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Q50

Site/Street furniture/equipment

This guide provides an introduction to writing specifications for site/street furniture and equipment and should be read in conjunction with the guide Introduction to Writing Architectural Specifications. Together these guides provide an in depth reference for the development of specifications based on a simple framework that can be applied to projects of all sizes.

Contents

This guidance note covers the prescriptive specification of site/street furniture and equipment.

Where purpose made timber items are required (e.g. timber decking or pergola) and constituent timbers provide a structural role the Strength Class and Grade of timber specified will need to be considered and specified appropriately. For further details refer to Specification Guide for Works Section G20 Carpentry/Timber framing/First fixing.

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Design Considerations

Site/Street furniture and equipment typically comprise:

- Finished products where the Contractor is required to carry out their installation only, e.g. bollards.
- Purpose made items where the Contractor is responsible for the manufacturer/assembly and installation, e.g. timber decking.

The overall performance requirements of individual items of furniture and equipment must satisfy the specific requirements of the project. Project requirements include functional and aesthetic criteria as well budget; design life; time and environmental considerations. Once established the key characteristics and associated levels of performance required for furniture and equipment can be identified.

The selection of products and materials should be undertaken in consultation with suppliers and with reference to relevant British Standards and Statutory Regulations.

Steel Products

Ordinary steel (carbon steel) is susceptible to corrosion and staining when exposed to air and moisture. As a result it is generally unsuitable for use in external furniture and equipment. Durable steel alloys or coated steel materials however provide a high level of resistance to corrosion.

Stainless Steel

Austenitic stainless steel is a steel alloy that is both very durable and highly resistant to staining. While having a higher resistance to corrosion it is not immune and corrosion can appear as pitting to the surface lowering the overall quality of the material finish. The risk of corrosion depends on the grade of stainless steel used and environmental conditions.

There are two main grades of Austenitic stainless steel:

- Grade 304 (1.4301): suitable for general use where there is less risk of contamination from acids and chemicals.
- Grade 316 (1.4401): provides increased resistance to corrosion from acids and chemicals. As a result it is suitable where high sodium chloride levels in the air can degrade other types of stainless steel, e.g. marine locations.

Coated Steels

A protective coating may be applied to steel in order to help prevent corrosion:

- Galvanised Steel: Steel that has been coated with a thin layer of zinc. Galvanised steel offers good resistance to abrasion but is generally suitable for use in corrosive environments, e.g. marine environments.

- Polyester Powder Coated Steel: steel that has been coated with a thin layer of polyester. Although coatings have limited chemical and wear resistance, polyester powder coatings are durable and provide good resistance to UV and colour stability.
- Plastic Coated Steel. Coatings also provide good resistance against chemical attack, UV and abrasion. Because plastic is a poor conductor it is not cold to touch making it a suitable finish for external handrails, etc.

Where coated steels are worked or damaged exposed steel surfaces must be re-coated to ensure continuity of protection against corrosion.

Plastic and Plastic Composite Products

Medium Density Polyethylene (MDPE), High Density Polyethylene (HDPE) and Recycled Plastic Composite (RPC) are used as substitutes for traditional timber, concrete and steel materials. The type and proportions of recycled content used to manufacture each different material varies although the properties they possess are broadly similar.

They are impervious to water, insect and fungal ingress and as a result will not rot or corrode. They are UV stabilised, resistant to chemical attack and do not require any surface treatment. These properties make it suitable for areas where there is an increased risk of physical attack

Timber Products

A number of characteristics of timber need to be considered in the selection of site/street timber furniture/features to ensure they meet requirements with respect to functional, aesthetic and design life criteria.

Durability

The durability of wood depends upon its ability to withstand various forms of biological attack, primarily fungal (causing dry and wet rot) and insect attack. As natural characteristics of wood vary from species to species so does durability. BS EN 350-2 identifies the durability of common soft and hardwood species to fungal and different forms of insect attack.

