, solidly bedded, free from dust and friable matter.

Plaster primer: Apply if recommended by adhesive manufacturer.

Plasterboard

Boards: Dry, securely fixed and rigid with no protruding fixings and face to receive decorative finish exposed.

Smoothing underlayment

Condition: Allow to dry before tiling.

Intermediate substrate

Joints: Close butt.

Penetrations: Seal.

Substrate surface: Secure, true and even.

Fixing

Colour/ Shade: Unintended variations within tiles for use in each area/ room are not permitted.

Variegated tiles: Mix thoroughly.

Adhesive: Compatible with background/ base. Prime if recommended by adhesive manufacturer.

Use of admixtures with cementitious adhesives: Only admixtures approved by adhesive manufacturer.

Cut tiles: Neat and accurate.

Fixing: Provide adhesion over entire background/ base and tile backs.

Final appearance:

- Before bedding material sets, adjust tiles and joints to give true, regular appearance when viewed under final lighting conditions.
- Width, plane and alignment of joints between mosaic sheets: To match joints between mosaic tiles.

Surplus bedding material: Clean from joints and face of tiles without disturbing tiles.

Setting out

Joints: True to line, continuous and without steps.

- Walls: Horizontal, vertical and aligned round corners.
- Floors: If setting out is not indicated on drawings, parallel to the main axis of the space or specified features.
- Adjoining floors/ walls and adjoining floors/ skirtings: Align.

Cut tiles: Minimize number, maximize size and position unobtrusively.

Movement joints: If locations are not indicated, submit proposals.

Flatness and regularity of tiling/ mosaics

Sudden irregularities: Not permitted.

- Deviation of surfaces: Measure from underside of a 2 m straightedge with 3 mm thick feet placed anywhere on the surface. The straightedge must not be obstructed by the tiles and no gap should be greater than 6 mm, i.e. a tolerance of plus or minus 3 mm.

Level of tiling across joints

Deviation between tile surfaces either side of a joint (maximum):

- 1 mm for joints less than 6 mm wide.
- 2 mm for joints 6 mm or greater in width.

Bedding mortar

Batching: Select from:

- Batch by weight.
- Batch by volume: Permitted on the basis of previously established weight:volume relationships of the particular materials. Use accurate gauge boxes. Allow for bulking of damp sand.

Mixing: Thoroughly to achieve uniform consistence. Use a suitable forced action mechanical mixer. Do not use a free fall type mixer.

Application: Within two hours of mixing at normal temperatures. Do not use after initial set. Do not retemper.

Crack control reinforcement

Installation: Place centrally in depth of bed. Lap not less than 100 mm and securely tie together with steel wire.

Corners: Avoid a four layer build at corners.

Skirtings

Coved tile skirtings: Bed solid to wall before laying floor tiles.

Sit-on tile skirtings: Bed solid to wall after laying floor tiles.

Semidry cement:sand bed (floors)

Water content: A film of water must not form on surface of bed when fully compacted.

Movement joints

General: Extend through tiles and bedding to base/ background.

Rigid joint sections: Set to exact finished level of floor.

Structural joints: Centre movement joint over joints in base/ background.

Grouting

Sequence: Grout when bed/ adhesive has set sufficient to prevent disturbance of tiles.

Joints: 6 mm deep (or depth of tile if less). Free from dust and debris.

Grouting: Fill joints completely, tool to profile, clean off surface. Leave free from blemishes.

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

Coloured grout:

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

M51 EDGE FIXED CARPETING

GENERAL/ PREPARATION

210 WORKMANSHIP GENERALLY

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

250 CARPET LAYOUT - PRE-ORDER REQUIREMENTS

- Setting out: Agree seam locations and pattern.

290 CONDITIONING CARPET

- Requirements: As recommended by manufacturer.

310 CONDITION OF WORKS PRIOR TO LAYING

- General requirements:

- Building weathertight and well dried out.
- Wet trades complete.
- Paintwork complete and dry.
- Floor service outlets, duct covers and other fixtures around which carpet is to be cut, fixed.

320 ENVIRONMENT

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

330 SUITABILITY OF BASES

- General: Commencement of laying carpeting will be taken as acceptance of suitability of bases.

340 NEW WET LAID BASES

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

350 TIMBER BOARDING/ STRIP FLOORING

- Substrate: Boards securely fixed and acceptably level with no protruding fasteners. Plane, sand or apply smoothing underlayment compound as necessary to give smooth, even surface.

360 EXISTING FLOOR COVERINGS TO BE OVERLAID

- Substrate: Make good by local rebedding, sanding or applying smoothing underlayment compound to give a secure, smooth, even surface. Allow to dry before laying carpeting.

LAYING CARPETING**470 LAYING CARPET GENERALLY**

- 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.
- Carpet perimeter: Accurately and closely fitted leaving no gaps. Edges turned down and secured to grippers.
- Carpet tension: Even, and such that carpet lies flat and will not ruck, ripple or become slack.
- Doorways and recesses: Cut carpet in. Do not piece in without prior approval.

480 POWER STRETCHING

- General: Power stretch carpets greater than 5 metres in any dimension.

570 COMPLETION

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

580 WASTE

- Spare covering material: Retain suitable material for patching. On completion submit pieces for selection. Hand over selected pieces to Employer.

M60 PAINTING AND CLEAR FINISHING**GENERAL**

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Coating materials

Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.

Knotting: To BS 1336.

Primers:

- Aluminium primer for woodwork: To BS 4756.
- Calcium plumbate: To BS 3698.
- Metallic zinc rich primer: To BS 4652.
- Water/ Organic solvent based primers for wood: To BS 7956.
- Cold applied bitumen based coatings (excluding use in contact with potable water): To BS 6949.

Paint manufacturer selected by contractor: Submit names before commencement of any coating work.

Other materials

Biocides: Types listed as surface biocides in current Health and Safety Executive (HSE) online publications covering non-agricultural approved pesticides.

EXECUTION

Handling and storage

Coating materials: Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number.

Materials from more than one batch: Give notice. Store separately and allocate to distinct parts or areas of the work.

Protection

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

Preparation generally

Standard: To BS 6150.

Substrates: Sufficiently dry in depth to suit coating.

Efflorescence salts: Remove.

Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.

Surface irregularities: Abrade to a smooth finish.

Joints, cracks, holes and other depressions: Fill with stoppers/ fillers. Work well in and finish off flush with surface. Abrade to a smooth finish.

Dust, particles and residues from abrasion: Remove.

Water based stoppers and fillers:

- Apply before priming unless recommended otherwise by manufacturer.
- If applied after priming, patch prime.

Oil based stoppers and fillers: Apply after priming.

Junctions of walls and ceilings with architraves, skirtings and other trims: Fill with water based acrylic filler.

Doors, opening windows and other moving parts:

- Ease, if necessary, before coating.
- Prime resulting bare areas.

Fixtures and fittings: Before commencing work: Remove from surfaces to be coated.

Existing ironmongery: Refurbishment: Remove old coating marks. Clean and polish.

- Hinges: Do not remove.
- Replacement: Refurbish as necessary; refit when coating is dry.

Organic growths:

- Dead and loose growths and infected coatings: Scrape off and remove from site.
- Treatment biocide: Apply appropriate solution to growth areas and surrounding surfaces.
- Residual effect biocide: Apply appropriate solution to inhibit re-establishment of growths.

Wall coverings:

- Retained wallcoverings: Check that they are in good condition and well adhered to substrate.
- Previously covered walls: Wash down to remove paper residues, adhesive and size.

Previously coated surfaces generally

Preparation: To BS 6150, 11.5.

Removing coatings: Do not damage substrate and adjacent surfaces or adversely affect subsequent coatings.

Loose, flaking or otherwise defective areas: Carefully remove to a firm edge.

Alkali affected coatings: Completely remove.

Contaminated surfaces: Give notice of:

- Coatings suspected of containing lead.
- Substrates suspected of containing asbestos.
- Significant rot, corrosion or other degradation of substrates.

Retained coatings: Thoroughly clean to remove dirt, grease and contaminants. Abrade gloss coated surfaces to provide a key.

Partly removed coatings: Apply additional preparatory coats to restore original coating thicknesses. Abrade junctions to give a flush surface.

Completely stripped surfaces: Prepare as for uncoated surfaces.

Previously coated surfaces

Burning off:

- Risk assessment and action plan: Prepare, and obtain approval before commencing work.
- Adjacent areas: Protect from excessive heat and falling scrapings.
- Exposed resinous areas and knots: Apply two coats of knotting.
- Removed coatings: Dispose of safely.

Galvanized, sherardized and electroplated steel:

- White rust: remove.

Pretreatment: Apply one of the following: 'T wash'/ mordant solution to blacken whole surface; or, etching primer recommended by coating system manufacturer.

Steel:

- Defective paintwork: Remove to leave a firm edge and clean bright metal.
- Sound paintwork: Abrade to provide key for subsequent coats.
- Corrosion and loose scale: Abrade back to bare metal.
- Residual rust: Treat with a proprietary removal solution.
- Bare metal: Apply primer as soon as possible.
- Remaining areas: Degrease.

Preprimed steel:

- Areas of defective primer, corrosion and loose scale: Abrade back to bare metal. Reprime as soon as possible.

Wood:

- Degraded or weathered surface wood: Abrade to remove.
- Degraded substrate wood: Repair with sound material of same species.
- Exposed resinous areas and knots: Apply two coats of knotting.

Preprimed wood:

- Areas of defective primer: Abrade back to bare wood and reprime.

Uncoated surfaces

Aluminium, copper and lead:

- Surface corrosion: Remove and lightly abrade surface.
- Pretreatment: Etching primer if recommended by coating system manufacturer.

Concrete:

- Release agents: Remove. Repair major surface defects.

Masonry and render:

- Surface contaminants, loose and flaking material: Remove.

Plaster:

- Nibs, trowel marks and plaster splashes: Scrape off.
- Overtrowelled 'polished' areas: Abrade lightly.

Plasterboard:

- Depressions around fixings: Fill with stoppers/ fillers.

Plasterboard to receive textured coating:

- Joints: Fill, tape and feather out with materials recommended by textured coating manufacturer.

PVC-U:

- Dirt and grease: Remove. Do not abrade surface.

Steel - manual cleaning:

- Oil and grease: Remove.
- Corrosion, loose scale, welding slag and spatter: Abrade to remove.
- Residual rust: Treat with a proprietary removal solution.
- Primer: Apply as soon as possible.

Wood:

- General: Abrade to a smooth, even finish with arrises and moulding edges lightly rounded or eased.
- Heads of fasteners: Countersink sufficient to hold stoppers/ fillers.
- Resinous areas and knots: Apply two coats of knotting.

Existing frames**Previously painted window frames:**

- Paint encroaching beyond glass sight line: Remove.
- Putty:

Loose and defective putty: Remove.

Putty cavities and junctions between previously painted surfaces and glass: Clean thoroughly.

Finishing: Patch prime, reputty as necessary and allow to harden. Seal and coat as soon as sufficiently hard.

External sealant pointing:

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

Existing gutters

Dirt and debris: Remove from inside of gutters.

Defective joints: Clean and seal with suitable jointing material.

Coating generally

Application standard: To BS 6150, Clause 9.

Conditions: Maintain suitable temperature, humidity and air quality during application and drying.

Surfaces: Clean and dry at time of application.

Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.

Overpainting: Do not paint over intumescent strips or silicone mastics.

Priming coats: Thickness to suit surface porosity. Apply as soon as possible on same day as preparation is completed.

Finish: Even, smooth and of uniform colour. Free from brush marks, sags, runs and other defects. Cut in neatly.

Coating of concealed surfaces

Workshop coating of joinery: Apply coatings to all surfaces of components.

Site coating of joinery: After priming/ sealing, apply additional coatings to surfaces that will be concealed when component is fixed in place.

Site coating of metal surfaces: Apply additional coatings to surfaces that will be concealed when component is fixed in place.

Bottom edges of external doors: Prime/ seal and coat before hanging doors.

Coating of wood

End grain: Before assembly, seal with primer or sealer, as appropriate. Allow to dry.

Staining:

- Sealer: Apply if recommended by stain manufacturer.
- Application: In flowing coats and brush out excess stain to produce uniform appearance.

Varnishing:

- First coat: For solvent based varnishes, thin with white spirit. Brush well in and lay off, avoiding aeration.
- Subsequent coats: Rub down lightly along the grain between coats.

Coating for glazing elements

Bead glazed coated wood: Before glazing, apply first two coats to rebates and beads.

Setting glazing compounds:

- Sealer: Apply two coats to rebates.
- Setting: Allow compound to set for seven days.
- Sealing: Within a further 14 days, seal with a primer as recommended by the glazing compound manufacturer. Fully protect glazing compound with coating system as soon as it is sufficiently hard. Extend finishing coats on to glass up to sight line.

N10 GENERAL FIXTURES FURNISHINGS AND EQUIPMENT**GENERAL**

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Purpose made furniture

Adhesives – non loadbearing: To BS EN 204.

Adhesives – loadbearing: To BS EN 301.

Medium density fibreboard (MDF): To BS EN 622-5.

Particleboard: To BS EN 312.

Plywood: Manufactured to a national standard and equal to or exceeding the requirements of the relevant British Standard.

- Bonding quality: To BS EN 314-2.
- Appearance class: To BS EN 635.

Timber: To BS EN 942.

Educational furniture

Functional dimensions: To BS EN 1729-1.

Safety requirements: To BS EN 1729-2.

Laboratory work benches:

Dimensions and safety requirements: To BS EN 13150.

Freestanding office screens

Dimensions: To BS EN 1023-1.

Performance: To BS EN 1023-2.

Office storage furniture

Safety requirements: To BS EN 14073-2.

Office tables and desks

Dimensions: To BS EN 527-1.

Performance: To BS EN 527-2.

Non domestic seating:

Strength, durability and safety: To BS EN 15373.

Whiteboards

Surface: To BS EN 438-1.

Lockers

Standard: To BS 4680.

Curtains

General requirements: To BS 5867-1.

Flammability requirements: To BS 5867-2.

Venetian blinds

Standard: To BS 3415.

Open fireplace components

Standard: To BS 1251.

EXECUTION

Moisture content of wood and wood based boards

Temperature and humidity: Maintain conditions to suit specified moisture content of wood components during delivery, storage, fixing and to handover.

Testing: When instructed, test components with approved moisture meter to manufacturer's recommendations.

Installation generally

Fixings and fasteners: As reference specification section Z20.

Sealant pointing

Application: As reference specification section Z22.

Trims

General: Wherever possible, use continuous lengths for open runs and between angles.

Running joints: Where unavoidable, obtain approval of location and method of jointing.

Angle joints: Mitre.

N13 SANITARY APPLIANCES AND FITTINGS

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Baths

Acrylic baths: To BS EN 198.

Pressed steel baths: To BS 1390.

Enamelled cast iron baths: To BS 1189.

Bidets

Pedestal bidets: To BS EN 35 and BS 5505-3.

Wall hung bidets: To BS EN 36 and BS 5505-3.

Disabled user WC package

Type approval certificate: Submit.

Jointing and bedding compounds

Types: Recommended by manufacturers of appliances/ accessories/ pipes being jointed or bedded.

Sealant for pointing

To BS EN ISO 11600.

Shower units

Shower units: To BS EN 251.

- Glazed screens: Either safety glass, Class 3 to BS EN 12600, or safety plastics, Class C to BS 6206.

Shower hoses: To BS EN 1113.

Sinks

Fireclay sinks: To BS 1206.

Kitchen sinks: To BS EN 13310.

Urinals and cisterns

Rimless vitreous china bowl urinals: To BS 5520.

Automatic flushing urinal cisterns: To BS 1876.

Wash basins

Fireclay and vitreous china: To BS 1188.

Wash basins: To BS 5506-3.

Connecting dimensions for basins:

- Pedestal wash basins: To BS EN 31.
- Wall hung wash basins: To BS EN 32.
- Wall hung hand rinse basins: To BS EN 111.

Wastes and traps

To BS EN 274-1, -2 and -3.

WCs and cisterns

General: To DEFRA WC suite performance specification or approved by relevant water company.

Pan: To BS EN 997 for close coupled pans and BS EN 37 and BS EN 997 for pans with independent water supply.

Seat and cover (where not specified otherwise): To BS 1254.

Pan connector: To BS 5627.

Cisterns (replacement only): To BS 1125 or BS 7357.

EXECUTION

Installation generally

Standards: To BS 6465-1, -2 and -3.

Assembly and fixing: Surfaces designed to falls to drain as intended.

Fasteners: Nonferrous or stainless steel.

Supply and discharge pipework: Fix before appliances.

Appliances:

- Fix securely to structure. Do not support on pipework.
- Do not use or stand on appliances.

Noggings, bearers, etc. to support sanitary appliances and fittings: Position accurately. Fix securely.

Jointing and bedding compounds: Recommended by manufacturers of appliances, accessories and pipes being jointed or bedded.

On completion: Components and accessories working correctly with no leaks.

Labels and stickers: Remove.

Installing cisterns

Cistern operating components: Obtain from cistern manufacturer.

- Float operated valve: Matched to pressure of water supply.

Overflow pipe: Fix to falls and locate to give visible warning of discharge.

- Location: Agreed, where not shown on drawings

Installing taps

Fixing: Securely against twisting.

Seal with appliance: Watertight.

Positioning: Hot tap to left of cold tap as viewed by user of appliance.

Installing wastes and overflows

Bedding: Waterproof jointing compound.

Fixing: With resilient washer between appliance and backnut.

Installing WC pans

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

Seat and cover: Stable when raised.

Tiled backgrounds other than splashbacks

Timing: Complete before fixing appliances.

Fixing appliances: Do not overstress tiles.

P20 UNFRAMED ISOLATED TRIMS SKIRTINGS AND SUNDRY ITEMS

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Wood architraves, skirtings, window boards and trims

Quality of wood and fixing: To BS 1186-3.

Moisture content at time of fixing: To BS EN 942.

- Exterior trim: 12–19%.
- Interior trim to continuously heated rooms, temperatures of 12–19°C: 9–13%.
- Interior trim to continuously heated rooms, temperatures of 20–24°C: 6–10%.

