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BRITISH STANDARD
SPECIFICATION
FOR
THE USE OF STRUCTURAL STEEL IN BUILDING.

(REVISED DECEMBER, 1935.)

LONDON:
PUBLISHED BY THE BRITISH STANDARDS INSTITUTION,
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28, VICTORIA STREET, LONDON, S.W.1.
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Price 2/- net. Post free 2/2.

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

This Specification, having been approved by the Building Divisional Council, was published by the authority of the General Council as a British Standard on 9th December, 1935.

NOTE.

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

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

No. 12. Portland Cement.

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. 146. Portland Blastfurnace Cement.

No. 190. British Standard Whitworth Bright Hexagon Bolts, Set-screws and Nuts, Split-pins, Washers and Studs.

No. 275. Dimensions of Rivets (½ inch to 1¾ inch diameter).

No. 410. Test Sieves.

No. 476. Definitions for Fire Resistance, Incombustibility and Non-inflammability of Building Materials and Structures.

No. 548. High Tensile Structural Steel for Bridges, etc., and General Building Construction.

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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.*

BRITISH STANDARD SPECIFICATION FOR THE USE OF STRUCTURAL STEEL IN BUILDING.

(REVISED DECEMBER, 1935.)

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.*

PREFACE.

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 with Local Byelaws and, for insurance purposes, with the Rules of the Fire Offices Committee, is secured.

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 other building materials forming part of the composite structure are dealt with in an Appendix insofar as it is necessary to do so in their relation to the structural steel. A Committee has been appointed to prepare corresponding Specifications for building materials.

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

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

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 16 (page 14) and the working stresses employed.

This Specification is put forward as an interim measure to meet the urgent demand in the industry for the consideration of requirements for steel building structures.

The Minister of Health has included a note in the Model Byelaws issued from the Ministry recommending that this Specification shall be used as a guide in the administration of local byelaws. Where Local Authorities outside London have thought it necessary to impose legal restrictions upon the use of structural steel in buildings the method followed has, almost without exception, been the making of byelaws based on the Model Byelaws, which require simply that steelwork in buildings shall be such as to secure due stability.

The London County Council has adopted (as a basis of consideration under Section 58 of the London Building Act, 1930, for relief from the provisions of the third schedule of the Act) a Code of Practice which is based upon the recommendations prepared by the D.S.I.R. and which embodies certain modifications thereof which are also contained in this Specification.

H.M. Office of Works have also intimated their intention of following, in general, the requirements of this Specification in the design of steel structures coming under their jurisdiction.

SCOPE.

This British Standard 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, bearing walls or bearing structures.

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 *Pillar* is a steel column, stanchion or strut.

The *Effective Pillar Length* is the length upon which the ratio of pillar length to least radius of gyration is calculated (see Clause 18).

A *Beam* is a steel girder, beam or joist.

A *Bearing Wall* or *Bearing Structure* is a wall or structure which provides support for other structural members and which is of sufficient strength and stability adequately to carry its own weight together with all imposed loads and forces.

A *Non-Bearing Wall* or *Non-Bearing Structure* is a wall or structure which supports no load other than its own weight and any wind or other lateral pressure which may act upon its surface.

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 a non-bearing external wall built between pillars and wholly supported by beams.

The *Foundation* is that part of the structure, entirely below ground surface level, which is employed for the purpose of distributing the load from pillars, beams or walls to the ground, and may include any retaining or other wall based upon the ground provided that it is of sufficient strength and stability adequately to carry its own weight together with all imposed loads and forces.

The *Dead Load* of a building is the actual weight of walls, floors, roofs, partitions and all other permanent construction comprised in such building.

The *Superimposed Load* in respect of a building consists of all loads other than the dead load.

PART II. GENERAL.

Steel.

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

Other Materials.

3. (See Appendix 1.)

* Special attention is drawn to the provision in B.S.S. No. 548, which fixes the rate of loading when approaching the yield point during testing at not more than ½ ton per sq. in. per minute.