For internal timber fittings durability against insect attack will form the principal concern while for external fittings fungal attack is likely to pose the greater risk.

Durability against fungal attack is defined within BS EN 350-2 using a five class system:

- Class 1 Very durable.
- Class 2 Durable.
- Class 3 Moderately durable.
- Class 4 Slightly durable.
- Class 5 Not durable.

These durability classes only relate to the fungal attack of Heartwoods, all Sapwoods are classified as 'not durable'.

Durability classes established in accordance with BS EN 350-2 provide an indication of performance when the wood is in contact with the ground (equal to conditions defined by Class 4 within BS 335-1). Where wood is not in contact with the ground its treatability (its water absorption characteristics) will also influence the service life of the wood, i.e. wood that is less absorbent for a given durability class will last longer than a wood that is more absorbent.

Where a wood does not provide the desired level of durability for its end use and location it may be treated with preservative.

Moisture Content

Variations in moisture content of timber cause the wood to expand and contract, mainly across the grain. As a result timber that has not been dried to the appropriate moisture content will be subject to shrinkage, warping and splitting.

BS 8000-5 provides recommended maximum moisture content levels for non structural/ungraded timber and joinery:

- External Timber: 24% (sheltered, unheated locations).
- External Joinery: 16% +/- 2%.

While there are no recommendations on minimum levels of moisture content, to avoid the likelihood of movement, etc, it is recommended that timber products do not have a moisture content significantly below that recommended for their final environment.

Treatment of Timber

BS EN 335-1 defines five different service situations that wood and wood based products may be exposed to by reference to User Classes, these are:

Class 1 Interior covered (dry).

Class 2 Interior or exterior (occasionally wet).

Class 3.1 Exterior, above ground and protected (occasionally wet).

Class 3.2 Exterior, above ground and unprotected (frequently wet).

Class 4.2 Exterior, in ground contact and/or fresh water (predominantly or permanently wet).

Class 4.2 Exterior, in ground (severe) and/or fresh water (permanently wet).

Class 5 In salt water (permanently wet).

These User Classes provide a means of reporting the suitability of treated and untreated wood and wood products for different end use environments. It also provides a means for specifying the level of preservative treatment required.

There are a large range of preservatives that can be used to treat timber. These may be broadly defined as either being copper based or non metallic.

Copper based preservatives may corrode certain metal products (including fasteners, hardware and flashing). To prevent premature corrosion and failure it is important to follow the recommendations of the manufacturer for all metal products.

Some non metallic treatments, do not become fixed in the wood and can readily leach out overtime. The need to re-apply preservative at regular intervals should be taken into consideration.

Appearance Quality

Timber: Graded and Ungraded

Graded timbers, suitable for structural uses, are Strength Graded visually or by machine, in accordance with BS EN 14081. For visual grading, compliance with BS EN 14081 is achieved through adherence to BS 4978 (softwoods) and BS 5756 (hardwoods).

Visual Strength Grading of timber is based on the assessment of certain characteristics. The grade given depends on the limits of these characteristics, i.e. the size of knots.

Ungraded timbers must not be used for structural purposes and are classified by Quality Grade. The Quality Grade is determined by visual assessment of different characteristics in accordance with BS EN 1611 (softwoods), BS EN 975-1 (Beech and Oak) and BS EN 975-2 (Poplars).

For further details on the appearance quality of timbers refer to Specification Guide for Works Section G20 Carpentry/Timber framing/First fixing.

Joinery: Appearance Quality

BS EN 942 sets out the requirements for the grading and classification by Appearance Quality of timber joinery products or individual joinery elements. The Standard is applicable to timber used at the time of product manufacture and the evaluation of the product itself.

Appearance Quality is assessed according to the size and clustering of knots and assessment of seven other types of defect. Timbers for joinery are classified into different classes ranging from J2 to J60.

Quality is defined by the maximum permissible diameter of knots within the timber in millimetres, prefixed with the letter 'J', i.e. J2 equates to timber with a maximum knot size of 2mm.

