

Code of practice for the design, selection, installation, use and maintenance of anchor devices conforming to BS EN 795

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Committees responsible for this British Standard

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- Arboricultural Safety Council
- Association of Consulting Scientists
- Association of Technical Lightning and Access Specialists (ATLAS)
- British Telecommunications plc
- BSIF Test and Certification Association
- Confederation of British Metalforming
- Construction Fixings Association
- Energy Networks Association
- Health and Safety Executive
- Industrial Rope Access Trade Association
- Institution of Mechanical Engineers
- Ministry of Defence — UK Defence Standardization
- National Engineering Laboratory
- North West Construction Safety Group
- Performance Textiles Association
- Personal Safety Manufacturers' Association
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- Co-opted members

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Foreword

This British Standard has been prepared by Technical Committee PH/5. It supersedes BS 7883:1997, which is withdrawn.

The start and finish of text introduced or altered by Amendment No. 1:2007 is indicated in the text by tags **A1** and **A1**. Minor editorial changes are not tagged.

This British Standard provides information relating to anchor devices and recommendations for their installation and use in conjunction with personal protective equipment (PPE) for protection against falls from a height.

This British Standard is intended to complement BS EN 795 by recommending good, accepted practice as followed by competent practitioners.

This revision of BS 7883 gives advice additional to that in the 1997 edition of BS 7883 on safety issues regarding installation of anchor devices, in particular the following.

- a) It gives recommendations on the correct use of components of anchor devices, with particular emphasis on the importance of using components in a system only in the way in which they have been approved for use in accordance with the type tests given in BS EN 795.
- b) It gives guidance on what should be done in the case of base materials of unknown strength.
- c) The force used for the proof load test for each anchor device following installation (except in cavity constructions) is recommended to be 6 kN, compared with 5 kN as currently recommended in BS EN 795:1997, **A.2**. This is because the performance requirements specified for components of personal fall protection systems and equipment (in, for example, BS EN 353-1, BS EN 353-2, BS EN 354, BS EN 355, BS EN 360 and BS EN 363) are based on the need to ensure that the impact force on the user during the arrest of a fall (a dynamic force) does not exceed 6 kN. These requirements are deemed to take precedence over the recommendation in BS EN 795 which, at the time of publication of this British Standard, is under revision and is likely to be changed to 6 kN.

As a code of practice, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

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.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iii, a blank page, pages 1 to 39 and a back cover.

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Introduction

The dangers of working at a height are not always apparent. Engineered controls have to be devised to protect persons working at a height against the effects of gravity, i.e. falls from a height. Anchor devices and systems, and the way in which they are used, are an essential part of such controls.

1 Scope

This British Standard gives recommendations for the design, selection, installation, use and maintenance of anchor devices conforming to BS EN 795, and for the design of anchor systems for installation at specific sites. It also gives guidance on the manufacture of anchor devices and systems to assist the manufacturer in ensuring conformity to BS EN 795.

The standard gives recommendations for the installation of anchor devices in existing buildings and in new construction. It also gives advice on methods for assessing the suitability of installed anchor devices and anchor systems.

The standard is applicable only to anchor devices and systems for the direct attachment of personal fall protection systems and equipment for use in the workplace to prevent and/or arrest falls from a height. It is not applicable to anchor devices or systems for attachment of collective fall protection systems, for example work positioning platforms (such as suspended access cradles) and fall arrest nets. It is not intended to apply to anchor devices and systems for the attachment of personal fall protection systems and equipment for use in leisure activities or in professional or private sports activities.

The standard is intended for use by designers, manufacturers, installers and users of anchor devices and anchor systems. It is also intended for use by other designers, e.g. architects and structural engineers, including those who are responsible for the design of safe access routes on buildings and structures.