Sheet materials

Fibreboards:

- Hardboard: To BS EN 622-2.
- Medium board: To BS EN 622-3.
- Dry processed boards (Medium density fibre board): To BS EN 622-5.

Particleboards: To BS EN 312.

Plywood:

- Appearance class, hardwood: To BS EN 635-2.
- Appearance class, softwood: To BS EN 635-3.
- Bond quality: To BS EN 314-2.

Plastics veneered board: To BS 4965.

- Durability class: D2.
- Laminate grade: VG.

EXECUTION

Installation

Straight runs: Form in single lengths wherever possible.

Location and method of forming running joints: Submit proposals.

Joints at angles: Mitre, unless shown otherwise.

Position and level of trims: Submit proposals.

P21 DOOR AND WINDOW IRONMONGERY

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Ironmongery selected by contractor

Source: Single co-ordinated range. Submit details of selected range, manufacturer and/ or supplier.

Samples

Timing: Before placing orders with suppliers obtain list of required samples from Contract Administrator.

Submission: Submit labelled examples of required samples.

Conformity: Retain samples on site for the duration of the contract. Ensure conformity of ironmongery as delivered with labelled samples.

Ironmongery for fire doors

Relevant products: Ironmongery fixed to, or morticed into, the component parts of a fire resisting door assembly.

Compliance: Ironmongery included in successful tests to BS 476-22 or BS EN 1634-1 on door assemblies similar to those proposed.

- Certification: Submit evidence of successful testing by CERTIFIRE or other UKAS accredited laboratory.

Melting point of components (except decorative non functional parts): 800°C (minimum).

Door bolts

Standard: To BS EN 12051.

Door closing devices (controlled)

Overhead closers and floor springs: To BS EN 1154.

- Door closing devices to fire/ smoke control doors: CE marked.

Door coordinators

Standard: To BS EN 1158.

- Door co-ordinators to fire/ smoke control doors: CE marked.

Door hinges

Single axis door hinges: To BS EN 1935.

- Hinges to doors on escape routes and fire/ smoke control doors: CE marked.

Door latches

General: To BS EN 12209.

Door lever handles and knobsets

Standard: To BS EN 1906.

Door locks

General: To BS EN 12209.

Thief resistant: To BS 3621, Kitemark certified.

Door track and running gear

Standard: To BS EN 1527.

Electromagnetic hold open devices

Standard: To BS 5839 or to BS EN 1155.

Electromagnetic hold open/ swing-free devices

Standard: To BS EN 1155.

- Electromagnetic devices to fire/ smoke control doors: CE marked.

Emergency/ Panic exit devices

Emergency exit devices: To BS EN 179.

Panic exit devices: To BS EN 1125.

- Emergency/ Panic exit devices for locked doors on escape routes: CE marked.

Letter plates

Standard: To BS EN 13724.

Padlocks

Standard: To BS EN 12320.

Pull handles

Standard: To BS 8424.

Window hinges

Single axis hinges to access windows (window doors): To BS EN 1935.

EXECUTION**Overhead door closers**

Operational adjustment:

- Variable power: Matched to size, weight and location of doors.
- Latched doors: Override latches and/ or door seals when fitted.
- Unlatched doors: Hold shut under normal working conditions.
- Closing against smoke seals of fire doors: Positive. No gaps.

Floor springs

Operational adjustment:

- Variable power: Matched to size, weight and location of doors.
- Latched doors: Override latches and/ or door seals when fitted.
- Unlatched doors: Hold shut under normal working conditions.

Closing against smoke seals of fire doors: Positive. No gaps.

Electromagnetic hold open/ swing-free devices

Means of release: Alarm system and/ or failure of power supply.

Test switch: Located in a convenient position adjacent to door.

Operational adjustment for devices with integral closer:

- Variable power: Matched to size, weight and location of doors.
- Latched doors: Override latches and/ or door seals when fitted.
- Unlatched doors: Hold shut under normal working conditions.

Door coordinators

Application: To all single swing double doors with rebated meeting stiles and fitted with self closers.

Uncontrolled door closers

Operation:

- Power: To suit the size and weight of doors to which they are fitted.
- Unlatched doors: Hold closed under normal conditions.

P30 TRENCHES, PIPEWAYS AND PITS FOR BURIED ENGINEERING**SERVICES****GENERAL**

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Access covers and frames

Standard: To BS EN 124.

Proprietary access and inspection chambers

Standard: To BS EN 13598-1.

Perforated gas collection pipework

Vitrified clay: To BS EN 295-5, Kitemark certified, perforated, strength FN22, with flexible mechanical joints.

Pipeducts

Material:

- Vitrified clay: To BS 65.
- PVC-U: To BS EN 1401-1, class SN4, Kitemark certified.
- Twin wall HDPE: To BS EN 50086-2-4 or Agrément certified.

Small surface access boxes

Standard: To BS 5834-2.

- Pipeguard: Cut from 110 mm outside diameter PVC-U pipe to BS EN 1401-1, class SN4.

Large surface access boxes

Standard: To BS 750 (2006), BS 5834-3, or BS EN 124, subject to requirements of service undertaker, highway authority or fire brigade as appropriate.

Granular material for bedding or surrounds

Standard: To BS EN 12620.

- Size: 4/10.

Drawlines

Material: To the requirements of service undertakers.

Warning marker tapes

Standard: To BS EN 12613.

Type: Continuous colour coded, heavy gauge polyethylene identification tapes.

EXECUTION**Routes of services below ground**

Locations of new service runs and pipeducts:

- Temporary marking: Indicate new service runs and pipeducts with 75 x 75 mm softwood posts painted white and projecting not less than 600 mm above ground level, or with clearly visible waterproof markings on hard surfaces.

Excavation for services in public roads and pavings

Excavation and backfilling:

- England, Wales and Scotland: To Highways Authorities and Utilities Committee (Stationery Office) 'Specification for the reinstatement of openings in highways'.
- Northern Ireland: To Northern Ireland Road Authority and Utilities Committee (Stationery Office) 'Specification for the reinstatement of openings in roads'.

Service trenches

Trench width: As small as practicable.

Trench bottoms: Remove mud, rock projections, boulders and hard spots. Trim level.

Give notice: To inspect trench for each section of the work.

Tree roots in service trenches

Protected area: The larger of the branch spread of the tree or an area with a radius of half the tree's height, measured from the trunk.

Roots in protected area: Do not cut.

Roots exceeding 25 mm diameter (all areas): Give notice and do not cut without permission.

Cutting:

- Use a hand saw to make clean smooth cuts.
- Minimise wound area and ragged edges.
- Pare cut surfaces smooth with a sharp knife.

Unintentionally severed roots: Give notice and form a new clean cut slightly nearer the trunk.

Backfilling to trenches containing intact or cut tree roots: Topsoil, well watered.

Laying pipeducts

General: Lay straight to line, true to gradient or level on an even continuous bed.

Clearance between pipeducts where they cross: 50 mm (minimum).

Drawlines: Thread through pipeducts. Leave in place for future pulling through of services.

Seal: Ends of pipeducts terminating inside buildings.

- Material: Mortar.

Protection: Protect from ingress of debris. During construction, temporarily seal all exposed ends.

Pipeduct bedding and surround – selected as-dug material

Location: General use.

As-dug bed: Trimmed by hand, level or to accurate gradient. Replace overdig with compacted spoil.

Bedding: Selected as-dug material thoroughly compacted by hand in 150 mm (maximum) layers.

- Thickness: 150 mm (minimum).

Surround: Selected as-dug material. Lay and compact to 150 mm (minimum) above pipeduct crown.

Pipeduct bedding and surround – granular material

Location: Where specified.

Bedding: Granular material thoroughly compacted by hand in 150 mm (maximum) layers.

- Thickness: 100 mm (minimum).

Surround: Granular material. Lay and compact to 150 mm (minimum) above pipeduct crown.

Pipeduct structural/ protective surround – concrete

Location: Close to buildings (where structural stability may be affected by the trench, or where a pipeduct needs protection).

Concrete blinding: 25 mm thick over full width of trench. Allow to set.

Pipeducts:

- Temporary support: Folding wedges of compressible board. Prevent flotation.
- Height above blinding: 100 mm (minimum).

Surround, to full width of trench:

- Depth: To 150 mm above crown of pipeduct or as shown on drawings.
- Vertical construction joints: At face of flexible pipeduct joints using 18 mm thick compressible board pre-cut to pipeduct profile.

Concrete surround for shallow pipeducts under buildings

Locations: Where pipeduct crowns are less than 300 mm below underside of slab.

Timing: Excavate trench after hardcore has been laid and compacted.

Concrete blinding: 25 mm thick over full width of trench. Allow to set.

Pipeducts:

- Temporary support: Folding wedges of compressible board. Prevent flotation.
- Height above blinding: 100 mm (minimum).

Surround: Cast integral with slab. Extend surround to within 150 mm of nearest flexible joint.

Installing proprietary access and inspection chambers and surface boxes

Setting out relative to adjacent construction features: Square and tightly jointed.

Permissible deviation in level of external covers and gratings: +0 to -6 mm.

Raising pieces (clay and concrete units): Joint with 1:3 cement:sand mortar.

Exposed openings: Fit purpose made temporary caps. Protect from traffic.

Bedding of frames for access covers and surface boxes

Bedding: Solidly in mortar, centrally over opening and level with surrounding finishes.

- In road or pavement finishes: Flush, and square with block or slab joints.
- In grassed areas: Set 30 mm below soil surface. Haunch back edge of bedding so that it is not visible.

Backfilling generally

Backfill from top of pipeduct surround: Material excavated from the trench.

Backfilling: Lay and compact in 300 mm (maximum) layers. Do not use heavy compactors before backfill is 600 mm deep.

Backfilling under new roads and pavings

Backfill from top of pipeduct surround: Granular sub-base material to Highways Agency Specification for highway works, clause 803 (Type 1).

Backfilling: Lay and compact in 150 mm (maximum) layers.

Warning marker boards, tapes and tiles

Installation: During backfilling.

Depth: Continuously, 200–300 mm above service pipe or cable or to requirements of service undertaker if different.

- Pipelines deeper than 2 m: Lay additional marker 600 mm above the top of the pipeline or to requirements of service undertaker if different.

Additional requirements for water and gas mains

Anchor blocks: Provide at all bends, tapers, cap ends and junctions.

Service testing

Timing: Where services require testing undertake tests before backfilling.

Documentation

Record drawings: Submit.

Perforated or slotted gas collection piping

Position: Lay just below floor slab in venting hardcore layer.

Brick radon sumps

Construction: Rectangular chamber. Lay perforated bricks on edge in honeycomb bond with mortar in bed joints only. Cap with paving slab. Enclose and seal end of vent pipe within sump.

Position: Centrally below ground floor slab, 15 m maximum from farthest point of area served.

- Area served (maximum): 250 m².

Plastics radon sumps

Position: Centrally below ground floor slab, 15 m maximum from farthest point of area served.

- Area served (maximum): 250 m².

P31 HOLES, CHASES, COVERS AND SUPPORTS FOR SERVICES

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

EXECUTION

Ducts, chases and holes generally

General: Wherever possible, form during construction rather than by cutting.

Holes and chases in concrete

Holes larger than 10 mm diameter and chases: Cast in.

Holes smaller than 10 mm diameter: Drilling is permitted.

Holes in structural steelwork

General: Cutting and drilling are not permitted.

Holes, recesses and chases in masonry

Locations: Select to maintain integrity of strength, stability and sound resistance of construction.

Sizes: Minimum needed to accommodate services.

- Holes: 300 x 300 mm (maximum).

Walls of hollow or cellular block: Do not chase.

Walls of other materials:

- Vertical chases: No deeper than one third of single leaf thickness, excluding finishes.
- Horizontal or raking chases: No longer than 1 m. No deeper than one sixth of the single leaf thickness, excluding finishes.

Chases and recesses: Do not set back to back. Offset by a clear distance at least equal to the wall thickness.

structure.

Notches and holes in structural timber

General: Avoid if possible.

Sizes: Minimum needed to accommodate services.

Position: Do not locate near knots or other defects.

Notches and holes in the same joist: 100 mm apart horizontally (minimum).

Notches in joists: Locate at top. Form by sawing down to a drilled hole.

- Depth: One eighth of joist depth (maximum).
- Distance from supports: In zone between one twelfth and one quarter of span.

Holes in joists: Locate on neutral axis.

- Diameter: One quarter of joist depth (maximum).
- Centres: 3 x diameter of largest hole (minimum).
- Distance from supports: In zone between one quarter and two fifths of span.

Notches in roof rafters, struts and columns: Not permitted.

Holes in struts and columns: Locate on neutral axis.

- Diameter: One quarter (maximum) of smallest width of member.
- Centres: 3 x diameter of largest hole (minimum).
- Distance from ends: In zone between one quarter and two fifths of span.

Floor ducting and trunking

Fixing: Pack ducting and trunking level and true before screeding.

Pipe sleeves

Sleeves: Extend through full thickness of wall or floor. Position accurately.

- Generally: Clearance around service pipe: 20 mm (maximum) or diameter of service, whichever is the lesser.
- Installation: Bed solid.

Exposed to view: Finish bedding and sealing neatly.

Access covers/ gratings and frames

Vertical positioning of frames: Level, or marry in with levels of surrounding surfaces.

Permissible deviation in level of external covers and frames: +0 to -6 mm.

COMPLETION

Meter cabinets

Keys: At completion, hand over to Employer.

R10 RAINWATER DRAINAGE SYSTEMS

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

Completion of design

Standard: To BS EN 12056-3, clauses 3–7 and National Annexes.

Collection and distribution of rainwater: Complete, and without leakage or noise nuisance.

PRODUCTS

Gutters

Aluminium: Agrément certified or otherwise submit proposals.

Cast iron:

- Half round: To BS 460.
- Other than standard half round sections: To BS 460 except for shape.

PVC-U: To the relevant parts of BS EN 607 and BS EN 1462, Kitemark certified.

Pipework

Aluminium: Agrément certified or otherwise submit proposals.

Cast iron - flexible couplings: To BS EN 877, Agrément certified.

Cast iron spigot and socket:

- Round: To BS 460.
- Shape other than round: To BS 460 except for shape.

PVC-U:

- External: To BS EN 12200-1, Kitemark certified.
- Sealed: To BS EN 1329-1 or BS 4514, Kitemark certified.

Insulation to internal gutters and pipelines

Fire performance: Class 1 spread of flame when tested to BS 476-7.

EXECUTION

Preparation

Work to be completed before commencing work specified in this section:

- Below ground drainage. Alternatively, make temporary arrangements for dispersal of rainwater without damage or disfigurement of the building fabric and surroundings.
- Painting of surfaces which will be concealed or inaccessible.

Installation generally

Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.

Plastics and galvanized steel pipes: Do not bend.

Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.

Protection:

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

Fixing and jointing gutters

Brackets: Securely fixed.

- Additional brackets: Where necessary to maintain support and stability, provide at joints in gutters and near angles and outlets.

Roofing underlay: Dressed into gutter.

Setting out eaves gutters

Setting out to level: Level and as close as practical to the roof.

Setting out to falls: 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 50 mm (maximum) below the roof.

Outlets: Aligned with connections to below ground drainage.

Installing rainwater outlets

Fixing: Secure. Fix before connecting pipework.

Junctions between outlets and pipework: Accommodate movement in structure and pipework.

Fixing pipework

Pipework: Fix securely, plumb and/ or true to line.

Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.

Externally socketed pipes and fittings: Fix with sockets facing upstream.

Additional supports: Provide as necessary to support junctions and changes in direction.

Vertical pipes:

- Provide a loadbearing support at least at every storey level.
- Tighten fixings as work proceeds so that every storey is self supporting.
- Wedge joints in unsealed metal pipes to prevent rattling.

Wall and floor penetrations: Isolate pipework from structure.

- Pipe sleeves: As section P31.
- Masking plates: Fix at penetrations if visible in the finished work.

Expansion joint pipe sockets: Fix rigidly to buildings. Elsewhere, provide brackets and fixings that allow pipes to slide.

Jointing pipework and gutters

General: Joint with materials and fittings that will make effective and durable connections.

Jointing differing pipework and gutter systems: Use adaptors intended for the purpose.

Cut ends of pipes and gutters: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.

Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.

Junctions: Form with fittings intended for the purpose.

Jointing material: Strike off flush. Do not allow it to project into bore of pipes and fittings.

Surplus flux, solvent jointing materials and cement: Remove.

Cutting coated pipework and gutters

Cutting: Recoat bare metal.

Fixing insulation to internal pipelines and gutters

Fixing: Secure and neat. Provide continuity at supports and leave no gaps. Fix split pipe insulation with the split on 'blind' side of pipeline.

Timing: Do not fit insulation until completion of pipe airtightness or leakage testing.

Electrical continuity – pipework

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

Internal pipework test – England, Wales, Ireland and Northern Ireland

Preparation: Temporarily seal open ends of pipework with plugs.

Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug.

Testing: Pump air into pipework until gauge registers 38 mm.

Required performance:

- Allow a period for temperature stabilization, after which the pressure of 38 mm is to be maintained without loss for at least 3 minutes.

Internal pipework test – Scotland

Standard: To BS EN 12056-2, National Annex NG.

Gutter test

Preparation: Temporarily block all outlets.

Testing: Fill gutters to overflow level and after 5 minutes closely inspect for leakage.

R11 ABOVE GROUND FOUL DRAINAGE SYSTEMS

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

Completion of design

Standards: To BS EN 12056-1 and BS EN 12056-2, and in accordance with BS EN 12056-2 National Annexes NA–NG.

- System type to BS EN 12056-2: System III ('single stack' system).

Collection and distribution of foul water

General: Quick, quiet and complete, self-cleansing in normal use, without blockage, crossflow, backfall, leakage, odours, noise nuisance or risk to health.

Pressure fluctuations in pipework (maximum): ± 38 mm water gauge.

Water seal retained in traps (minimum): 25 mm.

PRODUCTS

ABS pipework

Standard: To BS 5255, Kitemark certified; or

Standard: To BS EN 1455-1, Kitemark certified.

- Application area code: B.
- Opening dimensions of access fittings, design of swept fittings, stand off dimensions of pipe and fitting brackets and requirements for adaptors and plugs: To BS 4514.

Cast iron pipework - flexible couplings

Standard: To BS EN 877.