Timber Certification

The UK Government's timber procurement policy requires that all timber and wood-derived products must be independently verifiable and either from a:

- Legal and Sustainable source; or
- FLEGT-licensed or equivalent source;

The policy is mandatory for all Central Government Departments, Executive Agencies and Non Departmental Public Bodies. Local Authorities, and other public bodies.

The policy provides a recognised benchmark and its adoption within the private sector is encouraged by the Government and may be considered as general good practice when specifying timber based products.

Compliance with the UK Government timber procurement policy is achieved by ensuring that Contracts contain a suitably worded condition. Usually this will take the form of an appropriately worded clause within the Specification or Contract Preliminaries.

In order to assist compliance with the policy the government has identified two types of evidence that can be used to demonstrate the legality and sustainability of timber and timber products:

- Category A : Certification of materials under one of the approved schemes.
- Category B: All other forms of evidence, for example audit statements, government documentation or supplier declarations.

The use of certified materials provides the most common and simplest form of ensuring compliance. Four certification schemes have been confirmed by The UK Government's Central Point of Expertise on Timber (CPET) as demonstrating that timber and wood products come from legal and sustainable sources. These are:

- FSC (COC): Forest Stewardship Council Chain of Custody.
- PEFC: Programme for the Endorsement of Forest Certification Schemes.
- CSA: Canadian Standards Association.
- SFI: North American Sustainable Forest Initiative.

The PEFC is an "umbrella scheme" which endorses national schemes, including the Canadian scheme (CSA) and the North American (SFI) schemes. It is the UK Government's policy to treat all four schemes as equivalent when purchasing timber and wood products.

Concrete Foundations

Key characteristics of concrete include its strength, resistance to chemical attack and consistency. Performance classifications for each of these characteristics are set out in BS EN 206-1.

Strength Classes

The compressive strength of concrete can be determined by means of Cylinder or Cube strength tests. Each test provides differing results and care therefore needs to be taken to ensure the method of determining the compressive strength of the concrete is set out.

In accordance with BS EN 206-1 Strength Classes are denoted by a number, prefixed by the letter 'C', indicating the value of compressive strength in N/mm² determined using the Cylinder Strength test and a second number indicating compressive strength in N/mm² determined using the Cube Strength test, e.g. C8/10.

The Strength Class of concrete required will depend on the recommendations of the product manufacturer, where given. Where no guidance is provided by the manufacturer it may be assumed that a Strength Class associated with common foundations will be sufficient unless any special loading requirements are identified.

Design Chemical Class (DC Class)

The ability of concrete to resist chemical attack is denoted by Design Chemical Classes. This is indicated by the prefix 'DC' followed by the type/level of resistance on a scale of 1 (low resistance suitable for normal ground conditions) to 4 (high resistance). Further suffixes, detailed in BS EN 206-1, are also used to indicate specific resistance to certain chemicals and conditions.

The level of resistance required will depend upon the level of contamination within the ground. Where sulfates or other aggressive chemicals are present in the ground BS EN 206-1 should be referenced to ensure the correct level of resistance to chemical attack is specified.

Consistency Class

Consistency Class indicates that the ease with which concrete flows and is denoted by a number, prefixed by the letter 'S'. S1 results in the least slump to S4 highest.

Suitable Consistency Class for kerb bedding and backing is S1 and for general foundations S3.

Method of Specification

BS 8500-1 sets out five different methods for specifying concrete. These are:

- Designated Concretes: specification of pre-assigned concrete mixes using classification system set out in BS 8500-1. To ensure compliance with the standard a production conformity certificate must be held by the producer.
- Designed Concretes: typically used where the required level of performance is not covered by Designated Concretes.
- Prescribed Concretes: where the exact composition of the concrete is specified.
- Standardized Prescribed Concretes: classified according to compressive strength from ST1 to ST5, standardised prescribed concretes are used where concrete is site batched or the concrete is obtained from a supplier who does not possess a product conformity certification, necessary for the supply of Designated Concretes.
- Proprietary concretes: where the required performance of the concrete is specified and the composition of the concrete is determined by the manufacturer.