NOTE Advice on the selection, use and maintenance of personal fall protection systems and equipment for use in the workplace is given in BS 8437 and recommendations and guidance on the use of rope access methods for industrial purposes are given in BS 7985.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 8213-1:2004, *Windows, doors and rooflights — Part 1: Design for safety in use and during cleaning of windows, including door-height windows and roof windows — Code of practice.*

BS EN 795:1997, *Protection against falls from a height — Anchor devices — Requirements and testing.*

3 Terms and definitions

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

3.1

anchor device

element, or series of elements or components, which incorporates an anchor point or anchor points [BS EN 795:1997, 3.1]

3.2

element

part of a component or a sub-system

NOTE Ropes, webbing, attachment elements, fittings and anchor lines are examples of elements.

[BS EN 795:1997, 3.2]

3.3

component

part of a system at a point of sale by the manufacturer, supplied with packaging, marking and instructions for use [BS EN 795:1997, 3.3]

NOTE Body holding devices (e.g. harnesses) and lanyards are examples of components of systems.

3.4

anchor point

point on an anchor device to which personal fall protection equipment can be attached

3.5

structural anchor

element, or elements, permanently secured to a structure, to which an anchor device or personal protective equipment can be attached [BS EN 795:1997, 3.5]

3.6

extremity structural anchor

structural anchor at each extremity of a flexible anchor line or an anchor rail

NOTE Modified from BS EN 795:1997, 3.6.

3.7

intermediate structural anchor

additional structural anchor which may be necessary between the extremity structural anchors

NOTE Modified from BS EN 795:1997, 3.7.

3.8

anchor line

flexible line between structural anchors, to which personal protective equipment can be attached [BS EN 795:1997, 3.8]

3.9

anchor rail

rigid line between structural anchors, to which personal protective equipment can be attached [BS EN 795:1997, 3.9]

3.10

mobile anchor point

additional, movable element on the anchor line or anchor rail, to which personal protective equipment may be attached [BS EN 795:1997, 3.10]

NOTE Mobile anchor points are referred to in BS 8437 as “travellers”.

3.11

sub-system

assembly of elements and/or components making up a part of a larger system

3.12

fall factor

length of a potential free fall divided by the length of the connecting lanyard or anchor line, including any connectors, available to arrest the fall

3.13

free fall distance

total vertical distance through which the user of a fall arrest system could fall, from the start of the fall to the onset of fall arrest

3.14

restraint system

personal fall protection system for fall prevention which restricts the travel of the user

3.15

fall arrest system

personal fall protection system which limits the impact forces on the body of the user during fall arrest

3.16

anti-pendulum device

device used to prevent lateral swing of the user of a fall arrest system in the event of a fall

3.17**work positioning**

technique which enables a person to work supported in tension or suspension by personal protective equipment in such a way that a fall is prevented

3.18**rope access**

technique which uses two separately secured sub-systems, one as the means of support and the other as a safety back-up, for getting to and from the place of work, and which can be used for work positioning or rescue

3.19**personal fall protection system**

assembly of components to protect users against falls from a height, including at least a body holding device connected to a reliable anchor

3.20**competent person**

designated person suitably trained or qualified by knowledge and practical experience to enable the required task or tasks to be carried out properly [BS 8437:2005, 3.10]

3.21**competent person for periodic examination**

person who is knowledgeable of the current periodic examination requirements, recommendations and instructions issued by the manufacturer applicable to the relevant component, sub-system or system

NOTE 1 This person should be capable of identifying and assessing the significance of defects, should initiate the corrective action to be taken and should have the necessary skills and resources to do so.

NOTE 2 A competent person may need to be trained by the manufacturer or his authorized representative on specific PPE or other equipment, e.g. due to its complexity or innovation, or where safety critical knowledge is needed in the dismantling, reassembly or assessment of the PPE or other equipment, and may need to have that training updated due to modifications and upgrades.

NOTE 3 A person may be competent to carry out periodic examinations on one particular model of PPE or other equipment or may be competent to examine several models.