MUPVC pipework

Standard: To BS 5255, Kitemark certified.

PVC-C pipework

Standard: To BS EN 1566-1, Kitemark certified.

- Application area code: B.
- Opening dimensions of access fittings, design of swept fittings, stand off dimensions of pipe and fitting brackets and requirements for adaptors and plugs: To BS 4514.

Polypropylene pipework

Standard: To BS 5255, Kitemark certified; or

Standard: To BS EN 1451-1, Kitemark certified.

- Application area code: B.
- Opening dimensions of access fittings, design of swept fittings, stand off dimensions of pipe and fitting brackets and requirements for adaptors and plugs: To BS 4514.

PVC-U pipework

Standard: To BS 4514 (82.4 mm OD only); or

Standard: To BS EN 1329-1, Kitemark certified.

- Weather resistance, connectors to WC pans, opening dimensions of access fittings, design of swept fittings, stand off dimensions of pipe and fitting brackets and requirements for adaptors and plugs: To BS 4514.

Air admittance valves

Standard: To BS EN 12380 or Agrément certified.

- Minimum air flow rate: To BS EN 12056-2.

EXECUTION

Installation generally

Standard: To BS EN 12056-5.

Components: From the same manufacturer for each type of pipework.

Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.

Plastics and galvanized steel pipes: Do not bend.

Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.

Concealed or inaccessible surfaces: Decorate before starting work specified in this section.

Protection:

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

Pipe routes

General: The shortest practical, with as few bends as possible.

- Bends in wet portion of soil stacks: Not permitted.
- Routes not shown on drawings: Submit proposals before commencing work.

Fixing pipework

Pipework: Fix securely plumb and/ or true to line. Fix discharge stack pipes at or close below socket collar or coupling.

Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.

Externally socketed pipes and fittings: Fix with sockets facing upstream.

Additional supports: Provide as necessary to support junctions and changes in direction.

Vertical pipes: Provide a load bearing support not less than every storey level. Tighten fixings as work proceeds so that every storey is self supporting.

Wall and floor penetrations: Isolate pipework from structure, e.g. with pipe sleeves.

- Masking plates: Fix at penetrations if visible in the finished work.

Expansion joint sockets: Fix rigidly to the building.

Fixings: Allow the pipe to slide.

Jointing pipework – generally

General: Joint with materials, fittings and techniques that will make effective and durable connections.

Jointing differing pipework systems: With adaptors intended for the purpose.

Cut ends of pipes: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.

Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.

Junctions: Form with fittings intended for the purpose.

Jointing material: Do not allow it to project into bore of pipes and fittings.

Surplus flux, solvent jointing materials and cement: Remove from joints.

Electrical continuity

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.

Identification of internal foul drainage pipework

Markings: To BS 1710:

Type: Integral lettering on pipe wall, self-adhesive bands or identification clips.

Locations: At 500 mm centres, junctions and both sides of slabs, valves, appliances, bulkheads and wall penetrations.

Discharge and ventilating stacks

Terminations: Perforated cover or cage that does not restrict airflow.

Installing air admittance valves

Position: Vertical, above flood level of highest appliance served and clear of insulation materials (other than the manufacturer's insulating cover).

Connection to discharge stack: Allow removal for rodding, e.g. ring seal.

Roof spaces and other unheated locations: Fit manufacturer's insulating cover.

Pipework airtightness test

Preparation:

- Open ends of pipework: Temporarily seal using plugs.
- Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug or through trap of an appliance.

Testing: Pump air into pipework until gauge registers 38 mm.

Required performance: Pressure of 38 mm is to be maintained without loss for at least three minutes.

Prehandover checks

Temporary caps: Remove.

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

R12 BELOW GROUND DRAINAGE SYSTEMS**GENERAL****Cross-reference**

General: Read with A90 General technical requirements.

DESIGN

Completion of design by contractor

Below ground drainage systems: In accordance with BS EN 752, BS EN 1295-1 and BS EN 1610.

Land drainage systems: In accordance with relevant parts of BS 4428 and BS EN 752.

PRODUCTS

Adaptors for above ground drainage

To plastics drainage pipes: Plastics to BS 4660 and Kitemark certified or to BS EN 1401-1 and Kitemark certified.

To clay drainage pipes: Polypropylene to BS EN 295-1 and Kitemark certified.

Access covers and frames

Standard and cover loading grade: To BS EN 124.

Concrete (general)

Standards: To BS 8500-1 and -2.

Usage: In small quantities for general purposes including bedding of gullies and small accessories, backfilling and mass concrete surrounds to tanks.

Mixes:

- Ready mixed concrete: Designated concrete GEN1. Submit proposals if requesting higher strength mixes used elsewhere in the project to be considered.
- Site mixed concrete: Standardized prescribed concrete ST2.

Concrete (structural)

Usage: Foundations to manholes, pipe surrounds, benching/ toppings in manholes.

Mixes: See reference specification section E10 and associated work items.

Concrete manholes and inspection chambers

Standards: To BS 5911-3 and BS EN 1917 and Kitemark certified; or to BS 5911-4 and BS EN 1917.

- Cover loading grade: To BS EN 124.
- Concrete for backfilling and surrounds to tanks in nonaggressive soils: Concrete (general).

Flexible couplings

Standard: To BS EN 295-4 or Water Industry Standard WIS 04-41-01 and Kitemark certified, or Agrément certified.

Granular material

Standard: To BS EN 12620.

- Grade: Dependent on location – see Execution clauses in this section, and in sections R13, R16 and R17, if used.

Granular sub-base material

Standard: To Highways Agency Volume 1, 'Specification for Highway Works', Type 1 Unbound mixtures for sub-base.

Grease traps and converters

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

Gullies

One piece gullies/ One piece gullies and covers/ Composite gullies: To BS EN 1253-1, -2, -3, -4 and -5; or

- Cast iron: To BS 437 and Kitemark certified, or Agrément certified.
- Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
- Plastics: To BS 4660 and Kitemark certified, or Agrément certified.
- Polypropylene: To BS EN 1852-1.

One piece gullies/ One piece gullies and covers: To BS EN 1253-1, -2, -3, -4 and -5; or

- Concrete: To BS 5911-6 and Kitemark certified, or Agrément certified.

One piece gullies and covers/ Composite gullies:

- Cover loading grade: To BS EN 124.

Manhole steps

Standard: To BS EN 13101.

Pipes, bends and junctions

Supply of pipes and fittings: From same manufacturer for each pipeline.

Material and standards:

- Cast iron – grey: To BS EN 877, Kitemark certified, with double spigot joints and proprietary coupling system.
- Vitrified clay – flexible joints: To BS EN 295-1, Kitemark certified.
- Plastics – structured wall: To BS EN 13476-1 and -2 or -3 with supplementary testing to Water Industry Standard WIS 4 -35-01 issue 2, Kitemark or Agrément certified.
- PVC-U solid wall: To BS EN 1401-1, class SN4 or SN8, with flexible joints.

Plastics access points

Standard: To BS 4660 and Kitemark certified, to BS EN 13598-1, or Agrément certified.

- Cover loading grade: To BS EN 124.

Plastics inspection chambers

Standard: To BS 7158 or BS EN 13598-1, or Agrément certified.

- Cover loading grade: To BS EN 124.

Plastics oil and petrol separator units

Standards: To Environment Agency Pollution Prevention Guidelines PPG 3 and BS EN 858-1, with oil level alarm.

Precast concrete seatings for access covers and frames

Standards: To BS 5911-3 and BS EN 1917 and Kitemark certified.

Opening sizes: To suit access covers.

Rodding points

Standards:

- Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
- Plastics: To BS 4660 and Kitemark certified, or Agrément certified.

Saddle connectors

Standards:

- Cast iron: To BS 437 and Kitemark certified, or Agrément certified.
- Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
- Concrete: To BS 5911-6 and Kitemark certified, or Agrément certified.
- Plastics: To BS 4660 and Kitemark certified, or Agrément certified.

Storage tanks - foul water

Standard: To BS EN 12566-1.

EXECUTION

General

Standard: In accordance with BS EN 752, with National Annex NA, and BS EN 1610.

Stripping out

Exposed ends of existing drainage to be abandoned: Seal with concrete (general).

Existing drains

Setting out: Before starting work, check invert levels and positions of existing drains, sewers, inspection chambers and manholes against drawings. Report discrepancies.

Protection: Protect existing drains to be retained and maintain normal operation if in use.

Excavated material

Turf, topsoil, hardcore, etc: Set aside for use in reinstatement.

Selected fill for backfilling

Selected fill: As-dug material, free from vegetable matter, rubbish, frozen soil and material retained on a 40 mm sieve.

- Compaction: By hand in 100 mm layers.

Lower part of trench – general

Trench up to 300 mm above crown of pipe: Vertical sides, width as small as practicable.

- Width: External diameter of pipe plus 300 mm (minimum).

Type of subsoil

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.

Formation for beddings

Timing: Excavate to formation immediately before laying beddings or pipes.

Mud, rock projections, boulders and hard spots: Remove. Replace with consolidated bedding material.

Local soft spots: Harden by tamping in bedding material.

Inspection of excavated formations: Give notice.

Class D bed

Usage: Rigid pipework (clay, concrete or grey iron) laid on a natural bed.

Trench: Excavate slightly shallower than final levels.

- Trimming: By hand to accurate gradients. Replace overdig with compacted spoil.

Pipes: Rest uniformly on barrels, adjust to line and gradient. Do not use hard packings under pipes.

Backfilling:

- Material: Protective cushion of selected fill.
- Depth: 150 mm (250 mm for adoptable sewers) above crown of pipe.
- Compaction: By hand in 100 mm layers.

Class F bedding

Usage: Rigid pipework (clay, concrete or grey iron) requiring granular bedding.

Granular material:

- Pipe sizes DN 100 and DN 150: Size 4/10.
- Pipe sizes DN 225 and DN 300: Size 4/10 or 10/20.
- Pipe sizes DN 375-500: Size 10/20.
- Pipe sizes DN 600 and above: Size 10/20 or 20/40.

Bedding:

- Material: Granular, compacted over full width of trench.
- Thickness: 50 mm (minimum) for sleeve jointed pipes, 100 mm (minimum) for socket jointed pipes. Where trench bottom is uneven, increase thickness by 100 mm.

Pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.

Backfilling:

- Material: Protective cushion of selected fill.
- Depth: 150 mm (250 mm for adoptable sewers) above crown of pipe.

- Compaction: By hand in 100 mm layers.

Class N bedding

Usage: Rigid pipework (clay, concrete or grey iron) requiring as-dug material bedding.

Bedding:

- Material: As-dug material with a compaction fraction of not more than 0.3 (granular material, size 0/4 or 0/10, may be substituted).
- Compaction: Over full width of trench.
- Thickness: 50 mm (minimum) for sleeve jointed pipes, 100 mm (minimum) for socket jointed pipes. Where trench bottom is uneven, increase thickness by 100 mm.

Pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.

Backfilling:

- Material: Protective cushion of selected fill.
- Depth: 150 mm (250 mm for adoptable sewers) above crown of pipe.
- Compaction: By hand in 100 mm layers.

Class O support

Usage: Plastics pipework requiring a full depth granular support (single size material only).

Granular material:

- Pipe sizes DN 100 and DN 150: Size 4/10.
- Pipe sizes DN 225 and DN 300: Size 4/10 or 10/20.

Bedding:

- Material: Granular, compacted over full width of trench.
- Thickness: 100 mm (minimum).

Pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.

Support:

- Material: Granular.
- Depth: To slightly above crown of pipe.
- Compaction: By hand.

Backfilling:

- Material and depth: Protective cushion of selected fill to 300 mm above crown of pipe; or Additional granular material, to 100 mm above crown of pipe.
- Compaction: By hand in 100 mm layers.

Class P support

Usage: Plastics pipework requiring a full depth granular support (single size or graded material).

Granular material:

- Pipe sizes DN 100 and DN 150: Size 4/10.
- Pipe sizes DN 225 and DN 300: Size 4/10, 10/20 or 4/20.

Bedding:

- Material: Granular, compacted over full width of trench.
- Thickness: 100 mm (minimum).

Pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.

Support:

- Material: Granular.
- Depth: To slightly above crown of pipe.
- Compaction: By hand.

Backfilling:

- Material and depth: Protective cushion of selected fill to 300 mm above crown of pipe; or Additional granular material, to 100 mm above crown of pipe.
- Compaction: By hand in 100 mm layers.

Class Q surround

Usage: Plastics pipework requiring a granular surround with protection (typically shallow pipes with 600 mm cover or less in landscaped areas).

Granular material:

- Pipe sizes DN 100 and DN 150: Size 4/10.
- Pipe sizes DN 225 and DN 300: Size 4/10, 10/20 or 4/20.

Bedding:

- Material: Granular, compacted over full width of trench.
- Thickness: 100 mm (minimum).

Pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.

Surround:

- Material: Granular.
- Depth: To 75 mm (minimum) above crown of pipe.
- Compaction: By hand.

Compressible material:

- Laying: Continuously over completed surround before laying protection slabs.

Precast concrete protection slabs:

- Bearing: 300 mm (minimum).

Backfilling: Soil or topsoil, as appropriate.

Class W surround

Usage: Plastics pipework requiring a granular surround (typically under solid ground floors where the cover from the underside of the slab is 300 mm or more).

Timing: Excavate trench after hardcore has been laid and compacted.

Granular material:

- Pipe sizes DN 100 and DN 150: Size 4/10.
- Pipe sizes DN 225 and DN 300: Size 4/10 or 10/20.

Bedding:

- Material: Granular, compacted over full width of trench.
- Thickness: 100 mm (minimum).

Pipes: Dig slightly into bedding, rest uniformly on barrels and adjust to line and gradient.

Surround:

- Material: Granular.
- Depth: To 100 mm above crown of pipe.
- Compaction: By hand.

Backfilling:

- Material: Hardcore as section D20, or granular.
- Depth: Up to slab formation.
- Compaction: In 300 mm (maximum) thick layers.

Class Y surround

Usage: Pipework below solid ground floors, requiring a concrete surround cast integrally with a floor slab (cover from the underside of the slab is less than 300 mm).

Timing: Excavate trench after hardcore has been laid and compacted.

Blinding:

- Material: Concrete (general).
- Thickness: 25 mm (minimum).
- Width: Full width of trench.
- Allow to set before proceeding.

Pipes:

- Temporary support: Folding wedges of compressible board. Prevent flotation.
- Clearance under pipes: 100 mm (minimum).
- Adjust pipes to line and gradient.

Surround, cast integrally with slab:

- Material: Concrete of same mix as slab.
- Width: External diameter of pipe plus 200 mm (minimum).

Extent of surround: To within 150 mm of nearest flexible joint.

Class Z surround

Usage: Pipework requiring a concrete surround to ensure the stability of adjacent structures.

Blinding:

- Material: Concrete (general).
- Thickness (minimum): 25 mm (minimum).
- Width: Full width of trench.
- Allow to set before proceeding.

Pipes:

- Temporary support: Folding wedges of compressible board. Prevent flotation.
- Clearance under pipes (minimum): 100 mm (minimum).
- Adjust pipes to line and gradient.

Surround:

- Material: Concrete (general).
- Depth: To 150 mm above crown of pipe.
- Width: Full width of trench.

Vertical construction joints:

- Location: At face of flexible pipe joints.
- Material: 18 mm thick compressible board precut to profile of pipe.
- Socketed pipes: Fill gaps between spigots and sockets with resilient material to prevent entry of concrete.

Concrete surround for pipe runs near foundations

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):

- Trenches less than 1 m from foundations: Top of concrete surround not lower than bottom of foundation.
- 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.

Laying pipelines

Laying pipes: To true line and regular gradient on even bed for full length of barrel with sockets (if any) facing up the gradient.

Ingress of debris: Seal exposed ends during construction.

Timing: Minimize time between laying and testing.

Joining pipelines

Connections: Durable, effective and free from leakage.

Junctions, including to differing pipework systems: With adaptors intended for the purpose.

Cut ends of pipes: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.

Joining or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.

Allowance for movement: Provide and maintain appropriate clearance at ends of spigots as fixing and joining proceeds.

Joining material: Do not allow to project into bore of pipes and fittings.

Pipelines passing through structures

Pipelines that must be cast in or fixed to structures (including manholes, catchpits and inspection chambers): Provide 600 mm long rocker pipes adjacent to the external face of the structure (or both faces where appropriate, e.g. walls to footings), with flexible joints at both ends.

- Distance to rocker pipe from structure: 150 mm (maximum).

Provision for movement for pipelines that need not be cast in or fixed to structures (e.g. walls to footings):

- Rocker pipes as specified above; or
- Openings in the structures to give 50 mm (minimum) clearance around the pipeline. Closely fit a rigid sheet to each side of opening to prevent ingress of fill or vermin.

Bends at base of soil stacks

Bedding: Do not impair flexibility of pipe couplings.

- Material: Concrete (general).

Direct connection of ground floor WCs to drains

Drop from crown of WC trap to invert of drain (maximum): Comply with Building Regulations Approved/ Technical guidance documents.

Horizontal distance from the drop to a ventilated drain (maximum): 6 m.

Backdrop pipes outside manhole walls

Excavation beneath backdrop pipe: Backfill.

- Material: Concrete (general).

Pipe encasement:

- Material: Concrete (general).
- Thickness (minimum): 150 mm (minimum).

Installing flexible couplings

Ends of pipes to be joined: Cut cleanly and square.

Outer surfaces of pipes to be joined: Clean and smooth. Where necessary, e.g. on concrete or iron pipes, smooth out mould lines and/ or apply a cement grout over the sealing area.

Clamping bands: Tighten carefully to make gastight and watertight seals.

Initial testing of pipelines

Before testing:

- Cement mortar jointing: Leave 24 h.
- Solvent welded pipelines: Leave 1 h.

Method: Block open ends of pipelines to be tested and pressurise. Air test short lengths to BS EN 1610.

Backfilling to pipelines

Backfilling above top of surround or protective cushion: Material excavated from trench, compacted in layers 300 mm (maximum) thick.

Heavy compactors: Do not use before there is 600 mm (total) of material over pipes.

Backfilling under roads and pavings

Backfilling from top of surround or protective cushion up to formation level: Granular sub-base material, laid and compacted in 150 mm layers.