In most circumstances concrete foundations can be specified by Designated Concrete or Standardised Prescribed Concrete. The most suitable option will depend on the scale of the works specified and the likely method of procurement.

Typical specification clauses for each method will comprise:

Designated Concrete

- Conforming to BS 8500-2.
- Appropriate concrete designation: e.g. GEN1, (compressive strength of C8/10) suitable for general foundations where a high compressive strength or resistance to chemical attack is not required.
- Maximum aggregate size: when other than 20mm.

Standardised prescribed

- Conforming to BS 8500-2.
- Appropriate concrete designation: e.g. ST2, (compressive strength of C8/10) suitable for general foundations where a high compressive strength or resistance to chemical attack is not required.
- Maximum aggregate size: when other than 20mm.
- Consistency Class: e.g. S3.

The performance requirements for concrete foundation recommended by product manufacturers are typically limited to the compressive strength. The required compressive strength of foundations may also be outside the range of Standardised Prescribed Concrete, i.e. ST5 has a compressive strength class of C20/C25. Where this is the case the Designated Concrete method of specification may be more appropriate. Typical specification clauses for Designed Concretes will comprise:

Designed Concretes

- Conforming to BS 8500-2.
- Compressive Strength Class: e.g. C25/30.
- DC Class: e.g. DC1.
- Target Density.
- Class of consistence: e.g. S3.

Where maximum aggregate size of less than 20mm and, or, a specific Chloride Class are required these should also be stated.

Mechanical Fixing

To ensure the secure fixing of furniture and equipment substrates must be sufficiently robust and capable of withstanding/accommodating imposed loads, the spacing and embedment of fixings without failure of the substrate or the fixing. Types of fittings include, but are not limited to:

- Cast-in-place anchor bolts: provide the strongest method of fixing, they can however be difficult to cast in accurately. As a result they may not be suitable where furniture or equipment has limited fixing tolerances.
- Epoxy bolts: strong method of fixing. Epoxy must be mixed to exact specifications. The hole must be very clean, and the setting time observed before the application of loads.
- *Expansion bolts/anchors*: secure themselves using a mechanical wedging effect at the end of the fastener. Care should be taken to ensure that substrates are suitable and able to accommodate applied forces.
- Screw fixing: suitable where imposed loads are limited.

Bi-metallic Corrosion

Bi-metallic corrosion is the accelerated corrosion of one metal where it is in contact with another more noble (less corroding) metal.

For bi-metallic corrosion to occur an electrolyte must be present. As a result it tends to arise where:

- Water or condensation does not run off.
- Metals are immersed in water.
- Metals are in contact with the soil.

The rate of corrosion will depend on the:

- Distance apart the differing metals are to each other in anodic index/galvanic series.
- Conductivity of the electrolyte.
- Area of corroding metal in comparison with the metal it is in contact with.

Bi-metallic corrosion is likely to be more serious within coastal environments and where the corroding metal is small compare to the metal it is in contact with.

The extent to which corrosion occurs and the selection of appropriate counter-measures should be considered at the design stage. Measures include:

- Selection of metals close to each other in the anodic index/galvanic series.
- Isolation of dissimilar metals using insulators, e.g. rubber isolating patches.
- Isolation of metals from the environment, e.g. painting, coating.

Specification Guidance

Form of Specification

The specification of site/street furniture and equipment will typically be prescriptive in nature, even where the Contractor is responsible for the design of the works under the Contract terms.

This is because there is usually a desire to tightly control the appearance and performance of furniture and equipment selected. To achieve this using a performance based specification requires the specification of very detailed performance criteria. Compliance with the performance specification would then be dependent upon selecting a product that met these detailed requirements. As a result little opportunity for innovation in the selection of materials or construction methods exists. The advantages of Contractor involvement in the design process would hence be limited, negating the advantages offered by a performance based approach.

