INTERNATIONAL STANDARD

ISO 3766

Second edition
1995-02-15

Construction drawings — Simplified representation of concrete reinforcement

Dessins de construction — Représentation simplifiée des armatures de béton

Reference number
ISO 3766:1995(E)

Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 3766 was prepared by Technical Committee ISO/TC 10, *Technical drawings, product definition and related documentation*, Subcommittee SC 8, *Construction documentation*.

This second edition cancels and replaces the first edition (ISO 3766:1977), which has been technically revised.

Annex A of this International Standard is for information only.

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Construction drawings — Simplified representation of concrete reinforcement

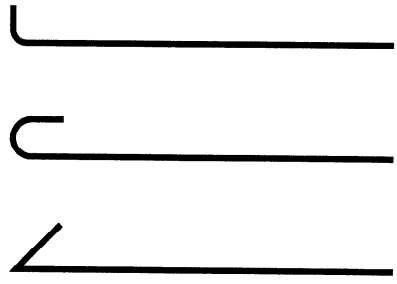
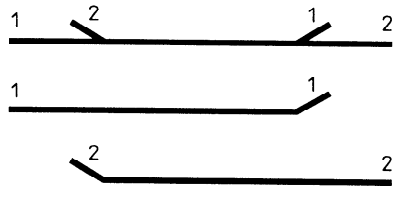
1 Scope

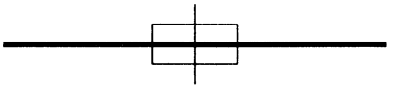
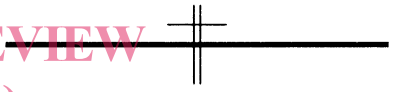
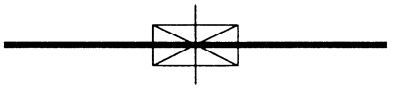
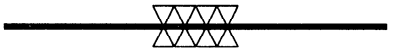
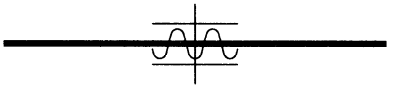
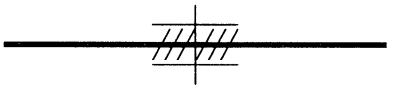
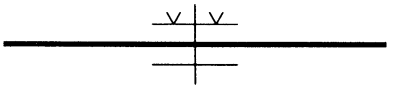
This International Standard specifies the simplified representation of reinforcement in reinforced concrete and in prestressed concrete for use on construction drawings.

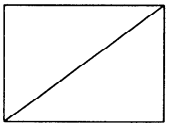
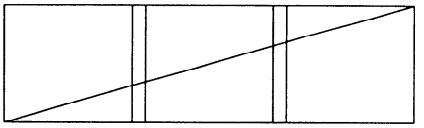
2 Ordinary reinforcement (non-prestressed)

Simplified representation of reinforcement in non-prestressed concrete is shown in table 1.

Table 1

No.	Description	Simplified representation
2.1	Bar, general representation, continuous extra-thick line	
2.2	Section of bar	
2.3	a) Elevation of bar terminating in a 90° bend b) Elevation of bar terminating in a 180° hook c) Plan of bar terminating in a bend or hook	
2.4	Bar without end anchorages, if necessary to indicate ends of more than one bar where bars are not separated on the drawing	

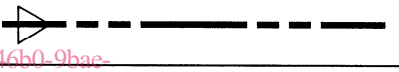
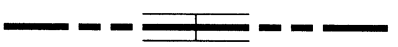
No.	Description	Simplified representation
2.5	Anchorage ring or plate	
	a) Elevation or plan view	
	b) End view	
2.6	Bar bent at right angle away from the viewer [but use 2.3 c) for standard end anchorage]	
2.7	Bar bent at right angle towards the viewer [but use 2.3 c) for standard end anchorage]	
2.8	Bars joined by mechanical couplers	
2.8.1	General representation	
	a) Tension coupler	
	b) Compression coupler	
2.8.2	Specific representation, if required	
	a) Taper-threaded coupler	
	b) Cold-forged ends and parallel threads	
	c) Rolled-on parallel threads	
	d) Parallel threads cut into bar	
	e) Coupler swaged onto bar	
	f) Coupler attached to bar by studs	
2.9	Welded fabric, section	

No.	Description	Simplified representation
2.10	Welded fabric, one sheet shown on plan	
2.11	Welded fabric, identical sheets in a row	

3 Prestressed reinforcement

Simplified representation of reinforcement in prestressed concrete is shown in table 2.