Public roads and pavings – E+W, Scot

Excavating and backfilling of trenches: To Department for Transport 'Specification for the reinstatement of openings in highways'.

Public roads and pavings – NI

Excavating and backfilling of trenches: To Northern Ireland Road Authority and Utilities Committee 'Specification for the reinstatement of openings in highways'.

Laying warning marker tapes

Installation: During backfilling, lay continuously over pipelines.

Depth: 300–400 mm.

- Pipelines deeper than 2 m: Lay an additional tape 600 mm above the top of the pipeline.

Installing access points and gullies

Setting out relative to adjacent construction features: Square and tightly jointed.

Permissible deviation in level of external covers and gratings: +0 to -6 mm.

Raising pieces (clay and concrete units): Joint with 1:3 cement:sand mortar.

Exposed openings: Fit purpose made temporary caps. Protect from site traffic.

Installing rodding points

Bedding and surround:

- Material: Concrete (general).
- Thickness (minimum): 100 mm (minimum).

Permissible deviation in level of external covers and gratings: +0 to -6 mm.

Installing oil and petrol separator units

Installation: Fill tank with water then encase tank and access shafts with concrete (general) to fully support tank.

Fixing manhole steps

Fixing: Bed in joints.

Positioning: 300 mm vertical centres staggered 300 mm horizontally, with lowest step 300 mm (maximum) above benching and top step 450 mm (maximum) below top of cover.

Jointing concrete manhole chamber sections

Inner joint surface: Trim surplus jointing material extruded into chamber and point neatly.

Laying conventional channels, branches and benching

Main channel: Bed solid in 1:3 cement:sand mortar.

- Branches: Connect to channel, preferably at half pipe level, so that discharge flows smoothly in direction of main flow.
- Branches greater than nominal size 150 mm: Connect the branch soffit level with the main drain soffit.
- Connecting angles more than 45° to direction of flow: Use three-quarter section channel bends.

Concrete benching:

- 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.
- Topping: Concrete or 1:3 Cement:Sand mortar.
- Application of topping: Before benching concrete has set, and with dense smooth uniform finish.

Laying preformed plastics channels, branches and benching

Main channel: Bed solid in 1:3 cement:sand mortar.

- Branches: Connect to channel, preferably at half pipe level, so that discharge flows smoothly in direction of main flow.
- Connecting angles more than 45° to direction of flow: Use three-quarter section channel bends.

Bedding: 1:3 cement:sand mortar. Use clips or ensure adequate mechanical key.

Benching:

- Material: Concrete (general).
- 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.
- Topping: Concrete or 1:3 Cement:Sand mortar.
- Application of topping: Before benching concrete has set, and with dense smooth uniform finish.

Installing access covers and frames

Bedding and haunching of frames: Continuously.

- Top of haunching: 30 mm below surrounding surfaces.

Horizontal positioning of frames:

- Centred over openings.
- Square with joints in surrounding paving.

Vertical positioning of frames:

- Level; or
- marry in with levels of surrounding paving.

Permissible deviation in level of external covers and frames: +0 to -6 mm.

Exposed openings in inspection chambers, access points, fittings and equipment

General: Fit purpose made temporary caps. Protect from site traffic.

Removal of debris and cleaning

Preparation: Lift covers to manholes, inspection chambers and access points. Remove mortar droppings, debris and loose wrappings.

- Timing: Before cleaning, final testing, CCTV inspection if specified, and immediately before handover.

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.

Washings and detritus: Do not discharge into sewers or watercourses.

Covers: Securely replace after cleaning and testing.

Temporary measures

Water used to stabilize tanks and the like during installation: Drain.

Testing and inspection

Dates for testing and inspection: Give notice.

Final testing of private gravity drains and sewers up to DN 300

Before testing:

- Cement mortar jointing: Leave 24 h.
- Solvent welded pipelines: Leave 1 h.

Standard: Comply with Building Regulations Approved/ Technical guidance documents.

Method: Air or water, Contractor's choice.

Water testing of manholes and inspection chambers

Timing: Before backfilling.

Standard:

- Exfiltration: To BS EN 1610. Testing with water (Method W).
- Infiltration: No identifiable flow of water penetrating the chamber.

Water testing of ancillary components

Standard: To BS EN 1610.

R17 SOAKAWAY AND SEPTIC TANK AND SEWAGE TREATMENT UNITS

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

Design

General: Read with section R12 Below ground drainage systems.

PRODUCTS

Below ground drainage systems

Products generally: As reference specification section R12.

Concrete (general)

Standards: To BS 8500-1 and -2.

Usage: In small quantities for general purposes including bedding, backfilling and mass concrete surrounds to tanks.

Mixes:

- Ready mixed concrete: Designated concrete GEN1. Submit proposals if requesting higher strength mixes used elsewhere in the project to be considered.
- Site mixed concrete: Standardized prescribed concrete ST2.

Distribution and sampling chambers

Cover loading grade: To BS EN 124.

Pipes, bends and junctions

Vitrified clay perforated: To BS EN 295-5, Kitemark certified.

PVC-U solid wall perforated: To BS EN 1401-1, class SN4, with flexible joints.

Private packaged septic tank units

Standard: To BS EN 12566-1 or Agrément certified.

- Cover loading grade: To BS EN 124.

Private packaged sewage treatment units

Standard: To BS EN 12566-3 or Agrément certified.

- Cover loading grade: To BS EN 124.

EXECUTION

General

Standard: In accordance with relevant parts of BS EN 752, with National Annex NA, and BS EN 1610.

Below ground drainage systems: As section R12.

Soakaways – granular fill

Geotextile membrane: Line bottom and sides of pit.

- Jointing: Overlap 300 mm.

Inspection and distributor pipes: Insert as required.

Height of fill: Above crown of inlet pipe.

Top of fill: Cover with geotextile membrane.

Backfill: As-dug material.

Access covers: Bed and haunch continuously in 1:3 cement:sand mortar.

Installing septic tank and sewage treatment units

Base: Concrete (general).

Surround:

- Preparation: Temporarily fill tanks with water to prevent flotation.
- Material: Concrete (general).

Installing distribution and sampling chambers

Collar: Concrete (general).

Septic tank drainage fields

Standard: To BS 6297.

Percolation trenches:

- Width (minimum): 300 mm.
- Depth: To suit pipe gradient, thickness of granular material below pipes and to give a pipe invert depth of 200 mm (minimum) below ground level.
- Width of undisturbed ground between trenches (minimum): 1 m.

Granular material:

- Depth below pipe inverts (minimum): 300 mm.
- Compaction: Thoroughly, in maximum 300 mm thick layers.
- Thickness above pipe crowns: 50 mm.

Pipes:

- Uniform gradient (maximum): 1 in 200 away from distribution and sampling chamber.
- Laying: Dig slightly into bed, resting uniformly on barrels and adjust to line and gradient.

Barrier layer across the top of granular material:

- Laying: Tuck 75 mm down trench sides. Lap joints 300 mm.

Backfill to surrounding ground level: As-dug material.

Laying cable ducts

Drawlines: Thread through during laying.

Backfilling with as-dug material

Material: As excavated from the trench.

Placing and compaction: Maximum 300 mm thick layers, up to finished ground level. Compact each layer before placing the next.

Heavy compactors: Do not use before there is 600 mm of material over pipes.

Commissioning of septic tanks and sewage treatment units

Testing: Test the operation of all pumps, valves, controls, sensors and the like to verify correct operation, and make good if necessary.

Hand over at completion:

- Manufacturers' operating and maintenance instructions.
- Tools for operation, maintenance and cleaning, including keys for access covers.

S90 HOT AND COLD WATER SUPPLY SYSTEMS

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

Design and detailing by contractor

Standard: To BS 6700 or BS EN 806-2.

PRODUCTS

Equipment

Solar collectors: To BS EN 12975-1 and -2.

Controls: To BS EN 60730-1, BS EN 60730-2-14 and -2-9.

Instantaneous water heaters – gas: To BS EN 26.

Instantaneous water heaters and shower units – electric: To BS EN 60335-2-35, BEAB approved and/ or accepted by water supply undertaker.

Storage water heaters – gas: To BS EN 89.

Storage water heaters – electric: To BS EN 60335-2-21, BEAB approved and/ or accepted by water supply undertaker.

Cisterns

Nonpotable water storage and feed & expansion tanks: With removable cover.

- Moulded plastics: To BS 4213.
- Grp: To BS EN 13280.

Potable water storage: To BS 7181, insulated with secured cover, screened air inlet and screened warning pipe termination assembly.

- Moulded plastics: To BS 4213.

Cistern valves: Float operated diaphragm type to BS 1212-2 or -3.

- Float: Plastics to BS 2456 size to suit water pressure.

Hot water storage cylinders

Direct: To BS 1566-1, Kitemark certified.

Double feed indirect: To BS 1566-1, Kitemark certified.

Single feed indirect: To BS 1566-2, Kitemark certified.

Separate insulating jacket: To BS 5615.

Insulated combination units

Standard: To BS 3198, Kitemark certified.

Combination units for hot and cold water linked to a boiler: Provide a feed and expansion cistern unless integral cistern included.

Indirectly heated unvented hot water storage

Standard: To BS EN 12897.

Immersion heaters

Standard: To BS EN 60335-2-73, BEAB approved.

Metal flue pipes

Standard: To BS 715 for gas fired appliances.

Copper pipe and fittings

Tube: To BS EN 1057, Kitemark certified.

General use: Half hard temper R250.

General use wall thickness (nominal):

- 6, 8, 10 and 12 mm pipes: 0.6 mm.
- 15 mm pipes: 0.7 mm.
- 22 and 28 mm pipes: 0.9 mm.
- 35 and 42 mm pipes: 1.2 mm.

Underground use: Soft coil temper R220 or half hard temper R250.

Underground use wall thickness (nominal):

- 6, 8, 10 and 12 mm pipes: 0.8 mm.
- 15 mm pipes: 1.0 mm.
- 22 and 28 mm pipes: 1.2 mm.
- 35 and 42 mm pipes: 1.5 mm.

Capillary fittings: To BS EN 1254-1, Kitemark certified.

Compression fittings: To BS EN 1254-2, Kitemark certified.

Fittings with threaded ends: To BS EN 1254-4, Kitemark certified.

Plastics coated copper pipelines for use below ground:

- Coating: Seamless polyethylene, to BS 3412.

Chromium plated copper pipe

Tube: To BS EN 1057, Kitemark certified, half hard temper R250.

- Finish: Chromium plate, to BS EN ISO 1456, service condition 2.

Wall thickness (nominal):

- 6, 8, 10 and 12 mm pipes: 0.6 mm.
- 15 mm pipes: 0.7 mm.
- 22 and 28 mm pipes: 0.9 mm.
- 35 and 42 mm pipes: 1.2 mm.

Compression fittings: To BS EN 1254-2, Kitemark certified, Type A.

- Finish: Chromium plate to BS EN ISO 1456, service condition 3.

Fittings with threaded ends: To BS EN 1254-4, Kitemark certified.

Stainless steel pipe

Tube: To BS EN 10312.

Fluxes containing chlorides or borides: Not permitted.

Thermoplastics pipe and fittings

Polybutylene (PB): To BS 7291-1 and BS 7291-2, or Water Regulations Advisory Scheme (WRAS) approved and Agreement certified.

Cross-linked polyethylene (PE-X): To BS 7291-1 and BS 7291-3, or Water Regulations Advisory Scheme (WRAS) approved and Agreement certified.

Polyethylene pipe for use below ground

Tube: Blue polyethylene to BS 6572, Kitemark certified (superseded but remains current) or BS EN 12201-2.

- Jointing: Compression fittings to BS EN 12201-3.

Pipeline insulation

- Fire performance: Class 1 spread of flame to BS 476-7.

Timers and thermostats

Standards: To relevant parts of BS EN 60730 and C, BEAB approved.

Valves

Generally: Approved by local water supply undertaker and of appropriate pressure and/ or temperature ratings.

For isolation control: With handwheels.

For isolation and regulation: With lockshields.

Ball valves: To BS EN 331.

Stop valves and draw-off taps for above ground use: Copper alloy to BS 1010-2, Kitemark certified.

Stop valves for below ground use: DZR copper alloy CZ 132 to BS 5433.

Gate valves: Copper alloy to BS 5154, Series B, Kitemark certified or BS EN 12288.

Double check valve assemblies: Copper alloy check valves to BS 6282-1 or BS EN 13959 with intervening test cock to BS 2879.

Draining taps: Copper alloy to BS 2879, Type 1, hose connection pattern, Kitemark certified.

Gas plug cocks: To BS 1552.

EXECUTION

Hot and cold water services for domestic use

Standard: To BS 6700 or BS EN 806-4.

Gas services

Standard: To BS 6891.

Installation generally

Performance: Free from leaks and audible effects of expansion, vibration and water hammer.

Fixing of equipment, components and accessories: Secure, parallel or perpendicular to building structure.

Preparation: Clear debris and projections before installing tanks and cisterns on floors or platforms.

Corrosion resistance: Use corrosion resistant fittings/ fixings and avoid contact between dissimilar metals.

Dezincification

Fittings used below ground or in concealed or inaccessible locations: Gunmetal or another material resistant to dezincification.

Flue pipe

Joints and bends: Minimize number.

Slope: Not more than 30° from the vertical.

Joints:

- Sockets: Uppermost.
- Supports: Fully supported and fixed securely with brackets supplied for the purpose.
- Sealing: Gas-tight, in accordance with manufacturer's instructions.
- Joints within floor void: Not permitted.

Expansion and contraction: Accommodate thermal movement.

Fire safety: Locate a safe distance from combustible materials.

Roof junction: Weatherproof.

Balanced flue terminal

Opening in external wall: Submit proposals for position.

Flue guard: Required if flue may be touched.

Cisterns

Outlet positions: 30 mm (minimum) above bottom.

Access clear space:

- Cistern does not exceed 450 mm in any dimension: 225 mm (minimum) above.
- Cistern does exceed 450 mm in any dimension: 350 mm (minimum) above.

Warning/ overflow pipes to cisterns

Normal water level and overflow level difference (minimum):

- Cold water storage cisterns: The greater of 32 mm or the bore of warning pipe.
- Feed and expansion cisterns: To allow 20% increase in the volume of water plus 25 mm.

Supply inlet above overflow level: Bore of warning pipe (minimum).

Fall: 1 in 10 (minimum).

Support: To prevent sagging.

Exposed end: Prominent position with turned down end.

Cistern end: Turned down to terminate 50 mm below normal water level.

Insulation: Insulate within the building where subject to freezing.

Vent pipes over cisterns

Route: No restrictions or valves.

Slope: Rising continuously from system connection to discharge over cistern.

Internal diameter: 20 mm (minimum).

Unvented hot water storage discharge pipes

Discharge pipe size: To suit outlet on safety device and length and configuration of pipe.

- Fall: 1 in 80 (minimum).
- Discharge: Via an air break and tundish.

Water softeners

Supply continuity: Fit bypass pipe and stop valves.

Drains: Overflow/ drain lines to trap and waste.

Back siphonage: Prevent back siphonage during regeneration.

Pipelines

Generally to:

- BS 8000-15, clause 3.7;
- BS 5955-8, clause 6.11;
- BS 6700, section 6 or BS EN 806-4; and
- BRE Defect Action Sheets 120 and 121.

Notches and holes in timber to:

- BS 6700, Figure 15 or BS EN 806-4 clauses 4.5 and 4.7.
- Building Regulations E&W Approved Document A, section 1B6.
- Building Regulations NI Technical Booklet D, section 2.6.

Position:

- Arrangement: Straight, and parallel or perpendicular to building elements.
- Location: Within floor, ceiling and/ or roof voids.
- Access: To facilitate installation of equipment, accessories and insulation without compression.
- Maintenance: Allow sufficient space for access.
- Where routed together horizontally: Hot pipelines above cold.
- Heating pipelines: Do not run cold water pipelines near.
- Heated spaces: Do not run cold water pipelines through.
- Electrical enclosures: Do not run water pipelines through.
- Electrical equipment: Do not run water pipelines above.

Pipelines fixing

Fixing: Secure and neat.

Joints, bends and offsets: Minimize.

Pipeline support: Prevent strain.

Drains and vents: Fix pipelines to falls. Fit draining taps at low points and vents at high points.

Thermal expansion and contraction: Allow for thermal movement. Isolate from structure. Prevent noise or abrasion.

Pipelines passing through walls, floors or other building elements: Sleeve.

Dirt, insects or rodents: Prevent ingress.

Support for copper/ stainless steel pipelines

Fixing: Secure and true to line.

Support centres (maximum):

- 15 and 22 mm pipe: Horizontal 1200 mm, vertical 1800 mm.
- 28 and 35 mm pipe: Horizontal 1800 mm, vertical 2400 mm.
- 42 and 54 mm pipe: Horizontal 2400 mm, vertical 3000 mm.

Additional supports: Locate within 150 mm of connections, junctions and changes of direction.

Supports for exposed thermoplastics pipelines

Fixing: Secure and true to line.

Support centres (maximum):

- Up to 16 mm pipe: Horizontal 300 mm, vertical 500 mm.
- 17-25 mm pipe: Horizontal 500 mm, vertical 800 mm.
- 26-32 mm pipe: Horizontal 800 mm, vertical 1000 mm.

Additional supports: Locate within 150 mm of connections, junctions and changes of direction.

Bends in thermoplastics pipelines

Bends: Do not use 90° elbow fittings. Large radius bends: Support at maximum centres.

90° bends: Fix pipe clips either side of bend.

Small radius bends: Fully support 90° bends with cold form bend fixtures.

Polyethylene pipelines for use below ground

Jointing: Compression fittings recommended by tube manufacturer.

Pipeline spacing

Clearance (minimum) to face of wall-fixed pipes or pipe insulation:

- From floor: 150 mm.
- From ceiling: 50 mm.
- From wall: 15 mm.
- Between pipes: 25 mm.
- From electrical conduit, cables, etc: 150 mm.

Joints in copper/ stainless steel pipelines

Preparation: Cut pipes square. Remove burrs.

Joints: Neat, clean and fully sealed.

Pipe ends: inserted to full depth.

Formed bends: Do not use on exposed pipework, except for small offsets.

Changes of direction: Use radius fittings.

