

BS 8666:2020



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Scheduling, dimensioning, cutting and bending of steel reinforcement for concrete — Specification

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Foreword

Publishing Information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 December 2020. It was prepared by Technical Committee, ISE/104, *Concrete reinforcing and pre-stressing steels*. A list of organizations represented on this committee can be obtained on request to the committee manager.

Supersession

This British Standard supersedes [BS 8666:2005](#) incorporating Amendment No.1:2008, which is withdrawn.

Information about this document

This is a full revision of the standard, and introduces the following principal changes:

- restructure and renaming of clauses and tables;
- addition of shape code specified in BS EN 1992-1-1;
- revision to terms and definitions;
- revision to [Table 1](#) to include dowel bars and the note to stainless steel;
- revisions to form of schedule [5.1](#) and [5.2](#);
- revisions to text of form of bar or fabric labels;
- revision to form of schedule, [Figure 1](#);
- revision to purpose made fabric example, [Figure 3](#);
- revision to dimensions, [7.2](#), [7.4](#) and [7.5](#);
- revision to scheduling, [Figure 4](#), [5](#) and [6](#) additional dimensioning added;
- revision to scheduling, [Figure 7](#) added;
- revision of [Table 2](#) to include an allowance for spring back;
- addition of [Table 3](#);
- revision of [Table 4](#) to include both Z-bars and U-bars;
- addition in [Table 5](#) of new shape codes 48 and 52;
- addition in [Table 5](#) of extra dimensions on most shapes with sloping legs;
- revision to [Table 5](#) to update the length formulae and dimension limits on some shapes;
- amendment of [Table 6](#) areas;
- revision of [Table 7](#) to allowable deviations on cutting and bending dimensions;
- addition of note to [Table 7](#);
- revision of [Table 8](#); and
- revision to fabrication and routine inspection, [12.3](#).

Assessed capability. Users of this are advised to consider the desirability of quality system assessment and registration against the appropriate standard in the BS EN ISO 9000 series by an accredited third-party certification body.

This publication can be withdrawn, revised, partially superseded or superseded. Information regarding the status of this publication can be found in the Standards Catalogue on the BSI website at bsigroup.com/standards, or by contacting the Customer Services team.

Where websites and webpages have been cited, they are provided for ease of reference and are correct at the time of publication. The location of a webpage or website, or its contents, cannot be guaranteed.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Where words have alternative spellings, the preferred spelling of the Shorter Oxford English Dictionary is used (e.g. “organization” rather than “organisation”).

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This British Standard specifies requirements for the scheduling, dimensioning, cutting and bending of steel for the reinforcement of concrete conforming to [BS 4449](#), [BS 4483](#) and [BS 6744](#) designed to BS EN 1992-1-1, BS EN 1992-2, BS EN 1992-3 and [BS 8110-1](#).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes provisions of this document¹⁾. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

[BS 4449:2005+A3:2016](#), *Carbon steel bars for the reinforcement of concrete – Specification*

[BS 4483](#), *Steel fabric for the reinforcement of concrete – Specification*

[BS 6744](#), *Stainless steel bars – Reinforcement of concrete – Requirements and test methods*

[BS 8110-1](#), *Structural use of concrete – Code of practice for design and construction*

BS EN 1992-2, *Eurocode 2: Design of concrete structures – Part 2: Concrete bridges – Design and detailing rules*

BS EN 1992-3, *Eurocode 2: Design of concrete structures – Part 3: Liquid retaining and containment structures*

BS EN ISO 216, *Writing paper and certain classes of printed matter – Trimmed sizes – A and B series*

BS EN 10080, *Steel for the reinforcement of concrete – Weldable reinforcing steel – General*

BS EN 13877-3, *Concrete pavements – Specification for dowels to be used in concrete pavements*

3 Terms, definitions and symbols

3.1 For the purposes of this British Standard the following terms and definitions apply.

3.1.1 bar

steel product of any cross-section

NOTE Where the term “bar” is used in this British Standard, it refers to a bar conforming to either [BS 4449](#) or [BS 6744](#).

