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BSI Group
389 Chiswick High Road
London, W4 4AL
United Kingdom

T: +44 20 845 086 9001
F: +44 20 8996 7400
cservices@bsigroup.com
bsigroup.com

British Standards Limited
Registered in England no: 07864997
Registered address: 389 Chiswick High Road
London, W4 4AL, United Kingdom

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BRITISH STANDARD 1478 : 1967

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SPECIFICATION FOR

BENDING DIMENSIONS AND SCHEDULING OF BARS FOR THE REINFORCEMENT OF CONCRETE

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BENDING DIMENSIONS AND SCHEDULING OF BARS FOR THE REINFORCEMENT OF CONCRETE

BS 1478 : 1967

Price 8/- net

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THIS BRITISH STANDARD, having been approved by the Iron and Steel Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 31st March, 1967.

First published, September, 1948.
First revision, December, 1964.
Second revision, March, 1967.

The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 4000, fully indexed and with a note of the contents of each, will be found in the British Standards Yearbook, price 15s. The BS Yearbook may be consulted in many public libraries and similar institutions.

This standard makes reference to the following British Standards:

BS 785. Hot rolled bars and hard drawn wire for the reinforcement of concrete. Part 1, Hot rolled steel bars.

BS 1144. Cold worked steel bars for the reinforcement of concrete.

BS 2481. Typewriters.

BS 3176. Printed matter and stationery. A and B series of trimmed sizes.

British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.

The following BSI references relate to the work on this standard:
Committee references ISE/9 and ISE/9/–/5
Draft for comment 66/2082

CO-OPERATING ORGANIZATIONS

The Iron and Steel Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

Alloy Steels Association
Board of Trade
British Cast Iron Research Association
British Constructional Steelwork Association
British Electrical and Allied Manufacturers' Association
*British Iron and Steel Federation
British Ironfounders' Association
British Mechanical Engineering Federation
British Railways Board
British Steel Castings Research Association
Council of Ironfoundry Associations
Council of Iron Producers
*Crown Agents for Oversea Governments and Administrations
Engineering Equipment Users' Association
Institute of British Foundrymen
*Institute of Iron and Steel Wire Manufacturers
Institute of Marine Engineers
*Institution of Civil Engineers
Institution of Mechanical Engineers (Automobile Division)
Institution of Production Engineers
*Institution of Structural Engineers
Iron and Steel Board
Iron and Steel Institute
Joint Iron Council
Lloyd's Register of Shipping
Ministry of Defence, Army Department
Ministry of Defence, Navy Department
Ministry of Labour (H.M. Factory Inspectorate)
National Association of Drop Forgers and Stampers
National Physical Laboratory (Ministry of Technology)
Oil Companies Materials Association
Royal Institute of British Architects
Shipbuilding Employers' Federation
Society of British Aerospace Companies Ltd.
Society of Motor Manufacturers and Traders Ltd.
Stainless Steel Development Association

The scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

Cement and Concrete Association
Concrete Reinforcement Steel Association
Concrete Society Ltd.
Federation of Associations of Specialists and Sub-Contractors
Federation of Civil Engineering Contractors
Greater London Council
Institution of Municipal Engineers
Ministry of Public Building and Works
Ministry of Technology, Building Research Station
Ministry of Transport
National Federation of Building Trades Employers
Reinforcement Manufacturers Association
An individual firm

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BRITISH STANDARD SPECIFICATION FOR

BENDING DIMENSIONS AND SCHEDULING OF BARS FOR THE REINFORCEMENT OF CONCRETE

FOREWORD

This revised British Standard is published under the authority of the Iron and Steel Industry Standards Committee. The standard has been revised in order to align with modern industrial practice, and the development of data processing, including computer techniques for the scheduling of bars.

This standard is intended to secure uniformity of practice in the scheduling and bending of bars for the reinforcement of concrete. The schedule should bear a statement that, 'The dimensions are in accordance with British Standard 1478'; sufficient dimensions and information being given for a bar to be bent to meet with the designers requirements. The method of dimensioning to take up cumulative variation in cutting and bending has been specified.

Where practicable the designation number for a particular shape has been retained in order to align with existing computer programs and to ensure continuity of reference to these codes. see Amdt no 1. (P.17)

SPECIFICATION

1. SCOPE

This British Standard applies to the scheduling and bending of bars conforming to BS 785, Part 1*, and cold worked bars conforming to BS 1144†.

2. DEFINITION AND NOTATION

2.1 Definition. For the purposes of this standard, the following definition applies:

Size of bar (*d*). In the case of bars in the range of round cross-sectional areas (M, H or X, see 3.5) the diameter of the circle of equivalent area, and in the case of bars in the range of square cross-sectional areas (S, see 3.5) the length of a side of a square of equivalent area.