Adaptors for connecting dissimilar materials: Purpose designed.

Substrate and plastics pipes and fittings: Do not damage.

Flux residue: Clean off.

Capillary joints in plastics coated pipes

Plastics coating: Do not damage.

Completed joint: When cool, wrap with PVC tape of matching colour, half lapped.

Joints in thermoplastics pipelines

Fittings and accessories for joints: Purpose designed.

Preparation: Cut pipes square. Remove burrs.

Joints: Neat, clean and fully sealed. Pipe ends: inserted to full depth.

Compression fittings: Do not overtighten.

Transition joints to boilers, circulators and adjacent to radiant heat sources: 300 mm long (minimum) copper transition tube, diameter as heating pipeline, compression jointed to pipeline and fitting.

Pipelines entering buildings

Depth: Lay pipes 750 mm (minimum) below finished ground level.

Pipelines rising into building within 750 mm of the external face of the external wall or passing through a ventilated void below floor level: Insulate from finished floor level to 600 mm beyond external face of building.

Ends of pipeducts: Seal both ends to a depth of 150 mm (minimum).

External supply pipelines

Pipelines exposed to air and less than 750 mm below finished ground level: Insulate.

Insulation to pipelines

Standard: In accordance with BS 5970.

Cold water pipelines: Insulate in unheated spaces and to potable cold water pipelines.

Hot water pipelines: Insulate, except for short lengths in prominent positions next to appliances.

Appearance: Fix securely and neatly. Make continuous over fittings and at supports. Locate split on 'blind' side of pipeline.

Gaps: Not permitted.

Timing: Fit insulation after testing.

Insulation to cisterns

Standard: In accordance with BS 5970.

General: Fix securely to sides and top of cisterns.

Gaps: Not permitted.

Access cover: Allow removal of cover with minimum disturbance to insulation.

Underside of cistern: Insulate where exposed in unheated spaces.

Valves

Isolation and regulation valves: Provide on equipment and subcircuits.

Location: Next to equipment to be isolated.

Access: Locate for ease of operation and maintenance.

Connection to pipework: Fit with joints to suit pipe material.

COMPLETION

System disinfection

Disinfection: To BS 6700 or BS EN 806-4.

Testing and commissioning

Testing and commissioning: To BS 6700 or BS EN 806-4.

- Notice: 3 days (minimum).

Preparation: Secure and clean pipework and equipment. Fit cistern/ tank covers.

Flushing and filling: To BS 6700 or BS EN 806-4.

Leak testing: Start and run until all parts are at normal operating temperatures, allow to cool to cold condition for a period of 3 hours.

Pressure testing: At both hot and cold joints, fittings and components free from leaks and signs of physical distress when tested for 1 hour (minimum) as follows:

- Systems fed directly from the mains and systems downstream of a booster pump: Test pressure of 1.5 times the designed maximum operating pressure.
- Systems fed from storage: Test pressure equal to storage cistern filled to normal maximum operating level.
- Inaccessible or buried pipelines: Hydraulic pressure test to twice the maximum operating pressure.

Equipment, controls and safety devices: Check and adjust operation.

Outlets: Check operation, rate of flow and temperature.

Testing gas pipelines

Testing and purging: To BS 6891.

Documentation

Manufacturers' operating and maintenance instructions: Submit for equipment and controls.

System operating and maintenance instructions: Submit for the system as a whole giving optimum settings for controls.

Record drawings: Submit drawings showing the location of circuits and operating controls.

Operating tools

Tools: Supply for operation, maintenance and cleaning purposes.

Valve keys: Supply for valves and vents.

Labels

Isolating and regulating valves on primary circuits: Label with statement of function.

T90 HEATING SYSTEMS

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

DESIGN

Basic domestic room design temperatures at given ventilation rates

Living rooms: Temperature 21°C.

- Air changes: 1.5 per hour.

Dining rooms: Temperature 21°C.

- Air changes: 1.5 per hour.

Bedsitting rooms: Temperature 21°C.

- Air changes: 1.5 per hour.

Bedrooms: Temperature 18°C.

- Air changes: 1 per hour.

Halls and landings: Temperature 18°C.

- Air changes: 1.5 per hour.

Kitchens: Temperature 18°C.

- Air changes: 2 per hour.

Bathrooms: Temperature 22°C.

- Air changes: 2 per hour.

Toilets: Temperature 18°C.

- Air changes: 2 per hour.

Thermal insulation of building fabric - heat loss determined by contractor

Heat loss calculations: Based on U values in the specified source documents or calculated from the fabric described elsewhere.

Submit: Heat loss calculations for each room using the HEVACOMP suite of programmes or an agreed equivalent.

System capacity

Output of total heating surface area in any space: As near as practicable to, but not less than, design heat loss for that space.

Boiler output (minimum): Total calculated heat loss, including emission from system pipelines and sufficient to meet hot water supply requirements.

Total heat loss calculations: Allow for intermittent use, exposure, and the like.

PRODUCTS

Central heating boilers

Gas fired:

- Standard boiler: To relevant parts of BS 5258-1, BS EN 483 or BS EN 297.
- Combination boiler: To BS 5258-15, BS EN 297 or BS EN 483 and BS EN 625.

Solid fuel fired:

- Undergrate ash removal: To BS 4433-1.
- Gravity feed: To BS 4433-2.

Oil fired: To OFS A100 (Oil Firing Technical Association [OFTEC] Standard), BS 799-2 or BS 799-3 and BS EN 15035.

Roomheaters

Solid fuel, with or without back boiler: To BS 3378.

Fires

Gas:

- Gas fire: To BS 7977-1.
- Gas fire with back boiler: To BS 7977-2.
- Inset live fuel effect gas fire: To BS EN 509 and BS 7977-1.
- Decorative fuel effect gas appliance: To BS EN 509 and BS 7977-1.

Cookers

Solid fuel with boiler: To BS 1252.

Chimneys and flues

Insulated chimneys with stainless steel linings for solid fuel fired appliances: To BS EN 1856-1, tested to BS EN 1859.

Insulated chimneys with stainless steel linings for oil fired appliances: To BS EN 1856-1, tested to BS EN 1859.

Flue liners: Flexible, spiral wound, austenitic stainless steel tube.

Metal flues for gas fired appliances: To BS 715, BS EN 1856-1 and BS 5440-1.

Oil storage tanks

Steel: To BS 799-5 and BS 5410-1.

Plastics: To OFS T100 (OFTEC) and BS 5410-1.

Cisterns

Feed and expansion cisterns with removable cover:

- Moulded plastics: To BS 4213.
- GRP: To BS EN 13280.

Cistern valves: Float operated diaphragm type to BS 1212-2 or -3.

Float: Plastics to BS 2456, size to suit water pressure.

Circulating pumps

Standard: To BS EN 1151 and BS EN 60335-2-51.

Radiators

Standard: To BS EN 442.

Convectors

Natural convectors: To BS EN 442.

Fan assisted convectors: To BS EN 442 and BS 4856.

Copper pipelines for general use

Standard: To BS EN 1057, Kitemark certified.

- Temper: Half hard temper R250.

Wall thickness (nominal):

- 6, 8, 10 and 12 mm nominal O.D. pipes: 0.6 mm.
- 15 mm nominal O.D. pipes: 0.7 mm.
- 22 and 28 mm nominal O.D. pipes: 0.9 mm.
- 35 and 42mm nominal O.D. pipes: 1.2 mm.

Microbore copper pipelines

Standard: To BS EN 1057, Kitemark certified.

Temper: Soft coil temper R220.

Wall thickness (nominal):

- 6 and 8 mm nominal O.D. pipes: 0.6 mm.
- 10 mm nominal O.D. pipes: 0.7 mm.

Plastics coated copper pipelines

Standard: To BS EN 1057, Kitemark certified.

- Coating: Seamless polyethylene, to BS 3412.

Temper: Half hard temper R250.

Wall thickness (nominal): As copper pipelines for general use.

Fittings for copper pipelines

Jointing:

- Integral lead free solder ring capillary fittings: To BS EN 1254-1, Kitemark certified.

Connections to appliances and equipment:

- Compression fittings: To BS EN 1254-2, Kitemark certified.
- Fittings with threaded ends: To BS EN 1254-4.

Thermoplastic pipe and fittings

Polybutylene (PB): To BS 7291-2.

Cross linked polyethylene (PE-X): To BS 7291-3.

Pipeline insulation

Material: Preformed flexible plastics closed cell foam or mineral fibre split tube.

Thermal conductivity: 0.04 W/m²·K (maximum).

Thickness:

- Heating and primary pipelines: Equal to the outside diameter of the pipe up to 40 mm (maximum).
- Internal cold water pipelines: 25 mm.
- Roof space cold water pipelines: 32 mm.
- External cold water pipelines: 38 mm.
- Fire performance: Class 1 spread of flame to BS 476-7.

Controls

Programmers: To relevant parts of BS EN 60730 and BS EN 61058, BEAB approved.

Timers and thermostats: To relevant parts BS EN 60730 and BS EN 61058, BEAB approved.

- Types: Recommended for purpose.

Valves

Generally:

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

Motorized valves: To relevant parts of BS EN 60730 and BS EN 61058, BEAB approved.

Manual radiator valves: Copper alloy to BS 2767.

Thermostatic radiator valves: To BS EN 215-1 and capable of providing isolation.

EXECUTION

System performance

Control:

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

Domestic heating systems: To Water Supply Regulations/ Byelaws and the requirements of the water supply undertaker.

Installation generally

Performance: Free from leaks and the audible effects of expansion, vibration and water hammer.

Fixing of equipment, components and accessories: Fix securely, parallel or perpendicular to the structure of the building.

Preparation: Clear debris and projections before installing tanks and cisterns on floors or platforms.

Corrosion resistance: Use corrosion resistant fittings/ fixings and avoid contact between dissimilar metals.

Electrical work: To BS 7671.

Fire resisting pipe sleeves:

- Types and sizes: Recommended by manufacturer.

Sealing around services: Fill space completely. Finish neatly.

Decoration and other work: Drop radiators when required.

Gas fired boilers

Installation: To BS 6798.

Space around the boiler:

- Ensure sufficient air circulation for draught diverter operation.
- Ensure sufficient air for combustion and cooling.
- Sufficient for maintenance and servicing.

Combustible material: Either 75 mm clear of the boiler, or lined with non-combustible material.

Combination boilers:

- Expansion vessel connection pipework: Locate the neutral point of the system in the return pipework close to the heat generator.
- Fill point location: Between the expansion vessel connection point and circulation pump inlet.

Solid fuel fired roomheaters with backboiler

Installation: To BS 8303-3.

Hearth: Place appliances wholly or partially upon constructional hearths or upon finished hearths constructed of non-combustible materials.

Existing flues: Ensure flue is clean, clear of obstructions, in a sound condition and of adequate size.

Gas fires

Type: With or without back boiler.

- Installation: To BS 5871-1.

Room sealing: Room seal appliances installed in spaces containing baths, showers or beds.

Fuel effect gas fires

Installation: To BS 5871-2.

Siting: Stand on a hearth or floor, or secure to wall.

Existing chimneys: Remove dampers or restrictor plates in the chimney, or where this is not practicable, permanently fix in the fully open position.

Live fuel effect gas fires:

- Sealing: To eliminate the entry of excess air into the flue, seal fire into position.

Decorative fuel effect gas fires:

- Servicing: Install appliances so they can be removed for servicing.

Flue pipes

Installation: To BS 5440-1.

Joints and bends: Minimize number.

Slope: Not more than 30° from the vertical.

Joints: Install with sockets uppermost, fully supported and fixed securely with brackets supplied for the purpose. Do not locate joints within the depth of floors.

- Seals: Seal to provide a gas-tight installation.

Expansion and contraction: Accommodate thermal movement.

Fire safety: Locate a safe distance from combustible materials.

Roof junction: Weatherproof. Fit terminal and flashings, collars etc.

Flexible flue liners

Installation: Complete, gas tight.

Flue: Unobstructed and clean.

Liner: One piece.

- Fixing: Fix securely at top of stack and to boiler with purpose-made clamps.

Joint at boiler: Seal. Fill completely with jointing material.

Existing chimneys

Preparation: Clean thoroughly. Check for obstructions and blockages.

Tests: Carry out core ball test and smoke test.

- Programme: Give notice.
- Obstructions or leaks: Submit proposals for making good.

Air supply to contractor design appliances

Air supply requirements: Submit details.

Sizes and locations of vents: Submit proposals.

Oil storage tanks

Installation: To BS 5410-1.

Feed and expansion cisterns

Installation: To BS 6700.

Outlet positions: 30 mm (minimum) above base.

Access clear space (minimum):

- Cistern does not exceed 450 mm in any dimension: 225 mm above.
- Cistern does exceed 450 mm in any dimension: 350 mm above.

Mounting height (minimum): One metre above highest point of circulation system, unless boiler manufacturer's recommendations allow less.

Location: Sufficient space for cleaning and maintenance, with enough clearance above the tank to service the valve and accommodate the expansion pipe.

Plinth: Firm and level. Ensure adequate distribution of the load - especially if required to be carried by trussed rafters.

Installation of insulation:

- General: Fix securely to sides and top of cisterns. Leave no gaps.
- Access cover: Allow removal of cover with minimum disturbance to insulation.
- Underside of cistern: Insulate where exposed in unheated spaces.

Warning and overflow pipes to feed and expansion cisterns

Difference (minimum) between normal water level and overflow level:

- Feed and expansion cisterns: Sufficient to allow 20% increase in the volume of water in the tank, plus 25 mm.

Vertical distance (minimum) of water supply inlet above overflow level: Bore of warning pipe.

Fall: 1 in 10 (minimum).

Installation: Support to prevent sagging. Terminate pipes separately in prominent positions with turned down ends. Turn down within the cistern. Terminate 50 mm below normal water level.

Insulation: Insulate within the building where the pipe is in an un-insulated space and subject to freezing.

Vent pipes over feed and expansion cisterns

Route: Install with no restrictions or valves and rising continuously from system connection to discharge over cistern.

Internal diameter: 20 mm (minimum).

Circulating pumps

Location: Readily accessible positions.

Installation: As recommended by manufacturer.

Radiators

Towel warmers: Install on primary hot water circuit.

Pipelines

Generally to:

- BS 8000-15, clause 3.7;
- BS 5955-8, clause 6.11;
- BS 6700, clause 2.8 and
- BRE Defect Action Sheets 120 and 121.

Notches and holes in timber to:

- BS 6700, Figure 15.
- Building Regulations E&W Approved Document A, section 1B6.
- Building Regulations NI Technical Booklet D, section 2.6.

Position:

- Arrangement: Straight, and parallel or perpendicular to building elements.
- Location: Within floor, ceiling and/ or roof voids.
- Access: To facilitate installation of equipment, accessories and insulation without compression.
- Maintenance: Allow sufficient space for access.
- Where routed together horizontally: Hot pipelines above cold.
- Heating pipelines: Do not run cold water pipelines near.
- Heated spaces: Do not run cold water pipelines through.
- Electrical enclosures: Do not run water pipelines through.
- Electrical equipment: Do not run water pipelines above.

Pipelines fixing general

Fixing: Secure and neat.

Joints, bends and offsets: Minimize.

Pipeline support: Prevent strain.

Drains and vents: Fix pipelines to falls. Fit draining taps at low points and vents at high points.

Thermal expansion and contraction: Allow for thermal movement. Isolate from structure. Prevent noise or abrasion.

Pipelines passing through walls, floors or other building elements: Sleeve.

Dirt, insects or rodents: Prevent ingress.

Spacing:

- Clearance (minimum) to face of wall-fixed pipes or pipe insulation:

From floor: 150 mm.

From ceiling: 50 mm.

From wall: 15 mm.

Between pipes: 25 mm.

From electrical conduit, cables, etc: 150 mm.

Copper and plastics coated copper pipelines

Jointing:

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

Capillary joints in plastics coated pipelines:

- Plastics coating: Do not damage, e.g. by direct or indirect heat. Wrap completed joint (when cool) with PVC tape of matching colour, half lapped.

Support centres (maximum):

- 15 and 22 mm pipes: Horizontal 1200 mm, vertical 1800 mm.
- 28 and 35 mm pipes: Horizontal 1800 mm, vertical 2400 mm.
- 42 and 54 mm pipes: Horizontal 2400 mm, vertical 3000 mm.

Additional supports: Within 150 mm of connections, junctions and changes of direction.

Thermoplastics pipelines

Bends:

- 90° elbow fittings to form bends: Not permitted.
- Large radius bends: Support at maximum centres.
- 90° bends: Fix pipe clips either side of bend.
- Small radius bends: Fully support 90° bends with cold form bend fixtures.

Support centres (maximum):

- Up to 16 mm pipes: Horizontal 300 mm, vertical 500 mm.
- 17–25 mm pipes: Horizontal 500 mm, vertical 800 mm.
- 26–32 mm pipes: Horizontal 800 mm, vertical 1000 mm.

Fixing: Secure and true to line.

Additional supports: Provide as necessary within 150 mm of connections, junctions and changes of direction.

Bends in thermoplastics pipelines

Bends: Do not use 90° elbow fittings. Large radius bends: Support at maximum centres.

90° bends: Fix pipe clips either side of bend.

Small radius bends: Fully support 90° bends with cold form bend fixtures.

Insulation to pipelines

Cold water pipelines: Insulate in unheated spaces and to potable cold water pipelines.

Hot water pipelines: Insulate, except for short lengths in prominent positions next to appliances.

Appearance: Fix securely and neatly. Make continuous over fittings and at supports. Leave no gaps. Locate split on 'blind' side of pipeline.

Gaps: Not permitted.

Timing: Fit insulation after testing.

Reflective aluminium foil

Installation: Cut neatly to size 25 mm smaller than radiator and fix behind radiators.

Valves

Isolation and regulation valves: Provide on equipment and subcircuits.

Location: Next to equipment to be isolated.

Access: Locate for ease of operation and maintenance.

Connection to pipework: Fit with joints to suit the pipe material.

Lockshield valves: Fitted to return side of radiators.

COMPLETION

Testing and commissioning

Notice: 3 days (minimum).

Preparation: Secure and clean pipework and equipment. Fit cistern/ tank covers.