3.1.2 bend angle

angle by which a bar leg is bent out of line from the preceding leg

3.1.3 nominal size

diameter of a circle, d , with an area equal to the effective cross-sectional area of the bar, sometimes referred to as its size

3.1.4 bar mark

identifying mark which cross-refers individual line entries on the schedule to the detailed drawing

NOTE 1 The bar mark also appears on the delivery label.

NOTE 2 The bar mark is also known as the fabric mark.

¹⁾ Documents that are referred to solely in an informative manner are listed in the Bibliography.

3.1.5 shape code

two-digit coded designation of the reinforcement shape

NOTE See [Table 5](#).

3.1.6 pitch

centre-to-centre spacing of bars in a sheet of fabric

3.1.7 mesh

rectangle defined by the pitch of the longitudinal bars and the pitch of the cross bars in a sheet of fabric

3.1.8 fabric

factory-made product consisting of welded bars

NOTE Where the term “fabric” is used in this British Standard, it refers to fabric conforming to [BS 4483](#).

3.1.9 standard fabric

fabric reinforcement where the bar and mesh arrangement can be defined by an identifiable fabric reference

NOTE See [Table 6](#).

3.1.10 purpose made fabric

fabric manufactured according to user’s specific requirements

NOTE Purpose made fabric is therefore not included in [Table 6](#). See [Figure 3](#).

3.1.11 fabric reference

alpha numeric designation denoting fabric

NOTE In accordance with [Table 6](#).

3.1.12 bar schedule

list of reinforcement types and sizes, quantities, shape codes, dimensions and bar mark numbers cross-referring to the detailed drawing

NOTE The preparation of the list is known as scheduling. See [Figure 1](#).

3.1.13 fabric schedule

list of fabric types, dimensions, quantities, and fabric mark numbers cross-referring to a detailed drawing

NOTE See [Figure 2](#).

3.1.14 link

reinforcement bent to form single or multiple legs that surrounds longitudinal reinforcement

NOTE Links may be closed or open with sufficient anchorage at their ends.

3.1.15 couplers

device for the mechanical connection of two lengths of reinforcing bar providing a transfer of tension and/or compression loads from one bar to the other

3.1.16 headed bar

reinforcing bar with a head attached at one or both ends

3.1.17 fabricator

an organization which processes cut and bent reinforcing steel

3.2 Symbols

For the purposes of this British Standard the following symbols apply.

d	nominal bar diameter
M	mandrel diameter
q	minimum width of 180° bend
P	minimum projection of end legs on bent bars
r	minimum bend radius for scheduling
R	specified bend radius in schedule

4 Notation

The type and grade of steel reinforcement shall be designated as follows:

Table 1 — *Notation of steel reinforcement*

Type of steel reinforcement	Notation
For diameters ≤ 12 mm, Grade B500A, Grade B500B or Grade B500C conforming to BS 4449:2005+A3:2016	H
For diameters > 12 mm, Grade B500B or Grade B500C conforming to BS 4449:2005+A3:2016	
Grade B500A conforming to BS 4449:2005+A3:2016	A
Grade B500B or Grade B500C conforming to BS 4449:2005+A3:2016	B
Grade B500C conforming to BS 4449:2005+A3:2016	C
Smooth plain round bar, straight shape code 00, for dowel bars only conforming to BS EN 13877-3	D
The specific grade(s) and steel designation number(s) of ribbed stainless steel conforming to BS 6744 and BS EN 10088 shall be stated on each relevant bending	S
Reinforcement of a type not included in the above list having material properties that are defined in the design or contract specification	X
<i>NOTE 1</i> In the Grade description B500A, etc., “B” indicates reinforcing steel.	
<i>NOTE 2</i> Within the ranges given, the grade(s) supplied for notations H and B are at the supplier’s discretion.	
<i>NOTE 3</i> A specific grade(s) and type(s) of ribbed stainless steel conforming to BS 6744 and BS EN 10080 should be stated on each relevant bending schedule.	