* BS 785, 'Hot rolled bars and hard drawn wire for the reinforcement of concrete' Part 1, 'Hot rolled steel bars'.
† BS 1144, 'Cold worked steel bars for the reinforcement of concrete'.

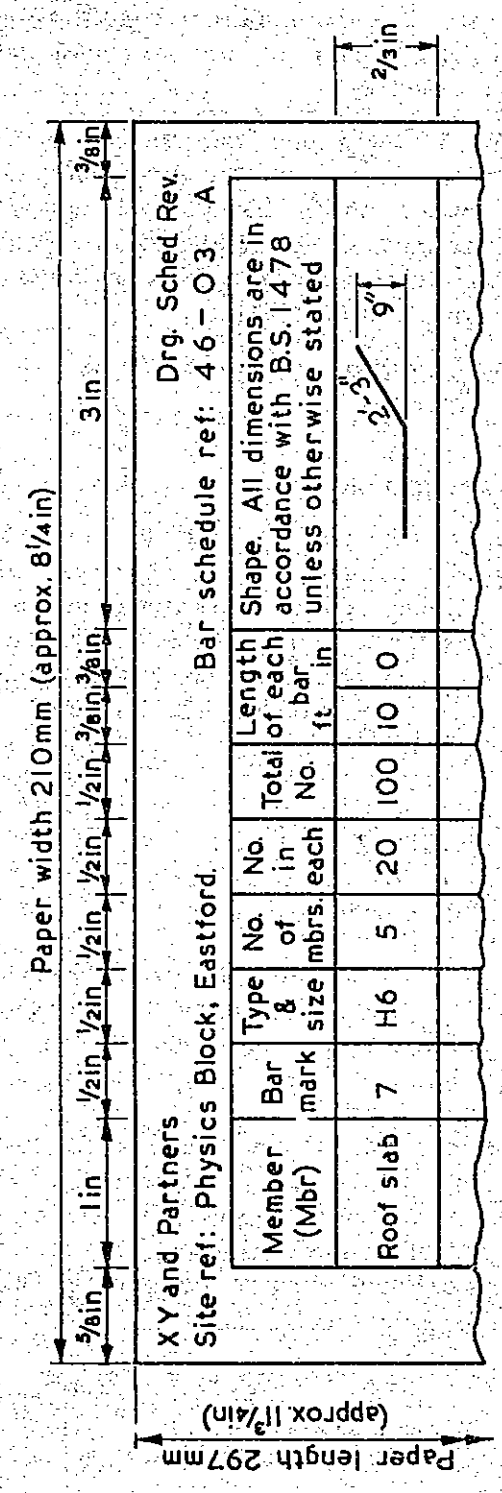

Fig. 1a. Standard form of bar schedule

see Amdt no. 1 (P17)

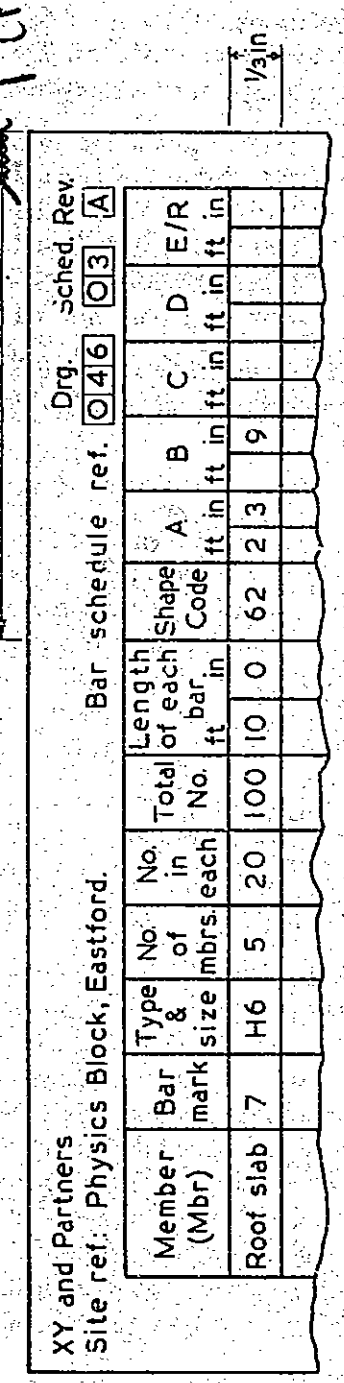

Fig. 1b. Standard form of bar schedule to facilitate data processing

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2.2 Notation. The size of bar should be stated as the number to eighths of an inch in the nominal size. This notation shall be used for both the round and square range of cross-sectional areas. For example,

H10 means a 1¼ in high yield bar having a high bond strength in the round range of areas (hot rolled deformed bars complying with BS 785, Part 1*, or cold worked bars complying with BS 1144†).
S10 means a 1¼ in high yield bar having high bond strength in the square range of areas (hot rolled deformed bars complying with BS 785, Part 1, or cold worked bars complying with BS 1144).