Leak testing: Start and run until parts are at normal operating temperatures, allow to cool to cold condition for a period of 3 hours.

Pressure testing: At both hot and cold joints, fittings and components free from leaks and signs of physical distress when tested for 1 hour (minimum) as follows:

- Systems fed directly from the mains and systems downstream of a booster pump: Test pressure of 1.5 times the designed maximum operating pressure.
- Systems fed from storage: Test pressure equal to storage cistern filled to normal maximum operating level.
- Inaccessible or buried pipelines: Hydraulic pressure test to twice the maximum operating pressure.

Equipment, controls and safety devices: Check and adjust operation.

Testing gas pipelines

General: Test and purge.

- Standard: To BS 6891.

Documentation

Manufacturers' operating and maintenance instructions: Submit for equipment and controls.

System operating and maintenance instructions: Submit for the system as a whole giving optimum settings for controls.

Record drawings: Submit drawings showing the location of circuits and operating controls.

Water Regulations/ Byelaws notifications and certificates: See Preliminaries, section A33.

Gas installation certification: See Preliminaries, section A33.

Operating tools

Tools: Supply for operation, maintenance and cleaning purposes.

Valve keys: Supply for valves and vents.

Labels

Isolating and regulating valves on primary circuits: Label with statement of function.

U90 GENERAL VENTILATION

GENERAL

Cross-reference

General: read with A90 General technical requirements.

PRODUCTS

Ventilators for heating appliances

General: Not adjustable. Not restricted, e.g. with mesh.

Air vents and ducts for gas appliances (rated input not exceeding 70 kW)

Standard: To BS 5440-2.

Safety of household and similar electrical equipment

Range (cooker) hoods: To BS EN 60335-2-31, BEAB approved.

Fan units: To BS EN 60335-2-80, BEAB approved.

Pull cord switches: To BS EN 61058-2-1.

EXECUTION

Site applied insulation

Location: Fit insulation to ductwork in unheated spaces.

Installation: Fix securely. Leave no gaps. Make continuous.

Ductwork

Rigid duct: Install complete, with necessary bends, junctions, reducers, connectors, and adaptors.

- Installation: Do not distort or reduce cross-sectional area. Do not strain joints.

Flexible duct: Install complete, with necessary junctions, reducers, connectors, and adaptors.

- Installation: Fully extend. Do not overstretch. Form smooth flowing curves without kinking, sagging or slumping.

Joints: Seal. Provide a robust airtight installation.

Falls: Fall away from fans, dampers and other in-line accessories.

Sleeves: Where ducts pass through building fabric. Bed solidly to the surrounding construction.

- Gap filling: 10–20 mm between sleeve and duct, fill completely.

Passive stack ventilation systems

Duct runs: As short and straight as possible. Smooth curvature to offsets.

Arrangement: Do not install ducts at more than 45° from vertical.

Air leakage: Prevent where ducts enter rooms and around inlet grilles.

Ventilators for heat appliances

Free area: Do not obstruct or restrict.

Opening adjustment: Not permitted.

Insect screens: Not permitted.

Condensate drains

Access: Provide for cleaning.

COMPLETION

Commissioning

Ventilation system: Balance airflow using methods recommended by the system manufacturer.

Operation: Examine ductwork for leakage.

- Test: Fans, equipment, controls and sensors.
- Submit: Report verifying correct operation.

Operation and maintenance

Operating and maintenance instructions:

- Submit: Manufacturers' operating and maintenance instructions for equipment and controls.

Tools: Supply tools for operation, maintenance and cleaning purposes, including keys for valves and vents.

V90 ELECTRICAL INSTALLATION

GENERAL

Cross-reference

General: Read with section A90 General technical requirements.

DESIGN

General electrical installation

Standard: To BS 7671.

Internal lighting

Standard: To CIBSE 'Code for lighting'.

External lighting

Standards: To BS 5489-1, CIBSE 'Code for lighting' and 'Lighting Guide 6'.

Emergency lighting

Standard: To BS 5266-1.

Photovoltaic systems

Standards:

- Generally: To IEC 60364-7-712, and in accordance with ENA Engineering recommendation G59/1 or ENA Engineering Recommendation G83/1, and DTI Report No S/P2/00282.
- Roof mounted: To BS EN 1991-1-4 and in accordance with BRE Digests 489 and 495.

Small scale wind generating systems

Wind turbines: To BS EN 61400-2.

PRODUCTS

Conduit and trunking

Types and sizes: Suitable for operating conditions.

Steel conduit and fittings: To BS 4568-1 or BS EN 61386-1.

PVC conduit and fittings: To BS 4607-1 or BS EN 61386-21.

Steel surface trunking systems: To BS EN 50085-1 and -2-1.

PVC surface trunking systems: To BS 4678-4 or BS EN 50085-1 and -2-1.

Steel underfloor ducting system: To BS 4678-2.

Cable Tray

Standard: To BS EN 61537.

Types and sizes: Suitable for operating conditions.

Cables

Standard: BASEC certified.

Types and sizes: To BS 7671.

Consumer control units and distribution boards

Consumer control units: To BS EN 60439-3, ASTA certified.

Distribution boards: To BS EN 60439-3, ASTA certified.

Main control rating: Suit maximum demand.

Number of ways: Permanently label each way to identify circuit function, cable size and protective device rating.

Circuit protection: Miniature circuit breakers to BS EN 60898-1 or fuses to BS 88-2, BS 88-3, BS 88-6, BS 1361, or BS 3036.

Additional circuit protection: To BS EN 61008-1 or BS EN 61009-1.

Equipment and accessories

Minor accessories needed to complete the installation: Types recommended for purpose by relevant manufacturer.

Electrical accessories: Complete with mounting boxes.

- Choice of manufacturer: Submit details of selected manufacturer with relevant catalogues.

Thirteen amp socket outlets: To BS 1363-2.

Socket outlets with integral RCD: To BS 7288.

Fused connection units: To BS 1363-4.

Shaver outlets: Single voltage to BS 4573, dual voltage to BS EN 61558-2-5.

Coaxial cable socket outlet: To BS 5733 and BS EN 60669-1.

Wall mounted switchplates: To BS EN 60669-1.

Ceiling mounted pullcord switches: To BS EN 61058-2-1.

Ceiling roses: To BS 67.

Bayonet cap lampholders: To BS EN 61184.

Edison screw lampholders: To BS EN 60238.

Compact fluorescent lampholders: To BS EN 60061-2.

Photoelectric control units for control of individual lights or lighting circuits: To BS 5972.

Television antennae: To BS 5640-1 and -2.

Electric thermal storage heaters: To BS EN 60335-2-61, BEAB approved.

Electric room heaters: To BS EN 60335-2-30, BEAB approved.

Electric heated towel rails and sauna heaters: To BS EN 60335-2-43, BEAB approved.

Time switches: To BS EN 60730-1 and BS EN 60730-2-7, BEAB approved.

Photoelectric control units for control of individual lights or lighting circuits: To BS 5972.

Emergency lighting systems

Luminaires and related components: Registered under Industry Committee for Emergency Lighting (ICEL) Product Registration Scheme.

Luminaires, including self contained emergency lighting luminaires: To BS EN 60598-2-22.

Luminaires modified for emergency use: Certified to ICEL 1004.

Photovoltaic systems

Crystalline silicon terrestrial photovoltaic (PV) modules: To BS EN 61215.

Thin film terrestrial photovoltaic (PV) modules: To BS EN 61646.

Junction Boxes and switchgear assemblies: To BS EN 60439-1 or to BS EN 61439-1 and -2.

EXECUTION

Circuits

Arrangement: Divide installation into separately controlled circuits. Subdivide further where necessary.

Installation generally

Performance: Provide a safe, well insulated, earth protected system capable of supplying the anticipated maximum demand.

Supports and fasteners: Corrosion resisting where moisture is present or may occur. Avoid contact between dissimilar metals.

Switchgear

Clearance in front of switchgear (minimum): 1 m.

Labelling: Permanently label each way, identifying circuit function, rating and cable size.

Enclosure identification: Label with project reference.

Cable trays

Access: Provide space encompassing cable trays to permit access for installing and maintaining cables.

Cutting: Along an unperforated line. Minimize. Make good edges. Treat surface as the tray.

Cable baskets

Access: Provide space encompassing cable trays to permit access for installing and maintaining cables.

Cutting: Side action bolt croppers. Minimize. Make good cut edges by treating to same standard as the basket.

Conduit and fittings

Fixing: Fix securely. Fix boxes independently of conduit.

Location: Position vertically and horizontally in line with equipment served, and parallel with building lines. Locate where accessible.

Jointing:

- Number of joints: Minimize by using maximum practicable lengths of conduit.
- Cut ends: Remove burrs, and plug during building works.
- Movement joints in structure: Manufactured expansion coupling.
- Threaded steel conduits: Tightly screw to ensure electrical continuity, with no thread showing.
- Conduit connections to boxes and items of equipment, other than those with threaded entries: Earthing coupling/ male brass bush and protective conductor.

Changes of direction: Use site machine formed bends, junction boxes and proprietary components. Do not use elbows or tees. Alternatively, use conduit boxes.

Connections to boxes, trunking, equipment and accessories: Use appropriate screwed couplings, adaptors, connectors and glands. Provide rubber bushes at open ends.

Conduit in concrete

Fixing: Securely to reinforcement. Boxes to formwork to prevent displacement.

Concrete cover: As for reinforcement.

Drainage of conduit

Drainage outlet locations: At lowest points in conduit installed externally and where condensation may occur.

Trunking/ Ducting/ Cable management systems

Positioning: Accurately with respect to equipment served and, where relevant, floor level.

Access: Provide space around cable trunking to permit access for installing and maintaining cables.

Jointing:

- Number of joints: Minimize by using maximum practicable lengths of conduit.
- Steel systems: Use mechanical couplings; do not weld. Fit a copper link at each joint to ensure electrical continuity.
- Movement joints in structure: Manufactured expansion coupling.

Fixing: Fix securely. Restrain floor mounted systems to prevent movement during screeding.

Junctions and changes of direction: Use proprietary units.

Cable exit holes: Fit grommets, bushes or liners.

Protection: Do not damage components. Fit temporary blanking plates to prevent ingress of screed and other extraneous materials.

Service outlet units: Fit when cables are installed.

Fire stopping of trunking/ ducting

Trunking/ ducting passing through fire resisting construction: Seal internally.

- Sealing material: Submit proposals.

Cable routes

Cables generally: Conceal wherever possible:

- Concealed cable runs to wall switches and outlets: Vertically in line with the accessory.

Exposed cable runs: Submit proposals.

- Orientation: Straight, vertical and/ or horizontal and parallel to walls.

Distance from other services running parallel: 150 mm minimum.

- Position cables below heating pipes.

Installing cables

General: Install cables neatly and securely. Protect against accidental damage, adverse environmental conditions, mechanical stress and deleterious substances.

Timing: Do not start internal cabling until building enclosure provides permanently dry conditions.

Jointing: At equipment and terminal fittings only.

Cables passing through masonry walls: Sleeve with conduit bushed at both ends.

Cables surrounded or covered by insulation: Derate.

Protective conductors

Type: Cable conductors.

Armoured cables

Temperature: Do not start installation if cable or ambient temperature is below 0°C, or has been below 0°C during the previous 24 hours.

Galvanized steel guards: Fit where cables are vulnerable to mechanical damage.

Earthing: Bond armour to equipment and main earthing system.

Connections to apparatus: Moisture proof. Use sealed glands and PVC shrouds.

PVC sheathed cables

Low temperatures: Do not install if ambient temperature is below 5°C.

MICC cables

Bending: Do not corrugate sheath.

Equipment and boxes: Connect with PVC shrouded glands.

Cable fasteners: Clips and spacings recommended by manufacturer and within 150 mm of bends and connections.

Testing: Test each length immediately after fixing. Repeat 24-48 hours later.

Cables laid directly in the ground

Cable bedding: 75 mm of sand.

Backfilling: 75 mm of sand over cables, then as-dug material.

Marker tape: nominally 250 mm above cable.

Multiple cables in same trench: Set 150 mm apart.

Cables below roads and hardstandings: Ducted, derate if longer than 10 m.

Cables entering buildings from below ground

Pipeducts: Seal at both ends.

Method: Submit proposals.

Cables in plaster

Cover: Galvanized steel channel. Nail to substrate.

Cables in vertical trunking/ ducts

Support: Pin racks or cleats at each floor level or at 5 m vertical centres, whichever is less.

Heat barrier centres (maximum): 5 m.

Heat barriers: Required except where fire resisting barriers are not provided.

Cables in accessible roof spaces

Cables running across ceiling joists: Fasten to timber battens fixed to joists.

Fixing electrical accessories/ equipment

Location: Coordinate with other wall or ceiling mounted equipment.

Positions: Accurate. Square to vertical and horizontal axes.

Alignment: Place adjacent accessories on the same vertical or horizontal axis, as appropriate.

Multigang switches

Connection: Provide a logical relationship with luminaires. Fit blanks to unused switch spaces.

Segregation: Internally segregate each phase with phase barriers and warning plates.

Location: To suit requirements of Building Regulations.

Luminaires, lamp holders and pendant sets

Supports: Adequate for weight of luminaire.

Lamps: Provide.

External luminaires and lighting columns

Cleanliness: Check seals for particle ingress and clean before sealing.

Columns: Install to Highways Agency 'Specification for highway works'.

Earth bars

Location: At incoming electrical service position.

Mounting: Wall mounted on insulated supports.

Labelling

Identification and notices generally:

- Standards: To BS 5499-5 and BS 5378-2.
- Equipment: Label when a voltage exceeding 230 V is present.

Distribution boards and consumer units: Card circuit chart within a reusable clear plastic cover. Fit to the inside of each unit. Include typed information identifying the outgoing circuit references, their device rating, cable type, size, circuit location and details. Label each outgoing way corresponding to the circuit chart.

Sub-main cables: Label at both ends and to both sides of wall/ floor penetrations with proprietary cable markers.

Photovoltaic systems:

- Provide dual supply warning notices (grid connected systems only) stating that the system is energized from more than one source.
- PV modules: Label with warning notices describing the presence of live terminals.
- A.C. isolation switches: Label with notices stating 'PV system - Point of emergency switching'.
- Circuit diagram: Provide at point of interconnection.
- Details of protective settings incorporated in the PCU: Provide at point of interconnection.
- Fuses, terminal blocks and other assembly components: Label describing their purpose.
- Spare fuses: Label, describe their rating and purpose.

Small scale wind generators:

- Content of turbine nameplate: Wind turbine manufacturer and country; production year; rated power; reference wind speed; hub height operating wind speed range; operating temperature range; wind turbine class; rated voltage at the wind turbine terminals; frequency at the wind turbine terminals or frequency range in the case where normal variation is greater than 2%.

Emergency lighting systems

Standards: To the most onerous requirements of BS 5266-1, BS EN 1838, BS EN 50171, BS EN 50172 and the Health and Safety (Safety Signs and Signals) Regulations.

Emergency luminaires

Permanent electrical supplies: Derive from adjacent local lighting circuit.

Charge indicator: Position in a conspicuous location.

Engraving

Metal and plastic accessories: Engrave, indicating their purpose.

Emergency lighting test key switches: Describe their function.

Multigang light switches: Describe the luminaire arrangement.

Photovoltaic modules

Fix independently of any other systems installation with zinc electroplated fasteners indoors and stainless steel fasteners outdoors.

Small scale wind generators

Standard: To BS EN 61400-2.

General: Separate dissimilar materials to prevent bi-metallic corrosion.

Building mounted turbine support poles and fixings: Do not fix fasteners into mortar courses.

COMPLETION

Inspection and testing

Testing and commissioning: To BS 7671.

Notice before testing (minimum): 24 hours.

Labels and signs required by Regulations: Fix securely in correct locations before system is tested.

Evidence: System log books, inspection and completion certificates.

Emergency lighting system:

- Standard: To BS 5266-1.
- Test certificates: To BS 5266-1, Annex C.
- System log book: To BS 5266-1.

External lighting system:

- Standard: In accordance with CIBSE Lighting guide 6.
- Method: Test results based on average illuminance measurement method using a full grid.

Photovoltaic systems:

- Generally: To International Electrotechnical Commission IEC 60364-7-712, ENA Engineering recommendation G59/1 or ENA Engineering recommendation G83/1, and DTI Report No S/P2/00282.

Final fix

Accessory faceplates, luminaires and other equipment: Fit after completion of decorations.

Cleaning

All electrical equipment: Clean immediately before handover.

Training

General: Before Completion, explain and demonstrate the purpose, function, operation and maintenance of the facility to end user nominees.

Scope: Use items and procedures listed in the Building Manual as the basis for instruction.

Times and locations: Submit proposals. Include for items requiring seasonal operation.

Z10 PURPOSE MADE JOINERY

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

EXECUTION

Fabrication

Joinery components, timber and workmanship: To BS 1186-2.

Sections: Formed out of solid.

Lengths and profiles: Accurate.

Sections after machining: Free from twist and bowing.

Surfaces after machining: Smooth and free from tearing, wooliness, chip bruising and other machining defects.

Joints: Tight, close fitting.

Components: Rigid. Free from distortion.

Screws: Provide pilot holes.

Screws of 8 gauge (4mm diameter) or more and screws into hardwood: Provide clearance holes.

Screw heads: Sunk at least 2 mm below surfaces visible in completed work.

Adhesive: Compatible with wood preservatives applied and end use of timber.

Permitted deviations from timber finished sizes (maximum)

Softwood:

- Sawn sections: To BS EN 1313-1, clause 6.
- Further processed sections: To BS EN 1313-1, clause NA2.

Hardwood:

- Sawn sections: To BS 1313-2, clause 6.
- Further processed sections: To BS EN 1313-2, clause NA3.

Dimensions on drawings: Finished sizes.

Preservative treated wood

Cutting and machining: Completed as far as possible before treatment.

Extensively processed treated timber: Re-treat timber sawn along length, ploughed, thickened, planed or otherwise extensively worked.

Surfaces exposed by minor cutting and drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

Moisture content

Wood and wood based boards: Maintained within specified range during manufacture and storage.

Finishing

Joinery finish: Smooth, flat surfaces suitable to receive finishes.

Arrises: Eased.