This guidance note covers the development of prescriptive specifications for site/street furniture and equipment only.

Scope

The Scope provides a brief description of the works specified within the particular section and details any contractual matters that are relevant to them. Care should be taken to avoid repeating particulars already included within the Contract Preliminaries.

Scope of Specification

To help the reader quickly understand which elements of the works are covered in each Works Section it is useful to provide a brief description of items, e.g. *traffic bollard to access road*.

Form of Specification

State whether the specification is performance based or prescriptive together with any specifically related contractual requirements or information that relate to the Works Section. Do not include any requirements or information already set out within the Contract Preliminaries.

Where the specification is prescriptive in nature requirements placed on the Contractor may include:

- The selection, supply and incorporation into the works of all listed accessories and sundry items in conjunction with Manufacturer's recommendations.

- The selection, supply and use of all minor items required for the installation of specified materials and products.
- The coordination of fixings with the installation of hard and soft landscaping, architectural, mechanical and electrical systems.
- The preparation and provision Fabrication Drawings illustrating the final detailing of certain items illustrated or described within the Contract Documents.

It is normal for the terms of a contract or the Contract Preliminaries to state that the Contractor may offer equivalent and, or, substitute products. Where this is not applicable to all Works Sections an appropriate statement must be provided.

Execution of the Works

Any general requirements or information specifically relating to the incorporation of furniture and equipment which are not contained within the Contract Preliminaries should be listed. These may comprise:

Reference Documents

A list of all instructions, guidance and standards concerning handling, storage, installation and maintenance of materials that the Contractor is to comply with while executing the works must be given. This may include:

- Installation instructions and recommendations provided by the manufacturer(s) of furniture and equipment.
- British Standards, depending upon the scope of works and method of fixing, examples include:
 - i. *BS 8000-5:1990 Code of practice for carpentry, joinery and general fixings.*
 - ii. *BS 8000-2.1 Code of practice for concrete work: mixing and transportation of concrete.*
 - iii. *BS 8000-2.2 Code of practice for concrete work: site work with in situ and precast concrete.*
- Workmanship clauses provided within the Specification.

In some circumstances conflicts might exist between the requirements set out within the documents listed. A statement should be included that sets out which documents take precedence or confirms whether compliance with the most or least onerous condition is required.

Product

Within prescriptive specifications the Contractor needs sufficient information to:

- Gain a clear and full understanding of the required works.
- Price the works.
- Order all materials, products and systems required in the execution of the works.

The level and type of product information provided will vary depending on the scope of the project, the type of contract and the nature of the works.

The different types of fittings, furniture and equipment that might be specified within this Works Section can be grouped by type of product and material, *e.g. Stainless Steel Bollards*.

General Items

- Manufacturer: Name of manufacturer, website and telephone number.
- Reference: Product/system reference name and, or, code.
- Finish: Specify finish, where applicable giving relevant specification reference, *e.g. M60.3360 Stain Paint*.
- Colour: Specify colour.

Accessories/Related Components

Where related components are required and provided by the same manufacturer it is recommended these items are specified as an additional item within the relevant product clause. These can be specified in two ways:

- *Concrete Foundations: reference Q50.4100.*
- *Concrete Foundations: Designated Concrete GEN1 to BS 8500-2.*

The last option is suitable where detailed information is not required, *e.g.* where items are specified by designation or are to be supplied by the manufacturer of the principal material, product or system.

Additional Information

Additional descriptive or performance related information can be provided where it is felt that this will aid the Contractor in understanding the scope of works, how they are to be achieved and the required level of workmanship. Examples may include:

- Location: Where a number of similar items are required in some circumstances it may be advantageous to indicate the location of specified items.

