

*Comitee Room 13  
Bristol*

No. 449—1937.

British Standards Institution, + 5 Ave

+ CE (B) 7670

+ CF (B) 200

+ CF (B) 6046

+ PD 493

+ PD 573



BRITISH STANDARD  
SPECIFICATION  
FOR

THE USE OF STRUCTURAL STEEL IN BUILDING.

(REVISED JULY, 1937.)

LONDON:  
PUBLISHED BY THE BRITISH STANDARDS INSTITUTION,  
PUBLICATIONS DEPARTMENT,  
28, VICTORIA STREET, LONDON, S.W.1.  
Telegrams: Standards, Sowest, London.

July, 1937.

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No. 449—1937.

**British Standards Institution**  
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FORMED IN 1901 AS THE ENGINEERING STANDARDS COMMITTEE  
INCORPORATED IN 1918 AS THE BRITISH ENGINEERING STANDARDS ASSOCIATION.

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*This Specification, having been approved by the Building Divisional Council, was published under the authority of the General Council as a British Standard on 19th July, 1937.*

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FIRST PUBLISHED	... ..	April, 1932.
FIRST REVISION	... ..	December, 1935.
SECOND REVISION	... ..	July, 1937.

**CO-OPERATING ORGANISATIONS.**

The Building Divisional Council under whose supervision this Specification was prepared consists of representatives from the following Government Departments and Scientific and Industrial Organisations :—

- |   |  |
|---|--|
| Admiralty.  | Incorporated Association of Architects and Surveyors.  |
| Air Ministry.   | Institute of Plumbers.   |
| Board of Trade.   | Institution of Heating and Ventilating Engineers.  |
| Crown Agents for the Colonies.  | *Institution of Municipal and County Engineers.  |
| Department of Health for Scotland.  | *Institution of Structural Engineers.  |
| *Department of Scientific and Industrial Research.                        | *London County Council.  |
| General Post Office.  | Metropolitan Boroughs Standing Joint Committee.  |
| High Commissioner for India.  | National Association of Heating, Ventilating and Domestic Engineering Employers.                 |
| *H.M. Office of Works.  | National Federation of Associated Paint, Colour and Varnish Manufacturers of the United Kingdom. |
| Home Office.  | National Federation of Builders' Merchants.  |
| Imperial Institute.   | *National Federation of Building Trades Employers.   |
| Ministry of Health.   | National Federation of Building Trades Operatives.   |
| War Office.   | *National Federation of Clay Industries.   |
| *Association of Municipal Corporations.                                   | National Federation of House Builders.   |
| Ballast, Sand and Allied Trades Association.                              | National Federation of Master Painters and Decorators of England and Wales.                      |
| *British Constructional Steelwork Association.                            | *Railway Companies of Great Britain.   |
| British Ironfounders' Association.  | Royal Institute of British Architects.   |
| British Waterworks Association.   | Royal Sanitary Institute.  |
| Builders' and Plumbers' Merchants Association.                            | Rural District Councils Association.   |
| Building Industries National Council.                                     | Sanitary Earthenware Manufacturers' Association.   |
| *Cement Makers' Federation.   | Scottish National Building Trades Federation.  |
| *Central Association of the Lime and Limestone Industry of Great Britain. | Timber Trade Federation of the United Kingdom.   |
| Chartered Surveyors' Institution.   | Urban District Councils Association.   |
| County Councils Association (England).                                    |  |
| *Electrical Contractors' Association.                                     |  |
| Federated Quarry Owners of Great Britain.                                 |  |
| Federation of British Industries.   |  |
| Federation of Civil Engineering Contractors.                              |  |
| Greystone Lime Burners' Association.                                      |  |

The Government Departments and Scientific and Industrial Organisations marked with an asterisk in the above list, together with the following, were directly represented on the Committees entrusted with the preparation of this Specification :—

- |                                    |   |
|------------------------------------|---|
| British Iron and Steel Federation. | Institute of Builders.  |
| District Surveyors' Association.   | Scottish Association of Bridge Builders and Structural Engineers. |

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## FOREWORD.