End grain of external components: Before assembly, sealed with primer or sealer and allowed to dry.

Z11 PURPOSE MADE METALWORK

GENERAL

Cross-reference

General: Read with A90 General technical requirements.

PRODUCTS

Coatings and coated products

To iron and steel:

- Vitreous enamelled carbon steel and cast iron building components: To BS EN 14431.
- Sherardized coatings on carbon steel and cast iron: To BS 4921.
- Powder organic coatings to galvanized steel for external architectural purposes: To BS 6497 or BS EN 13438.
- Zinc electrodeposited coatings with supplementary treatment on iron or steel: To BS EN 12329.
- Cadmium electrodeposited coatings on iron or steel: To BS EN 12330.
- Nickel, nickel/ chromium, copper/ nickel and copper/ nickel/ chromium electrodeposited coatings: To BS EN 12540 (also applicable to zinc alloys, copper and copper alloys).
- Hot dip galvanized coatings on fabricated iron and steel: To BS EN ISO 1461.

To aluminium and aluminium alloys:

- Anodic oxidation coatings on wrought aluminium for external architectural applications: To BS 3987.
- Liquid organic coatings to aluminium alloy for external architectural purposes: To BS 4842.
- Powder organic coatings to aluminium alloy for external architectural purposes: To BS 6496.
- Welding:

General guidance for arc welding: To BS EN 1011-1.

Arc welding of ferritic steels: To BS EN 1011-2.

Materials generally

Prefinished metal: Do not damage or alter appearance of finish.

Fasteners: To appropriate British Standard and, unless specified otherwise, of same metal as component, with matching coating or finish.

EXECUTION

Fabrication generally

Contact between dissimilar metals in components that are to be fixed where moisture may be present or occur: Avoid.

Finished components: Rigid and free from distortion, cracks, burrs and sharp arrises.

- Moving parts: Free moving without binding.

Corner junctions of identical sections: Mitred unless specified otherwise.

Cold formed work

Profiles: Accurate with straight arrises.

Welding/ Brazing generally

Surfaces to be joined: Thoroughly cleaned.

Tack welds: Use only for temporary attachment.

Joints: Made with parent and filler metal fully bonded throughout with no inclusions, holes, porosity or cracks.

Surfaces of materials that will be self-finished and visible in completed work: Protect from weld spatter.

Traces of flux residue, slag and weld spatter: Removed.

Welding of steel

Preferred method: Metal arc welding.

- Alternative methods: Submit proposals.

Finishing welded/ brazed joints visible in completed work

Butt joints: Smooth and flush with adjacent surfaces.

Fillet joints: Neatly executed and ground smooth where specified.

Preparation for application of coatings

General: Fabrication complete, and fixing holes drilled before applying coatings.

Paint, grease, flux, rust, burrs and sharp arrises: Removed.

Galvanizing

Vent and drain holes: Provide in approved locations and submit proposals for sealing after galvanizing.

Powder coating**Applicator requirements:**

- Approved by the powder coating manufacturer.
- Currently certified to BS EN ISO 9901.

Anodizing**Processor requirements:**

- Approved by the Aluminium Finishing Association.
- Currently certified to BS EN ISO 9901.

Z12 PRESERVATIVE AND FIRE RETARDANT TREATMENT**GENERAL****Cross-reference**

General: Read with A90 General technical requirements.

EXECUTION**Treatment application**

Timing: After cutting and machining timber, and before assembling components.

Processor: Licensed by manufacturer of specified treatment solution.

Certification: For each batch of timber provide a certificate of assurance that treatment has been carried out as specified.

WPA Commodity Specifications

Standard: Current editions of the Wood Protection Association (WPA) publications 'Industrial flame retardant treatment of solid timber and panel products' and 'Industrial wood preservation specification and practice'.

Solution strengths and treatment cycles: Select to achieve specified service life and to suit timber treatability.

Copper-organic preservative treatment

Type: Copper azole (CuAz), alkaline copper quaternary (ACQ) or equivalent.

Application: High pressure impregnation.

Moisture content of wood at time of treatment (maximum): 28%.

Condition of treated timber before use: Dry.

Copper chromium arsenic (CCA) preservative treatment

Usage: European legislation restricts new treatment. Submit proposals if use of recycled timber treated with CCA is intended. Copper chromium based preservative treatment (other than CCA).

Type: Chromated copper (CC), copper chromium phosphate (CCP), copper chromium borate (CCB) or equivalent.

Application: High pressure impregnation.

Moisture content of wood at time of treatment (maximum): 28%. After treatment, allow timber to dry before using.

Condition of treated timber before use: Dry and at moisture content specified elsewhere.

Incorporation of treated timber into the Works: Do not use for minimum 14 days after treatment.

Organic solvent preservative treatment

Colour: Colourless.

Usage: Do not use near animals, plants or foodstuffs, or in association with bituminous/ coal tar based materials.

Application: Double vacuum + low pressure impregnation, or immersion.

Moisture content of wood at time of treatment: As specified for the component at time of fixing.

Condition of treated timber before use: Surface dry.

Water based microemulsion preservative treatment

Application: Double vacuum + low pressure impregnation.

Moisture content of wood at time of treatment: As specified for the component at time of fixing.

Condition of treated timber before use: Surface dry.

Boron compound preservative treatment

Usage: Do not use in timber subject to continual wetting.

Application: High pressure impregnation.

Moisture content of wood at time of treatment (maximum): 28%.

Condition of treated timber before use: Dry.

Fire retardant treatment

Application: Vacuum + pressure impregnation.

Moisture content of wood at time of treatment: As specified for the timber/ component at time of fixing.

Condition of treated timber before use: Redried slowly at temperatures not exceeding 65°C to minimize degradation and distortion.

Leach resistant fire retardant treatment

Application: Vacuum + pressure impregnation.

Moisture content of wood at time of treatment: As specified for the timber/ component at time of fixing.

Z20 FIXINGS AND ADHESIVES**GENERAL****Cross-reference**

General: Read with A90 General technical requirements.

Definitions

In this section the following definitions are used:

- Fixing: The act of securing an object to another object or background, e.g. Fix A to B with screws at 200 mm centres.
- Fixings: Systems that fix objects together, composite connection items comprising, e.g. nuts, bolts, washers, spacers, cover caps.
- Fasteners: Components that fix objects together, e.g. screws, nails.

PRODUCTS

Fasteners generally

Materials: To have bimetallic corrosion resistance and atmospheric corrosion resistance appropriate to fixing location.

Appearance: Submit samples on request.

Packings

Material: Noncompressible, corrosion resistant, rot proof.

Area of packings: Sufficient to transfer loads.

Masonry fixings

Light duty: Plugs and screws.

Heavy duty: Expansion anchors or chemical anchors.

Pelleted countersunk fixings

Pellets: Cut from matching timber, grain matched.

Plugs

Type: Proprietary types to suit substrate, loads to be supported and conditions expected in use.

Adhesives generally

Standards:

- Hot-setting phenolic and aminoplastic: To BS 1203.
- Thermosetting wood adhesives: To BS EN 12765.
- Polyvinyl acetate thermoplastic adhesive: To BS 4071.

Pelleted countersunk fixings

Pellets: Cut from matching timber, grain matched.

Powder actuated fixing systems

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

Tools: To BS 4078-2, Kitemark certified.

Operatives: Trained and certified as competent by tool manufacturer.

EXECUTION

Fixing generally

Types, sizes and quantities of fasteners/ packings and spacings of fixings: Selected to retain supported components without distortion and loss of support.

Integrity of supported components: Select types, sizes, quantities and spacings of fixings, fasteners and packings to retain supported components without distortion or loss of support.

Components, substrates, fixings and fasteners of dissimilar metals: Isolate with plastics washers/ sleeves to avoid bimetallic corrosion.

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

Appearance: Fixings to be in straight lines at regular centres.

Fixing packings

Function: To take up tolerances and prevent distortion of materials/ components.

Limits: Do not use packings beyond thicknesses recommended by fixings and fasteners manufacturer.

Locations: Not within zones to be filled with sealant.

Fixing cramps

Cramp positions: 150 mm (maximum) from each end of frame sections and at 600 mm (maximum) centres.

Fasteners: Fix cramps to frames with screws of same material as cramps.

Fixings in masonry work: Fully bedded in mortar.

Pelleted countersunk fixings

Finished level of countersunk screw heads: 6 mm (minimum) below timber surface.

Pellets: Cut from matching timber, match grain and glue in to full depth of hole.

Finished level of pellets: Flush with surface.

Plugged countersunk screw fixing

Finished level of countersunk screw heads: 6 mm (minimum) below timber surface.

Plugs: Glue in to full depth of hole.

Finished level of plugs: Projecting above surface.

Powder actuated fixing systems

Powder actuated fixing tools, method of use: To BS 4078-1.

Operatives: Trained and certified as competent by tool manufacturer.

Applying adhesives

Surfaces: Clean. Adjust regularity and texture to suit bonding and gap filling characteristics of adhesive.

Support and clamping during setting: Provide as necessary. Do not mark surfaces or distort components being fixed.

Finished adhesive joints: Fully bonded. Free of surplus adhesive.

Z21 MORTARS

GENERAL

Cross-reference

General: read with A90 General technical requirements.

PRODUCTS

Admixtures for site made cement gauged and hydraulic lime:sand masonry mortars

Air entraining (plasticizing) admixtures: To BS EN 934-3 and compatible with other mortar constituents.

Prohibited admixtures: Calcium chloride, ethylene glycol and any admixture containing calcium chloride.

Cements for mortar

Cement: To BS EN 197-1 and CE marked.

- Type: Portland cement, CEM I. Portland limestone cement, CEM II/A-L or CEM II/A-LL. Portland slag cement, CEM II/B-S, Portland fly ash cement, CEM II/B.
- Strength class: 32.5, 42.5 or 52.5.

White cement: To BS EN 197-1 and CE marked.

- Type: Portland cement, CEM I.
- Strength class: 52.5.

Sulfate resisting Portland cement.

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

Masonry cement: To BS EN 413-1 and CE marked, class MC 12.5.

Lime:sand for cement gauged masonry mortars

Ready mixed:

- Standard: To BS EN 998-2.
- Lime: Nonhydraulic to BS EN 459-1, type CL 90S.
- Pigments for coloured mortar: To BS EN 12878.

Site made:

- Permitted use: Where a special colour is not required and in lieu of factory made ready-mixed material.
- Lime: Nonhydraulic to BS EN 459-1, type: CL 90S.
- Mixing: Thoroughly mix lime with sand, in the dry state. Add water and mix again. Allow to stand, without drying out, for at least 16 hours before using.

Retarded ready to use cement gauged masonry mortars

Standard: To BS EN 998-2.

Lime for cement:lime:sand mortars: Nonhydraulic to BS EN 459-1.

- Type: CL 90S.

Pigments for coloured mortars: To BS EN 12878.

Time and temperature limitations: Use within limits prescribed by mortar manufacturer.

- Retempering: Restore workability with water only within prescribed time limits.

Sand for lime:sand masonry mortars

Type: Sharp, well graded.

- Quality, sampling and testing: To BS EN 13139.

Sand for site made cement gauged masonry mortars

Standard: To BS EN 13139.

- Grading: 0/2 (FP or MP). Fines content where the proportion of sand in a mortar mix is specified as a range (e.g. 1:1: 5 – 6): Lower proportion of sand, use category 3 fines. Higher proportion of sand, use category 2 fines.

Sand for facework mortar: Maintain consistent colour and texture. Obtain from one source.

EXECUTION

Making cement gauged mortars

Batching: By volume. Use clean and accurate gauge boxes or buckets.

- Mix proportions: Based on dry sand. Allow for bulking of damp sand.

Mixing: Mix materials thoroughly to uniform consistency, free from lumps.

- Mortars containing air entraining admixtures: Mix mechanically. Do not overmix.

Working time (maximum): Two hours at normal temperatures.

Contamination: Prevent intermixing with other materials.

Ready prepared lime putty

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

- Maturation: In pits/ containers that allow excess water to drain away.
- Density of matured lime putty: 1.3–1.4 kg/L.

Maturation period before use (minimum): 30 days after slaking.

Making lime:sand mortars

Batching: By volume. Use clean and accurate gauge boxes or buckets.

Mixing: Mix materials thoroughly to uniform consistency, free from lumps.

- Site prepared nonhydraulic lime:sand mortars: Use roller pan mixer. Mix materials thoroughly by compressing, beating and chopping. Do not add water. Maturation period before use (maximum) 7 days.
- Site prepared hydrated hydraulic lime:sand: Follow the lime manufacturer's recommendations for each stage of the mix. Water quantity, only sufficient to produce a workable mix. Working time, within limits recommended by the hydraulic lime manufacturer.

Contamination: Prevent intermixing with other materials, including cement.

Ready to use nonhydraulic lime:sand mortars

Type: Select from:

- Lime putty slaked directly from quicklime to BS EN 459-1 and mixed thoroughly with sand.
- Quicklime to BS EN 459-1 slaked directly with sand.

Maturation period before use (maximum): 7 days.

222 SEALANTS

EXECUTION

610 SUITABILITY OF JOINTS

- Presealing checks:
 - Joint dimensions: Within limits specified for the sealant.
 - Substrate quality: Surfaces regular, undamaged and stable.

620 PREPARING JOINTS

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

630 APPLYING SEALANTS

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

SECTION THREE - SCHEDULE OF WORKS		
Item	Description of Works	Tender costs (£)
	<p><u>PRELIMINARIES</u></p> <p>To be read in conjunction with LHL Group drawings/ details and preliminaries / preambles (reference specification) as listed below:</p> <p>LHL Drawings:</p> <p>Y-MP-6290-18-Existing Site Plan SK01 Y-MP-6290-18-Ground Floor Plan(Demolition marked on)SK02 Y-MP-6290-18-First Floor Plan SK03 Y-MP-6290-18-Section A-A -SK04 Y-MP-6290-18-Section B-B-SK05 Y-MP-6290-18-Section C-C-SK06 Y-MP-6290-18-Location Plan-SK07 Y-MP-6290-18-Proposed Site Plan-SK08 Y-MP-6290-18-New Floor Detail-SK09</p> <p><u>Preliminaries</u> To include: Items under section 1 Preliminaries and Section 2 Preambles All management staff, site accommodation, services and plant Temporary Works Building Manual at completion and all other documents appended to the Specification of Works.</p> <p>This Schedule of Works should not be treated as total.</p> <p>The Contractor is to include within his tender for all work shown on the Drawings and in the Specification.</p> <p>This Schedule of Works provides for the breakdown of the Contract Sum to assist with the valuations of both interim certificates and variations. It is not to be taken as an exhaustive list of work required for the completion of the works. The Contractor is to price the whole of the works shown or inferred on the drawings and described in this Schedule. The Contractor is deemed to have visited the Site and to have fully acquainted himself with the nature and extent of the Works. If, in the opinion of the Contractor, this Schedule of Works does not provide a sufficient breakdown of the items for pricing purposes then the Contractor is to include here the price of such works and supply a separate detailed list of the works covered by such items.</p> <p><u>WORK BY OTHERS</u> Caravan Delivery</p>	
3.1	<u>TEMPORARY ACCOMODATION WORKS</u>	
3.1.1	Allow for drainage connection into existing manhole for caravan as detailed on drawing Y-MP-6290-18-Existing Site Plan-SK01	
3.1.2	Excavate trenches across road for temporary electric, BT and water feed to caravan, backfill with earth and gravel topping as existing.	
3.1.3	Allow for connecting 240V mains electric and 20mm polypipe water supply from the House for the temporary caravan. All cables to compliant with the relevant British Standards.	
	<i>Consumer unit to Caravan located inside the Caravan. Caravan requires 40 amp incoming. To be checked onsite by qualified Electrician.</i>	
3.1.4	Allow for adapting existing BT phone line to feed caravan.	
3.1.5	Compact surface to base of caravan 35 x 12 ft and provide paving slabs for caravan legs to sit on.	
3.1.6	Allow for disconnecting temporary services on completion of the main house works.	
3.2	<u>DEMOLITION AND ALTERATIONS</u>	
	<u>GENERALLY</u>	

SECTION THREE - SCHEDULE OF WORKS		
Item	Description of Works	Tender costs (£)
3.2.1	Make safe all electrical equipment to Ground Floor.	
3.2.2	Make safe Ground Source Heat Pump	
3.2.3	Allow two men two days for removing loose furniture and fittings and relocating.	
3.2.4	Make provision for dust protection to First floor.	
	<u>INTERNALLY</u>	
3.2.5	Allow for suspending and strapping all equipment within Lockable store and Electrical cupboard to allow the remedial flooring works. (Comprising GSHP, Heat Exchange Unit, Meter Boxes, Electrical consumer unit.)	
3.2.6	Take out existing sanitary fittings comprising WC, WHB, shower tray and shower fittings. Cap off all ends of pipework.	
3.2.7	Take out existing boxing to back of WC and Wash hand basin and clear away. SVP to be retained in position.	
3.2.8	Carefully disconnect wood burner from flue, store onsite prior to refitting.	
3.2.9	Strip existing ground floor finish complete with bedding and clear away.	
3.2.10	Take off existing ground floor skirting boards and clear away.	
3.2.11	Take off existing ceramic tiles above Kitchen work tops and clear away.	
3.2.12	Take off existing ceramic tiles above wash hand basin and clear away.	
3.2.13	Take out existing Kitchen and Utility fittings, sinks, taps, cap off all ends of pipework and clear away.	
3.2.14	Strip existing 22mm WBP plywood deck and clear away	
3.2.15	Strip existing ground floor U/F heating system including tray, supports, pipework, manifold and clear away.	
3.2.16	Take out existing rockwool insulation between joists and clear away.	
3.2.17	Cut out existing floor joists and clear away.	
3.2.18	Carefully take off existing internal doors (12nr) and clear away.	
3.2.19	Take out existing stud partitions as indicated on Drawing No Y-MP-6290-18-SK01	
3.2.20	Carefully take out first flight of existing staircase, store onsite prior to refitting.	
3.2.21	Allow for propping steps to home office.	
3.2.22	Allow for relocating Gun Cupboard upstairs and reinstating to original position on completion of the ground floor works.	
3.3	<u>WORK UP TO TOP OF GROUND FLOOR SLAB</u>	
	<u>NOTE: All spoil to be disposed off site to approved landfill</u>	
3.3.1	Excavation to existing subbase to required depth and dispose off site.	
3.3.2	Construct ground floor slab comprising 150mm concrete type C30 insitu slab reinforced with and including layer of A252 fabric reinforcement lapped at joints; covered with 150mm Kingspan K103 Kooltherm insulation laid break bond and with tight butt joints on layer of 1200 gauge Visqueen damp proof membrane as separation layer with taped and sealed joints; the concrete laid on and including layer of 1500 gauge Visqueen Zedex CPT high performance damp proof membrane with taped and sealed joints on 142mm thick hardcore sub base with 40mm sand blinding , including all weed killer, earthworks support and compacting sub base, blinding and bottoms.	
3.3.3	Allow for turning up top layer of 1000 g Visqueen sheeting at external and internal cavity walls up face of isolation joint. - new floor construction	