- Substrate: where items are set into the ground or attached to existing structures state the type of substrate. This assists the Contractor in determining how the works should be undertaken.
- Preservative Treatment: where purpose made timber items are specified information provided can include the following criteria:
 - i. Design Life: *e.g. 60 years*
 - ii. Treatment Reference: *e.g. name of proprietary treatment.*
 - iii. Required Durability Classification (BS EN 335-1) of timber post treatment.
- Method of Fixing: Specify the method of fixing where manufacturer's instructions are not provided.

Where additional information is provided it should be grouped together with the relevant item or clause.

Accessories

Where related components are specified in detail all information needed by the Contractor to order the correct materials or products must be given.

Check with the manufacturer of the principal materials, and products that the selected components are compatible with other systems. Information to be provided may comprise:

- Manufacturer: Name of manufacturer, website and telephone number.
- Reference: Product/system reference name and, or, code.
- Finish: Specify finish
- Colour: Specify colour
- Method of fixing

Workmanship

Additional requirements relating to the installation of specified materials and products can be provided within Workmanship Clauses. Requirements relate to:

- Scope of works, *e.g.* frequency of movement joints.
- Additional design information, *e.g.* setting out information, joint widths, etc.
- Quality control, *e.g.* permissible tolerances, discarding non-compliant materials.
- Method of working, *e.g.* sequencing or works.

In the majority of instances guidance provided by product manufacturers and BS 8000 Parts 2 & 5 will be sufficient to enable the Contractor to undertake the work to a high standard. Additional requirements may be provided that expand upon, alter, confirm or emphasise requirements already outlined within the reference documents (i.e. where work needs to be undertaken to an historic building in a particular manner).

Where workmanship clauses stipulate the method of working to be employed, check that any instructions given will not reduce the performance of the product or material in question.

Setting Out

State any specific setting out requirements, not otherwise indicated within the Contract Drawings, over and above those provided by the product manufacturer.

Instruct the Contractor to notify the Contract Administrator of any conflicts and seek confirmation of setting out requirements.

Moisture Content

Where timber is stored on site it must be stored so that its moisture content remains within the required range. This ensures timber has the correct moisture content at the time of fixing. It also helps to reduce the risk of timber warping, splitting, shrinking or weakening due to fluctuations in moisture content.

Instruct the Contractor to comply with the specific requirements or recommendations provided by the manufacturer. Where these are not applicable items are to be stored in accordance with the guidance contained within BS 8000-5.

Installation

Instruct the Contractor to install all furniture and equipment in accordance with the product manufacturer's recommendations ensuring that they:

- Are installed plumb and level.
- Where designed to do so, drain freely as intended.
- Are free from damage and protective packaging is retained for as long as practical.
- Where appropriate, in working order and fully operable.

Where furniture is to be fixed within or to concrete foundations confirm the scope of work and the quality of workmanship required, including:

- Excavation of trenches or post holes to the size recommended by the manufacturer or as stated in the specification.
- Location of the item to be secured, e.g. centrally within the concrete base.

- Level at which the top of foundations are to be terminated, e.g. above ground level, flush with surrounding surfaces or below ground level.
- Finish to be provided to the top of the foundation, e.g. smooth and regular surface sloping outwards so that water is shed away from encased posts, etc.
- Where foundations are finished below ground level, the relaying of surrounding ground coverings including the backfilling holes where necessary.

Where the surface of the concrete is to be left exposed it is advisable to require its protection until set to avoid the risk of unwanted markings in within the exposed concrete finish.

The Contractor should also be instructed to ensure that when concrete foundations are cast during periods of cold or inclement weather they are protected using a polythene sheet during the first 24 hours to ensure the it cures correctly.

Treatment of Cut Surfaces

Where pre-treated timber or coated metal products (i.e. galvanised, powder or plastic coated steel) are used any surface exposed by drilling or cutting must be re-coated to ensure corrosion does not occur.

Where the type of preservative or method of treatment is not specified, state that the Contractor is to confirm the recommended method of treatment or re-coating with the product manufacture and apply accordingly.