This Specification includes a reference to the following British Standard Specifications:—

- No. 15. Structural Steel for Bridges, etc., and General Building Construction.
- No. 28. Dimensions of Black Bolts and Nuts, Studs, Lock Nuts and Washers (British Standard Whitworth).
- No. 190. British Standard Whitworth Bright Hexagon Bolts, Set-screws and Nuts, Split-pins, Washers and Studs.
- No. 275. Dimensions of Rivets ( $\frac{1}{2}$  inch to  $1\frac{1}{4}$  inch diameter).
- No. 538. Metal Arc Welding as applied to Steel Structures.
- No. 548. High Tensile Structural Steel for Bridges, etc., and General Building Construction.
- No. 693. Oxy-Acetylene Welding as applied to Steel Structures.

In order to keep abreast of progress in the Industries concerned, the British Standard Specifications are subject to periodical review.

Suggestions for improvements, addressed to the British Standards Institution, 28, Victoria Street, London, S.W.1, will be welcomed at all times. They will be recorded and in due course brought to the notice of the Committees charged with the revision of the Specifications to which they refer.

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NOTE.—The Institution desires to call attention to the fact that this Specification is intended to include the technical provisions necessary for the supply of the material herein referred to, but does not purport to comprise all the necessary provisions of a contract.

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NOTE.—The object of this Specification is to secure the general observance of such fundamental principles as appear desirable to ensure safety without hampering freedom in the selection of the most appropriate design for the purpose in view.

## INTRODUCTION.

This Specification is based on the Code of Practice for the Use of Structural Steel in Building\* recommended by the Steel Structures Research Committee of the Department of Scientific and Industrial Research, and lays down the minimum requirements for buildings of normal type.

Acknowledgement is also made to the Institution of Structural Engineers whose report on Steelwork for Buildings has proved of assistance.

Users should satisfy themselves that effective compliance is secured with Local Byelaws and, for insurance purposes, with the Rules of the Fire Offices Committee.

In preparing the Specification the Committee has carefully considered the work done elsewhere along similar lines. The Specification covers the use of structural steel, but some notes on other build-

\* See First Report of the Steel Structures Research Committee, Department of Scientific and Industrial Research, published by H.M. Stationery Office, price 5s. nett.

ing materials forming part of the composite structure are included at the end of the publication for general information. They do not form part of the Specification.

The Specification does not deal with those cases in which fatigue failure may occur.

The Committee has been asked, by the interests concerned, to remind users of this Specification that provision should be made, where necessary, for water, gas and electric services having particular regard to Clause 13 (page 16) and the working stresses employed.

#### SCOPE.

This Specification relates to the use of Structural Steel in buildings wherein the loads and stresses are transmitted to the foundations by a framework of steel, or partly by a framework of steel and/or by party walls.

This Specification lays down the *minimum* requirements for buildings of normal type.

### PART I.

#### DEFINITIONS.

1. For the purposes of this Specification the following definitions shall apply:—

A *Column* includes a steel pillar, stanchion, strut or other compression member.

The *Effective Column Length* is the length upon which the ratio of column length to least radius of gyration is calculated (see Clause 15).

An *External Wall* is an outer wall of a building not being a party wall, even though adjoining a wall of another building. An external wall may be below ground.

A *Partition* is an internal vertical structure employed solely for the purpose of sub-dividing any storey of a building into sections, and which supports no load other than its own weight.

A *Panel Wall* is an external wall built between columns and wholly supported by the steel framework.

The *Foundation* is that part of the building which is employed directly to distribute loading to the ground, and may include any retaining or other wall based upon the ground that is of sufficient strength and stability adequately to carry its own weight together with all imposed loads and forces.

The *Dead Loading* of a building is the weight of all walls, floors, roofs, partitions and other like permanent construction.

The *Superimposed Loading* in respect of a building consists of all loading other than the dead loading.

### PART II.

#### GENERAL.

##### Steel.

2. All parts of the framework of a building constructed in accordance with this Specification, including all columns, beams and struts, shall be of steel which before fabrication complies with British Standard Specification No. 15-1936, for Structural Steel for Bridges, etc., and General Building Construction, or with British Standard Specification No. 548-1934,\* for High Tensile Structural Steel for Bridges, etc., and General Building Construction.

##### Other Materials.

3. Where other materials are used in association with steel-work any requirements in regard to such materials that are included in any Byelaws or Regulations to which the building has to conform shall be complied with.

Alternatively where the building is not subject to any Byelaws or Regulations such materials shall conform to the requirements of the appropriate British Standard Specification.

\* Special attention is drawn to the provision in B.S.S. No. 548-1934, which fixes the rate of loading when approaching the yield point during testing at not more than  $\frac{1}{2}$  ton per sq. in. per sec.