[BS EN 365:2004, 3.3]

A1 3.22**masonry**

construction of stone(s), brick(s) or block(s) [BS 6100-1:2004, 5.5.12]

3.23**stonework**

masonry of stone(s), which may or may not have been worked, bonded or solidly put together [BS 6100-1:2004, 5.5.13]

3.24**brickwork**

masonry of brick(s) bonded and solidly put together with mortar [BS 6100-1:2004, 5.5.14]

3.25**blockwork**

masonry of blocks of fired clay, concrete or other suitable material bonded and solidly put together with mortar ^{A1}

4 Classification of anchor devices

4.1 General

BS EN 795:1997 describes six classes of anchor devices, as detailed in 4.2 to 4.6.

4.2 Class A

4.2.1 *Class A1*

Class A1 comprises anchor devices designed to be secured to vertical, horizontal and inclined surfaces e.g. walls, columns and lintels. Examples are shown in Figure 1.

4.2.2 *Class A2*

Class A2 comprises anchor devices designed to be secured to inclined roofs. Examples are shown in Figure 2.

4.3 Class B

Class B comprises transportable temporary anchor devices. Examples are shown in Figure 3.

4.4 Class C

Class C comprises anchor devices employing horizontal flexible anchor lines. Examples are shown in Figure 4.

A horizontal anchor line is considered to be an anchor line which deviates from the horizontal by not more than 15°.

4.5 Class D

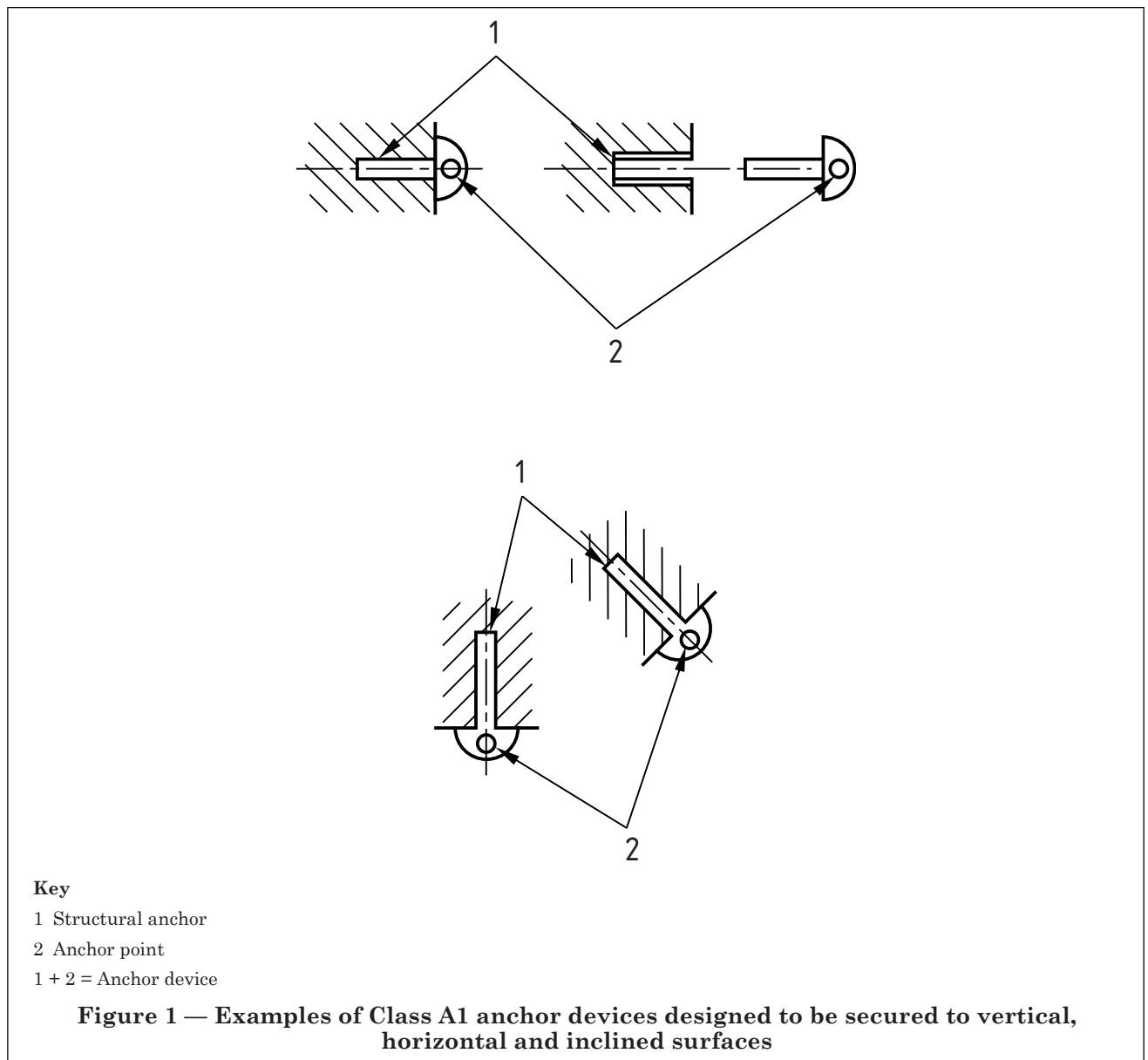
Class D comprises anchor devices employing horizontal rigid anchor lines. These anchor lines are usually in the form of rails and are referred to as “anchor rails”. Examples are shown in Figure 5.