Table 2

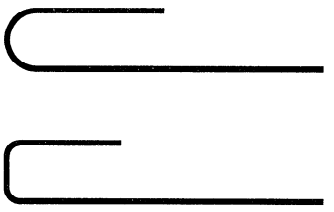
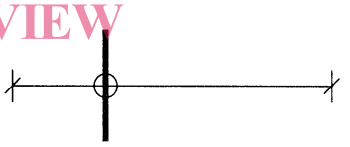
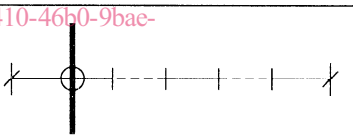
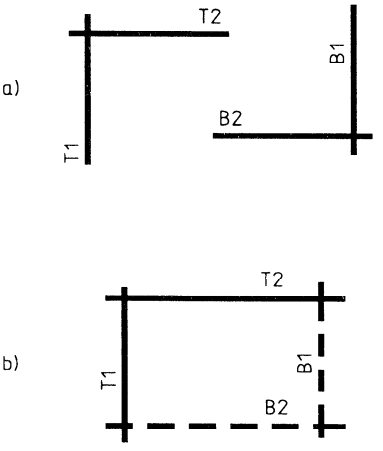
No.	Description	Simplified representation
3.1	Prestressing bar or cable, long chain double-dashed extra-thick line[1)]	
3.2	Section of post-tensioned reinforcement in pipes or conduits	
3.3	Section of prestressed reinforcement	
3.4	Anchorage at tensioning end[1)]	
3.5	Fixed anchorage[1)]	
3.6	End view of anchorage	
3.7	Movable splice[1)]	
3.8	Fixed splice[1)]	

1) When no confusion with ordinary reinforcement can possibly arise, prestressed reinforcement can be drawn with a continuous extra-thick line.

4 Drawing conventions

The drawing conventions observed in the simplified representation of concrete reinforcement are given in table 3.

Table 3

No.	Convention	Simplified representation
4.1	Bends shall normally be represented on drawings showing radii	
4.2	A bundle of bars may be drawn using a single line, with end markings indicating the number of bars in the bundle EXAMPLE Bundle with three identical bars	
4.3	Each set of identical bars, stirrups or links shall be indicated by one bar, stirrup or link drawn with an extra-thick line, with a continuous thin line across the set terminated by short oblique lines to mark the extreme bars, stirrups or links. A circle drawn with a continuous thin line connects the "set line" with the correct bar, stirrup or link	
4.4	Bars placed in groups spaced equidistantly and containing an identical number of identical bars, may be indicated as shown in the example	
4.5	Two-way reinforcement shall be shown in section, or marked with text or the double-headed arrow in the example in order to show the directions of bars in the outside layer on each face of the construction in plan or elevation	
4.6	The location of layers of reinforcement on plan drawings shall be indicated as follows, where B = Bottom layer T = Top layer 1 = Layer nearest the concrete face 2 = Second layer from the concrete face NOTE 1 B and T are used for the English language; equivalent letters for other languages a) Bottom and top layers shown on separate plans b) Bottom and top layers shown on the same plan; the bottom layer shall be indicated by a dashed extra-thick line	

No.	Convention	Simplified representation
4.7	The location of layers of reinforcement on elevation drawings shall be indicated as follows, where N = Near face F = Far face 1 = Layer nearest the concrete face 2 = Second layer from the concrete face NOTE 2 N and F are used for the English language; equivalent letters for other languages a) Near-face and far-face reinforcement shown on separate elevations b) Near-face and far-face reinforcement shown on the same elevation; the far-face layer shall be indicated by a dashed extra-thick line	a) N2, F1, F2, N1 b) N2, N1, F1, F2
4.8	If the arrangement of the reinforcement is not clearly shown by the section, an additional detail showing the reinforcement may be drawn outside the section	
4.9	All the types of links present shall be indicated on the drawing. If the arrangement is complicated, it may be clarified by the aid of a detail outside the section	

5 Drawing notations

5.1 Items of information concerning reinforcing bars shall be written on the drawing in the longitudinal direction of the bars or along reference lines indicating the bars in question.

Items of information for welded fabric shall be written along the diagonal line. The number of sheets of fabric shall be indicated together with the fabric type reference.

A bar quality and profile can be designated by a single letter if it is properly defined, e.g. B = Fe B 500 (ribbed) to European Standard EN 10080.

5.2 The following information concerning reinforcing bars shall be given on the drawing:

		Example
a)	number;	19
b)	quality;	B
c)	nominal size, in millimetres;	20
d)	bat mark;	23
e)	spacing, in millimetres;	200
f)	location in slab or wall (see 4.6 and 4.7).	T

The information concerning the example presented shall be written:

19B20-23-200T

5.3 The following information concerning bundles of reinforcing bars shall be given on the drawing:

		Example
a)	number of bundles;	5
b)	number of bars in a bundle;	3
c)	quality;	B
d)	nominal size, in millimetres;	40
e)	bundle mark;	27
f)	spacing of bundles, in millimetres;	400
g)	location (see 4.6 and 4.7).	B

The information concerning the example presented shall be written:

5x3B40-27-400B

Annex A
(informative)

Bibliography

[1] ISO 128:1982, *Technical drawings — General principles of presentation.*

[2] ISO 10209-1:1992, *Technical product documentation — Vocabulary — Part 1: Terms relating to technical drawings: general and types of drawings.*