

Structural use of steelwork in building —

Part 2: Specification for materials, fabrication and erection: hot rolled sections

Committees responsible for this British Standard

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- British Constructional Steelwork Association Ltd.
- British Industrial Fasteners Federation
- British Railways Board
- British Steel Industry
- Department of the Environment (Building Research Establishment)
- Department of the Environment (Construction Industries Directorate)
- Department of the Environment (Property Services Agency)
- Health and Safety Executive
- Institution of Civil Engineers
- Institution of Structural Engineers
- Royal Institute of British Architects
- Steel Construction Institution
- Welding Institute

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Foreword

This Part of BS 5950 has been prepared under the direction of the Civil Engineering and Building Structures Standards Policy Committee. This Part of BS 5950 replaces BS 5950-2:1985 which is withdrawn. BS 5950 is a document combining codes of practice to cover the design, construction and fire protection of steel structures and specifications for materials, workmanship and erection. This edition introduces technical changes but it does not reflect a full review or revision of the standard, which will be undertaken in due course. In publishing this new edition, the opportunity has been taken to incorporate the text of Amendment No. 1, published in November 1990, to BS 5950-2:1985.

The changes introduced in this new edition are indicated by a single side line in the margin of the page.

BS 5950 comprises the following Parts:

- *Part 1: Code of practice for design in simple and continuous construction: hot rolled sections;*
- *Part 2: Specification for materials, fabrication and erection: hot rolled sections;*
- *Part 3: Design in composite construction;*
- *Section 3.1: Code of practice for design of simple and continuous composite beams;*
- ¹⁾*Section 3.2: Code of practice for design of composite columns and frames;*
- *Part 4: Code of practice for design of floors with profiled steel sheeting;*
- *Part 5: Code of practice for design of cold formed sections;*
- *Part 6¹⁾: Code of practice for design in light gauge sheeting, decking and cladding;*
- *Part 7¹⁾: Specification for materials and workmanship: cold formed sections;*
- *Part 8: Code of practice for fire resistant design;*
- *Part 9¹⁾: Code of practice for stressed skin design.*

It has been assumed in the drafting of this British Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 16, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ In preparation.

Section 1. General

1.1 Scope

This Part of BS 5950 specifies requirements for the materials, fabrication and erection, in hot rolled sections, of structural steelwork in building.

The special requirements pertaining to the design and testing of steel overhead runway beams are not included and reference should be made to BS 2853.

The requirements given in this Part apply to the fabrication and erection of the steelwork but the engineer undertaking the design needs to be aware of those items which will affect the design.

Guidance on inspection and testing is given in **A.8**.

Where the person controlling the works is named as the architect then “responsible architect” is to be read for “engineer” in this standard. Any reference to drawings is to be taken as those drawings prepared by or approved by the engineer.

NOTE 1 The requirements specified herein whilst suitable for inclusion in contract documents, may need to be modified to align with specific needs.

NOTE 2 The titles of the publications referred to in this standard are listed on the inside back cover.

1.2 Definitions

For the purposes of this Part of BS 5950, the following definitions apply.

1.2.1 design grade

designation used to define specific performance requirements of the material for design purposes in BS 5950-1

1.2.2 product grade

designation used to define mechanical and chemical properties and manufacturing requirements of the material as specified in the appropriate product standard

Section 2. Materials

2.1 Structural steel

2.1.1 Structural steel complying with the requirements of British Standards

Unless otherwise specified by the engineer, all hot rolled structural steel products (except for steel reinforcement in concrete) shall be of weldable quality and shall comply with the relevant British Standard as follows:

BS 4360

BS EN 10025 (grade Fe 360, Fe 430 or Fe 510 only).

Rimming steel shall not be used.

NOTE 1 The reference to rimming steel affects BS EN 10025 grades Fe 360A and Fe 360B only.

The appropriate product grade for any product, corresponding to the specified design grade in BS 5950-1, shall be obtained from Table 2.

NOTE 2 Certain product grades do not have a specified maximum manganese content or are not supplied with carbon equivalent value (CEV) options. Additional requirements may therefore need to be specified and agreed at the time of order (see 4.2).

2.1.2 Structural steels complying with the requirements of other specifications

Where the engineer requires steels to be supplied complying with standards other than those specified in 2.1.1, the performance requirements listed in Table 1 shall be determined in accordance with one of the specifications given in 2.1.1.

2.1.3 Structural steelwork designed in accordance with the plastic theory

Where structural steelwork is to be designed in accordance with the plastic theory, the steel used shall comply with 2.1.1 or 2.1.2 and shall comply with the additional requirements for steel in structures designed by the plastic theory given in Table 1.

2.1.4 Hot rolled sections

Unless otherwise specified by the engineer, hot rolled sections shall comply with BS 4 and BS 4848 as appropriate. Where sections complying with other specifications are used, their dimensional tolerances shall comply with BS 4 and BS 4848.

2.1.5 Thickness tolerances of plates and flats

The thickness tolerances for plates, flats and wide flats shall be the normal thickness tolerances specified in BS EN 10025 or BS 4360, as appropriate.

NOTE Tolerances of plates supplied to BS 4360:1986 (see note 5 of Table 2) may be to either BS 4360:1986 or BS EN 10025 at the supplier's option.

2.1.6 Laminar defects

In the areas specified on the drawings the material shall be tested for laminations in accordance with BS 5996.

2.1.7 Inspection and testing

Structural steels for use in design to BS 5950-1 shall receive specific inspection and testing in accordance with the supply standard, and documentation demonstrating compliance shall be provided.

NOTE Specific testing of the material has to be requested at the time of the enquiry and order.

The steel supplier shall supply a certificate of test and inspection endorsed by the steel manufacturer, stating the process of manufacture and giving the product grade, the ladle analysis and the results of each of the mechanical tests applicable to the material supplied. The certificate shall indicate the numbers or identification marks of the casts to which it applies, corresponding to the numbers to be found on the material supplied. In the case of sections with flanges, the certificate shall indicate whether the sample for test purposes was taken from the web or the flange.

2.1.8 Marking

Steel supplied from the manufacturer or merchant shall be marked in accordance with the requirements of the appropriate product specification.

Other marking shall be carried out in accordance with the requirements of 3.2.

2.2 Bolts, nuts and washers

2.2.1 Ordinary bolts

Ordinary bolts and nuts shall comply with BS 3692, BS 4190, BS 4395-1 or BS 4933 as appropriate. Nuts shall be of at least the strength grade appropriate to the grade of bolt or other threaded element with which they are used.

2.2.2 Plain washers

Plain washers for use with ordinary bolts and nuts shall comply with BS 4320.

2.2.3 High strength friction grip fasteners

Unless otherwise specified by the engineer, high strength friction grip bolts, nuts and washers shall comply with BS 4395. Where other types of high strength friction grip fasteners are used, they shall have mechanical properties similar to bolts complying with BS 4395 and be capable of being tightened to the minimum shank tension specified in BS 4604.