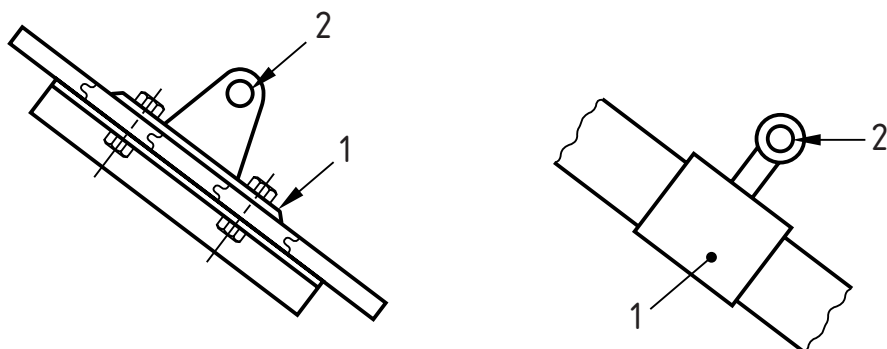
A horizontal anchor line is considered to be an anchor line which deviates from the horizontal by not more than 15°.

4.6 Class E

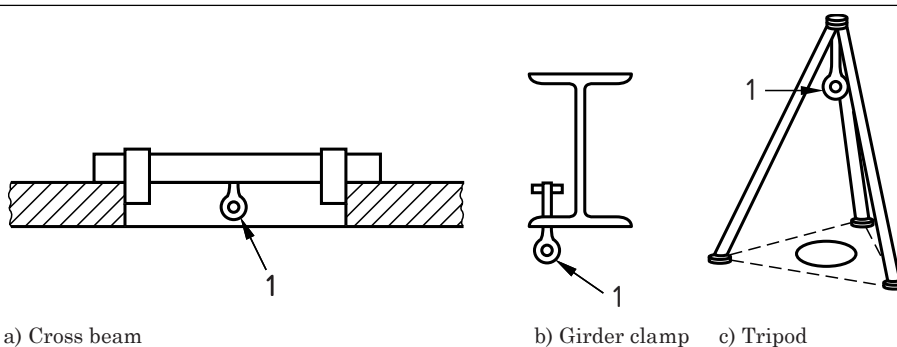
Class E comprises dead weight anchors for use on horizontal surfaces. Examples are shown in Figure 6.

For the use of dead weight anchors a horizontal surface is considered to be a surface that deviates from the horizontal by not more than 5°.