The intermediate sizes 5/16 in and 7/16 in shall be described as, for example, in plain round mild steel, M25 and M35 respectively.

3. FORM OF BAR SCHEDULE

3.1 A standard form (see Figs. 1*a* and 1*b*) of schedule shall be used in conjunction with the requirements of this British Standard. The schedule shall be referred to as a bar schedule since it is customary for the fabricator to prepare separate cutting and bending lists for the fabrication of the bars. The bar schedule is usually completed in sequence of structural units whereas the cutting and bending list is usually sorted into type and size of bar. The form of bar schedule shown in Fig. 1*a* or Fig. 1*b* shall be used. see Amdt 2.

3.2 The width of the columns in the bar schedule shall be as shown in Fig. 1*a*. The paper used for the form shall be A4‡ (297 mm × 210 mm).

The left hand and right hand margins may be used for weight, total length or other purposes for computer produced documents; see 11.3.

3.3 The bar schedule reference shall comprise consecutive letters or numbers and shall appear at the top right hand corner of the bar schedule. The schedule shall be cross-referenced to the drawings. Such terms as sheet number or page number shall not be used. In order to facilitate the use of data processing the bar schedule reference shall not exceed six characters.

For the schedule reference in computer produced bar schedules, the first three characters shall describe the drawing number and the structure should be so divided into units that there is a maximum of 999 drawings per unit starting at drawing number 001. The schedule number shall occupy the fourth and fifth spaces, starting at 01 and not exceeding 99 for any one drawing. This leaves the remaining sixth character free for a revision letter.

* BS 785, ' Hot rolled bars and hard drawn wire for the reinforcement of concrete ', Part 1, ' Hot rolled steel bars '.
† BS 1144, ' Cold worked steel bars for the reinforcement of concrete '.
‡ BS 3176, ' Printed matter and stationery. A and B series of trimmed sizes '.

Example:

	Drg.	Sched.	Rev.
Bar Schedule Reference	0 4 6	0 3	A

3.4 The bar identification to be put on the labels attached to the bars shall be indicated in the ' Mark ' column. Identification numbers and/or letters should be simple and consecutive. The bar mark shall not contain more than a maximum of five numbers or letters plus one revision letter where necessary.

3.5 The quality and basic shape of the steel shall be specified in the ' type and size ' column. The preferred abbreviations are as follows: See Amdt 2.

M plain mild steel bars in the round range of areas (hot rolled bars complying with BS 785, Part 1*).
H High yield bars having a high bond strength in the round range of areas (hot rolled deformed bars complying with BS 785, Part 1*, or cold worked bars complying with BS 1144).
S High yield bars having a high bond strength in the square range of areas (hot rolled deformed bars complying with BS 785, Part 1*, or cold worked bars complying with BS 1144†).
X A general abbreviation to cover types not covered by M, H and S.

(High yield refers to a yield stress of 60 000 lbf/in², or 66 000 lbf/in² in the case of cold worked bars up to and including ⅝ in.) see Amdt 2.

3.7 Each bar scheduled shall be specified completely and without reference to earlier schedules. Such descriptions as ' as before ' shall not be used. If bar shapes are drawn they shall be spaced apart vertically in divisions of ⅔ in or 1 in, and if a sketch is not required, as with the schedule shown in Fig. 1*b*, the lines shall be spaced ⅓ in apart vertically, in order to align with the standard typewriter spacing in accordance with BS 2481‡.

4. BENDING DIMENSIONS

4.1 The dimensions given in the schedule showing the position of bends on a bar shall be measured in the manner illustrated in Tables 6 and 7. Values of the allowance for *h*, *n* and *R* shall be those appropriate to the type of steel used.

4.2 Any bar which does not conform to the standard shapes or a combination thereof shall be fully dimensioned in the schedule and the method of measurement shall be shown. A total length of bar shall be specified, but unless there is

* BS 785, ' Hot rolled bars and hard drawn wire for the reinforcement of concrete ', Part 1, ' Hot rolled steel bars '.
† BS 1144, ' Cold worked steel bars for the reinforcement of concrete '.
‡ BS 2481, ' Typewriters '.

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