Corrosion Protection

Where dissimilar metals will come into contact there is a risk of bi-metallic corrosion occurring and the selection of appropriate counter-measures should be considered at the design stage.

Confirm any counter measures that are to be taken and, where applicable, instruct the Contractor to:

- Identify the appropriate primer, protective tape or isolating product (e.g. washer, or sleeve).
- Apply the recommended primer/tape in accordance with the product manufacturer's instructions.

Cleaning

The use of certain cleaning methods may impact on the appearance and performance of furniture and equipment, e.g. the use of abrasive cleaners. Where applicable, the Contractor should be required to clean furniture and equipment in accordance with the manufacturer's recommendations to ensure finishes is not damaged or operability impeded.

Samples, Tests, Certificates, etc

The following guidance should be read in conjunction with the guidance provided for Samples, Tests, Certificates, etc within Specright's Introduction to writing Architectural Specifications.

Samples

Where the specification is prescriptive in nature it is generally recommended product samples are reviewed prior to writing the specification.

Product samples may be requested where the specification is prescriptive in nature and the aesthetic quality of any proposed materials or products need to be checked, e.g. to agree the quality of finish and colour.

Timber Certification

Where all timber and wood-derived products must be provided from independently verifiable legal and sustainable, or equivalent, sources this requirement together with the permitted method for demonstrating compliance needs to be given. Requirements should include:

- Scope: range of materials/products to be from a certified sustainable source, *e.g. each batch of timber and wood derived products utilised during the course of the works.*
- Acceptable forms of evidence: i.e. list of approved certification schemes.
- Reporting: *e.g. Retain certificates on site for inspection, or, submit to Employers Agent.*

Spares & Tools

Spares or tools that the Contractor is required to provide the Employer with at Practical Completion should be listed including any appropriate instructions:

- List of items, including quantities.
- When spares and tools are to be provided, i.e. at Practical Completion.
- Where items are to be placed or delivered.

Instructions & Training

The provision of instruction manuals as part of the Operating and Maintenance Manual and training of the Employer's staff should be covered within the Contract Preliminaries. Additional items can be specified within the relevant specification section. Details might comprise:

- Documents and training required.
- Who is to provide the training, i.e. Contractor, installer or manufacturer.
- Where and when training is to be provided.

Standards & References

Timber

BS 8000-5	Workmanship on building sites. Code of practice for carpentry, joinery and general fixings
BS EN 942	Timber in joinery. General requirements
BS EN 1611-1	Sawn timber. Appearance grading of softwoods. European spruces, firs, pines and Douglas fir
BS EN 975-1	Sawn timber. Appearance grading of hardwoods. Oak and beech
BS EN 975-2	Sawn timber. Appearance grading of hardwoods. Poplars

Durability

BS EN 350-2	Durability of wood and wood-based products, natural durability of solid wood
BS EN 355-1	Durability of wood and wood-based products, definitions of use classes

Bi-metallic Corrosion

PD 6484	Commentary on corrosion at bimetallic contacts and its alleviation
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Concrete

BS EN 206-1	Concrete. Specification, performance, production and conformity
BS 8500-1+A1	Concrete. Complementary British Standard to BS EN 206-1. Method of specifying and guidance for the specifier
BS 8500-2+A1	Concrete. Complementary British Standard to BS EN 206-1. Specification for constituent materials and concrete
BS 8000-2.1	Workmanship on building sites. Code of practice for concrete work: mixing and transporting concrete
BS 8000-2.2	Workmanship on building sites. Code of practice for concrete work: site work in situ and precast concrete

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Specright's Specification Guides are intended to provide the reader with an overview of some of the topics that are pertinent to the relevant CAWS Subsection or Clause. They are not intended to comprise a full and comprehensive guide to all matters. It remains the reader's responsibility to ensure that the specification complies with the statutory requirements, British Standards, current best practice and manufacturer's instructions, requirements and recommendations for all aspects relating to design, handling, installation, operation, maintenance and removal.