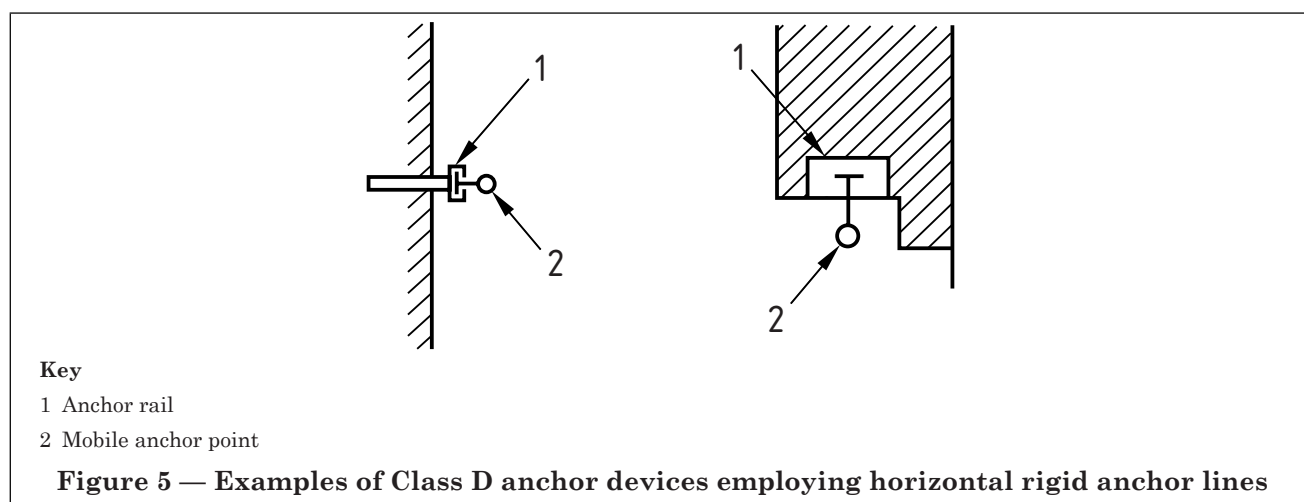
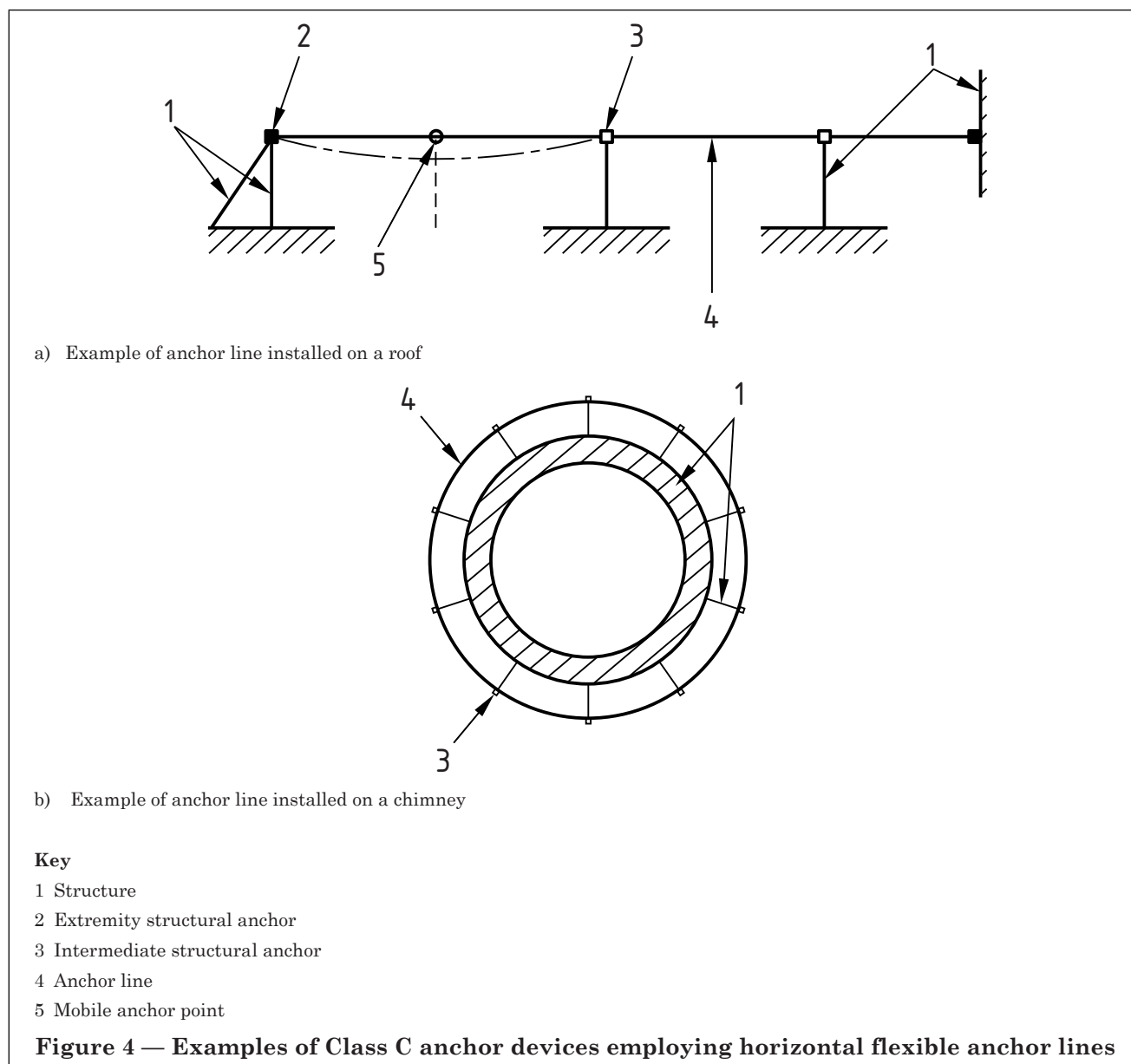
**Key**