SECTION THREE - SCHEDULE OF WORKS		
Item	Description of Works	Tender costs (£)
3.3.4	Allow for turning up top layer of 1000 g Visqueen sheeting at internal block columns up face of isolation joint. - new floor construction	
3.3.5	Allow for forming holes etc. as required for WC outlet pipes, drainage pipes, incoming services etc.	
3.3.6	Allow an additional 20m3 of fill type 1 MOT limestone to make up levels including compacting in layers etc. (Provisional Item)	
3.4	<u>INTERNAL WALLS AND PARTITIONS</u>	
3.4.1	Construct internal timber stud partitions comprising 50 x 100mm tanalised timber studs at 450mm centres vertically and 600mm centres horizontally	
3.4.2	Allow for forming openings for internal doors including all additional timber studs around openings	
3.4.3	Allow 10m2 of patressing to internal stud for fixing of shower fittings, tv brackets, shelving etc. (Provisional Item)	
3.5	<u>INTERNAL DOORS</u>	
	<u>Supply and Fix Suffolk Internal Oak Door Range from XL Joinery , all to receive clear finish, each door leaf with three hinges ; complete with all fixings etc.</u>	
	<u>Ground Floor</u>	
3.5.1	Structural opening to suit door size 838 x1981 (4nr)	
3.5.2	Structural opening to suit door size 762 x1981 (2nr)	
3.5.3	Structural opening to suit door size 668 x1981 (1nr)	
	<u>First Floor</u>	
3.5.4	To existing door opening - door size 762 x 1981 (5nr)	
3.5.5	Supply and fix Architraves to match existing including all mitred angles - Ground Floor	
3.5.6	Allow for all pointing around architraves etc in clear sealant.	
3.5.7	Allow for upgrading doors to as required to meet Building Regulations, Fire Safety. Including associated Intumescent strips, smoke seals etc.	
3.5.8	Allow for fixing mortice latch, lever handles to all new doors.	
3.5.9	Allow the provisional sum of £1,000.00 for supply of Ironmongery.	
3.6	<u>WALL FINISHES</u>	
3.6.1	9mm Gyproc plasterboard and 3mm skim coat plaster to be internal timber stud partitions.	
3.6.2	Allow for Moisture resistant plasterboard to Shower, Kitchen and Utility Room.	
3.6.3	Allow for making good plaster work where wall removed / surface damaged, including all preparation, plasterboard, jointing to existing plaster and all narrow widths, reveals, stainless steel angle beads etc.	
3.6.4	Allow for all cutting boards, additional supports and plywood strengthening panels etc. as required for the Plumbing, Mechanical and Electrical Installations.	
3.6.5	Supply and fix 150 x 150mm Ceramic wall tiling - Snow Crackle 10x20 metro tile by Fabresa (Spain) - on plastered walls including all waterproof bedding and grouting, all narrow widths, reveals, tile trims, expansion joints at internal angles and sealing same, stainless steel angle beads etc. - 450mm high from top of base units - Kitchen, Utility Room	
3.6.6	Supply and fix 250 x 175mm Ceramic wall tiling - Snow Crackle 10x20 metro tile by Fabresa (Spain) - on plastered walls including all waterproof bedding and grouting, all narrow widths, reveals, tile trims, expansion joints at internal angles and sealing same, stainless steel angle beads etc. - full height to shower area and 400 x 400mm above WHB.	

SECTION THREE - SCHEDULE OF WORKS		
Item	Description of Works	Tender costs (£)
3.7	<u>FLOOR FINISHES</u>	
3.7.1	Provide and lay 65mm Easy Flow cement and sand screed to underfloor heating system.	
3.7.2	Allow for ensuring isolation joint at base of walls is intact before pouring screed.	
3.7.3	Supply and lay 200 x 200 x 10mm Ceramic floor tiling - Legend Nuez 60x60 floor tile by Cicogres (Spain) - on and including separating membrane on screeded floor, waterproof grouting and pointing and allow for all levelling screed as necessary - To new ground floor (excluding sitting Room)	
3.7.4	Supply and lay Carpet - Calvert Carpets Ltd - Wool Textured - Resort- Colour- Champagne- complete with underlay and all grippers to edges etc., strictly in accordance with the manufacturers instructions to Staircase run and Sitting Room.	
3.7.5	Allow for all Oak thresholds for all doorways and junctions with a differing floor finishes.	
3.7.6	Supply and fix wrought softwood skirtings including all mitres, ends etc to match existing - All of ground floor to match existing layout.	
3.7.7	Allow for pointing top of skirting with approved clear silicone sealant..	
3.8	<u>CEILING FINISHES</u>	
3.8.1	Allow for making good plaster work where wall removed / surface damaged, including all preparation, plasterboard, jointing to existing plaster and all narrow widths, reveals, stainless steel angle beads etc.	
3.8.2	Allow for Moisture resistant plasterboard to Locker store, Shower, Kitchen and Utility Room.	
3.9	<u>STAIRCASE</u>	
3.9.1	Refix staircase flight and make good finishes where disturbed.	
3.10	<u>FITTINGS</u>	
	<u>Supply and fix Howden Greenwich Gloss range Utility Fittings manufactured by Howden Joinery Co including assembling, jointing etc. as required complete with all blank ends, plinths, pelmets cornices, angle brackets, fixing brackets, jointing materials etc. Utility layout to match existing.</u>	
3.10.1	Supply and fix Bullnose matt laminate 38mm worktops - 600mm deep to Utility Counter.	
3.10.2	Allow for sealing around tops of worktops etc. with approved white silicone sealant.	
3.10.3	Supply and fix Lamona Windermere single bowl sink - Right hand drainer and Lamona Chrome Arroscia 3 in 1 hot water tap - Product ref SNK6026 - Plumbing connections in M&E section.	
3.10.4	Allow for 94mm Chrome Effect cup handles to drawers -Product reference HKB1327	
3.10.5	Allow for 33mm Chrome Effect knob handles to cupboard to doors - Product reference HKB1339	
	<u>Supply and fix Howden Burford Tongue and Groove range Kitchen Fittings manufactured by Howden Joinery Co including assembling, jointing etc. as required complete with all blank ends, plinths, pelmets cornices, angle brackets, fixing brackets, jointing materials etc. Kitchen layout of base units and wall units to match existing.</u>	
3.10.6	Supply and fix Pre-finished Oak Block 40mm worktop to top of kitchen counter.	
3.10.7	Allow for sealing around tops of worktops etc. with approved white silicone sealant.	
3.10.8	Allow for extractor hood to match burford tongue and groove range.	
3.10.9	Supply and fix Lamona Windermere single bowl sink - Left hand drainer and Lamona Chrome Arroscia 3 in 1 hot water tap - SNK6021- Plumbing connections in M&E section.	
3.10.10	Allow for 94mm Chrome Effect cup handles to drawers -Product reference HKB1327	
3.10.11	Allow for 33mm Chrome Effect knob handles to cupboard to doors - Product reference HKB1339	

SECTION THREE - SCHEDULE OF WORKS		
Item	Description of Works	Tender costs (£)
3.11	<u>PLUMBING INSTALLATIONS</u>	
	<u>SANITARY FITTINGS</u>	
3.11.1	Supply and Fix the following Sanitary Fittings complete with overflow, taps, waste fitting, trap, flush pipes etc., jointing component parts and all fixings (Soil and waste pipework to drains and water services pipework measured separately)	
3.11.2	Vitreous china washbasin complete with taps plug, waste fitting, trap; allow Supply PC Sum £350.00 including all taps; fixed to timber boxing, Ground Floor WC	
3.11.3	Vitreous china washbasin complete with taps plug, waste fitting, trap; allow Supply PC Sum £350.00 including all taps; fixed to timber boxing - Ground Floor WC	
3.11.4	Shower tray and shower door complete with shower fitting, waste fitting, trap; allow Supply PC Sum £800.00 including tray, door and shower fitting; fixed to timber stud / screeded floor - Ground Floor WC	
3.11.5	Vitreous china bath complete with taps, plug, waste fitting, traps; allow Supply PC Sum £800.00 including all taps; fixed to metal stud partition walls - to Bedroom 1 Ensuite.	
3.11.6	Allow for sealing around all Sanitary fittings with approved white silicone sealant.	
3.11.7	Allow for fixing toilet roll holders, towel rails, soap dishes, shelves, mirrors etc. to Ground Floor WC	
3.12	<u>PIPEWORK AND FITTINGS</u>	
3.12.1	Supply and fix waste pipework to all Sanitary fittings including all connections to drains - Ground Floor - sink and Washing Machine in Utility Room Shower, WC and wash hand basin in Bathroom.	
3.12.2	Alter SVP to Kitchen fittings to incorporate rodding eye with access panel through kitchen base unit for future maintenance.	
3.12.3	Supply and fit all 42mm waste pipework etc. to Kitchen Fittings etc. including all connections to drains - sink unit; Integrated dishwasher	
3.12.4	Allow for all short connection to hot and cold water services provided in Mechanical Installations to Kitchen fittings - sink unit, Integrated Dishwasher; Refrigerator	
3.12.5	Allow for all pipe boxings to exposed pipework etc. for Plumbing Installations comprising 12.5mm plasterboard with skim finish, framework, access panels, 25mm insulation materials wrapped around pipework etc.	
3.12.6	Allow for all operating and maintenance manuals.	
3.13	<u>MECHANICAL SERVICES INSTALLATION</u>	
3.13.1	The mechanical sub-contractor shall be responsible for the design, installation and testing of the new mechanical services installation in accordance with the drawings and performance specification. The mechanical services installation is to be designed and installed in accordance with Building Regulations,BSRIA,CIBSE regulations, COSHH (Control of Substances Hazardous to Health) Regulations and relevant British Standards. -Winter: 21°C; -Summer: Shall not exceed 28°C	
3.13.2	Allow for reconnecting & recommissioning existing GSHP and Heat Exchange Unit on completion of the remedial flooring works.	
3.13.3	Design, Supply and Install new underfloor heating system throughout ground floor.	
3.13.4	Allow for connecting first floor under floor heating to new manifold.	
3.13.5	Design, supply and install hot and cold water pipework where removed following remedial works.	
3.13.6	Design, supply and install thermal insulation to pipework to include within voids against condensation.	

SECTION THREE - SCHEDULE OF WORKS		
Item	Description of Works	Tender costs (£)
3.13.7	Mechanical Services installation is to be designed with no noise or vibration caused by plant and equipment with anti-vibration mounts, noise attenuation, sound deadening enclosures and cross-talk attenuators between rooms as necessary.	
3.13.8	Allow for all Preliminaries and Conditions of Contract in connection with the Mechanical Installation including all Health and Safety/CDM - this to include all general attendances, disposal of waste etc.	
3.13.9	Allow for all builders work in connection with the Mechanical Installations including making good finishings.	
3.13.10	Allow for all fire collars and weathering slates etc. where pipework passes through fire walls/ external walls.	
3.13.11	The design of the M&E installation is to be fully coordinated to identify clashes within fixings within the voids, partitions etc.	
3.13.12	All pipework is to be hidden within voids / chased in where possible. Allow for all pipe boxings to exposed pipework etc. for Plumbing Installations complete with 12mm MDF, framework, access panels, 25mm insulation materials wrapped around pipework etc. Finish in accordance with painting and decorating clauses.	
3.13.13	Allow for all seasonal commissioning and providing O & M Manuals upon completion. Commissioning is to be carried out in compliance with Building Regulations and BSRIA / CIBSE regulations.	
3.14	<u>ELECTRICAL SERVICES INSTALLATION</u>	
3.14.1	The electrical sub-contractor shall be responsible for the design, installation and testing of the complete electrical services installation in accordance with the drawings and performance specification. The electrical services installations is to be designed and installed in accordance with BS 7671 - Requirements for Electrical Installations (IEE Wiring Regulations), BS 5266, Building Regulations and Fire Officer requirements.	
3.14.2	Design, supply and install new lighting and switching where removed undertaking remedial works.	
3.14.3	Allow for all work in amending existing fire alarm system to suit layout following remedial works.	
3.14.3	Allow for all work in amending existing smoke detection system to suit layout following remedial works.	
3.14.4	Design, supply and install small power installations to suit layout following remedial works.	
3.14.5	Allow for reconnecting first floor circuit lighting, switching, small power, fire alarm, smoke detection etc.	
3.14.6	Design, supply and install all electrical works as required by the heating and ventilation sub-contractor based on drawings and specification.	

SECTION THREE - SCHEDULE OF WORKS		
Item	Description of Works	Tender costs (£)
3.14.7	Design, supply and install the earthing and bonding as required by the installation and in accordance with the relevant British Standards.	
3.14.8	Allow for all Preliminaries and Conditions of Contract in connection with the whole of the Electrical Installation including all Health and Safety/CDM - this to include all general attendances, disposal of waste etc.	
3.14.9	Allow for all builders work in connection with the whole of the Electrical Installations including making good finishings.	
3.14.10	Allow for testing and commissioning and O & M manuals upon completion.	
3.14.11	Allow for additional twin socket to wall directly opposite staircase flight.	
3.15	<u>PAINTING AND DECORATING</u>	
3.15.1	Prepare and apply one mist and two full coats of Diamond High Performance eggshell to plastered walls including all reveals - to Ground Floor Home Office, Hall / Staircase, Sitting Room. First Floor Bed 1, Bed 2, Bed 3, Hall / Staircase area.	
3.15.2	Prepare and apply one mist and two full coats of Diamond Matt Light and Space to plastered walls including all reveals - to Ground Floor, Kitchen / Dining, Utility Room, Bathroom, Lockable Store; First Floor Bathroom and Cylinder cupboard.	
3.15.3	Extra over for multi-coloured work including cutting in and cutting to line -to Sitting Room, Bedroom 1	
3.15.4	Allow for working around plant, tanks etc	
3.15.5	Prepare, prime and apply one undercoat and two coats gloss paint on existing window boards not exceeding 300mm girth.	
3.15.6	Prepare, prime and apply one undercoat and two coats gloss paint on Skirting boards and architraves not exceeding 300mm girth. Throughout Ground Floor and First Floor.	
3.15.7	Prepare, prime and apply one undercoat and two coats gloss paint on staircase string over 300mm girth.	
3.16	<u>DRAINAGE AND EXTERNAL WORKS</u>	
3.16.1	Construct 110mm Polypipe twinwall perforated land drainage system in including all excavation, cover and backfill in accordance with Drawing Y-MP-6290-18-Proposed Site Plan-SK08 ,manufacturers instructions and with current Statutory Regulations	
3.16.2	Excavate to reduce level of mound as denoted on Drawing Y-MP-6290-18-Proposed Site Plan-SK0 to existing ground level And dispose off site.	
3.16.3	Allow for grass seeding to land drain backfill	
3.16.4	Take up 8 nr paving slabs and reinstate on completion of the land drainage works.	
3.17	<u>OTHER WORK</u>	
3.17.1	The Contractor is to detail any other works necessary to complete the works as detailed on the Tender Drawings and not listed herein this work schedule. (a) (b) (c)	
3.18	<u>Contingency & Provisional Sums</u> Please refer to Section 4.	
	TOTAL	

SECTION FOUR - PROVISIONAL AND PRIME COST SUMS		
Item	Description of work	Tender Cost (£)
	<p>DAYWORKS</p> <p>Where work cannot properly be measured and valued, the contractor shall be allowed to the Prime Cost of such works calculated in accordance with "The Definitions of Prime Cost of Daywork carried out under a Building Contract" Second Edition, 1st December, 1975, issued by the Royal Institution of Chartered Surveyors and the National Federation of Building Traders Employers, together with the per cent addition as to each section of the Prime Cost at the rates inserted below. Dayworks will only be permitted in exceptional circumstances. It is intended that the works will be measured and valued using the Schedule of Works or, where these are not applicable, fair rates will be used.</p> <p>Daywork carried out under of incidental to the Building Contract</p> <p>Include the provisional sum of £1,000.00 Pounds for the prime cost of labour as defined as defined in "The Schedule of Basic Plant Charges, third revision (1981)" issued by the Royal Institution of Chartered Surveyors.</p> <p>Add for overheads as defined and profit. %</p> <p>Include the provisional sum of £1,000.00 Pounds for the; prime costs of plant as defined in "The Schedule of Basic Plant Charges, third revision (1981)" issued by the Royal Institution of Chartered Surveyors.</p> <p>Add for overhead as defined as profit. %</p> <p>MATERIALS AND GOODS</p> <p>Include the provisional sum of £500.00 Pounds for the prime cost of materials and goods as defined in "The Schedule of Basic Plant Charges, third revision (1981)" issued by the Royal Institution of Chartered Surveyors.</p> <p>Add for overhead as defined as profit. %</p> <p>CONTINGENCIES</p> <p>Provide the sum of £5,000.00 Pounds for contingencies.</p> <p>PROVISIONAL SUMS</p> <p>The following sums for defined works to be expended on the instruction of the Architects. The contractor must make allowance for the programming, etc. for work specified as a Provisional Sum.</p> <p>Allow a provisional sum of <u>£2,000.00</u> for new staircase flights.</p> <p>Allow a provisional sum of <u>£2,500.00</u> for carpeting First Floor.</p> <p>Allow a provisional sum of <u>£1,000.00</u> for works in connection with M&E.</p> <p>Allow a provisional sum of <u>£7,000.00</u> for replacement Mechanical GSHP fittings.</p>	