5 Form of schedule

5.1 General

For bar reinforcement, a bar schedule shall be prepared in accordance with the example given in [Figure 1](#). The information and the order in which it is presented shall follow this example, but details of presentation are left to the individual.

Standard fabric types (see [Table 6](#)) shall be called up on bar schedules. The word fabric shall be followed by the fabric reference and area in m² required across the width of the schedule.

NOTE Standard fabrics may also be scheduled in accordance with the example given in [Figure 2](#).

The bar or fabric mark shall comprise simple and consecutive numbers or letters with a maximum of six characters.

The bar or fabric mark shall be used for labelling purposes in accordance with [Clause 6](#).

Purpose made fabrics shall be scheduled in accordance with either [Figure 2](#) or [Figure 3](#).

In the “type and size” column of the schedule, the notations specified in [Clause 4](#) for the type and grade of reinforcement shall be given and this shall be followed by the nominal size in millimeters.

The bar or fabric schedule shall include the statement “This schedule conforms to BS 8666:2020”.

5.2 Special bar end preparation

Where special end preparation is required (for couplers, headed bars), the bar mark shall commence with “E”. The bar or fabric mark shall be used for labelling purposes in accordance with [Clause 6](#).

5.3 Paper-based schedules

For schedules that are not produced on a computer, the minimum width of the columns in the bar or fabric schedules shall be as shown in [Figure 1](#) and [Figure 2](#). For computer produced schedules, the column widths and the size of the schedule may vary from those shown in [Figure 1](#) and [Figure 2](#), but the sequence of columns shall be maintained. A schedule can consist of one or several sheets and each sheet shall not be significantly larger than size A4 in accordance with BS EN ISO 216.

The schedule reference shall be included at the top right-hand corner of the schedule form and shall be consecutively numbered. The schedule reference shall include:

- the last relevant characters of the relevant detailed drawing number or reference;
- up to two characters for the sheet number;

NOTE The styles “1 (of 6)” and “6 (and last)” may be used on manually prepared schedules but the words in parentheses cannot form part of the schedule reference.

- one character for the revision; and
- one character, if necessary, for the schedule status.

Where used, the status character shall be defined on the schedule (e.g. P — preliminary, T — tender, C — construction) but the character shall not form part of the schedule reference.

EXAMPLE

Schedule reference				
Drawing No.			0	4
Sheet No.	03	Revision		A or 01
		Status		C

Where a schedule revision is necessary, the line or lines affected shall be indicated by a suitable reference on the schedule, e.g. “A” at the right-hand side of the schedule in [Figure 1](#). The single revision character in the schedule reference shall be revised in ascending order.

5.4 Electronic data files

Electronic files shall be prepared in accordance with [5.1](#) and [5.2](#) above.

Each file shall include identification of:

- the system, software or industry standard and version number being used;
- contract information;

- c) drawing reference;
- d) schedule reference;
- e) creator of the schedule (with contact details);
- f) date of preparation;
- g) checker;
- h) date of checking;
- i) reviser;
- j) revision number or revision letter;
- k) date of last revision;
- l) member identifiers or names; and
- m) data for each bar mark.

The data for each bar mark shall be in the same sequence as the columns shown in [Figure 1](#) and [Figure 2](#).

Each file shall be taken as a single entity; any revision should require the whole file to be issued as a new revision.

6 Form of bar or fabric label

The schedule reference and the mark given in the “bar or fabric mark” column of the schedule shall be the minimum information put on the labels attached to the reinforcement.

EXAMPLE

Bar schedule reference	0	4	6	0	3		A or 01
Bar mark							7

The labels shall be durable and securely tied to the reinforcement.

NOTE The supplier may add further information required for their own identification and internal systems. Additional information requested by the customer and agreed by the supplier may also be added to the labelling.

[illegible]