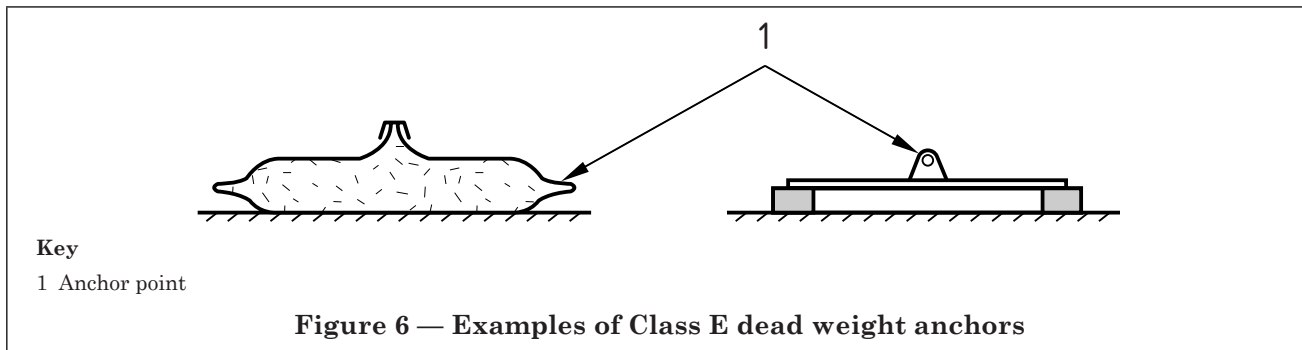
- 1 Structural anchor
- 2 Anchor point
- 1 + 2 = Anchor device

Figure 2 — Examples of Class A2 anchor devices designed to be secured to inclined roofs**Key**

- 1 Anchor point

Figure 3 — Examples of Class B transportable temporary anchor devices





5 Materials

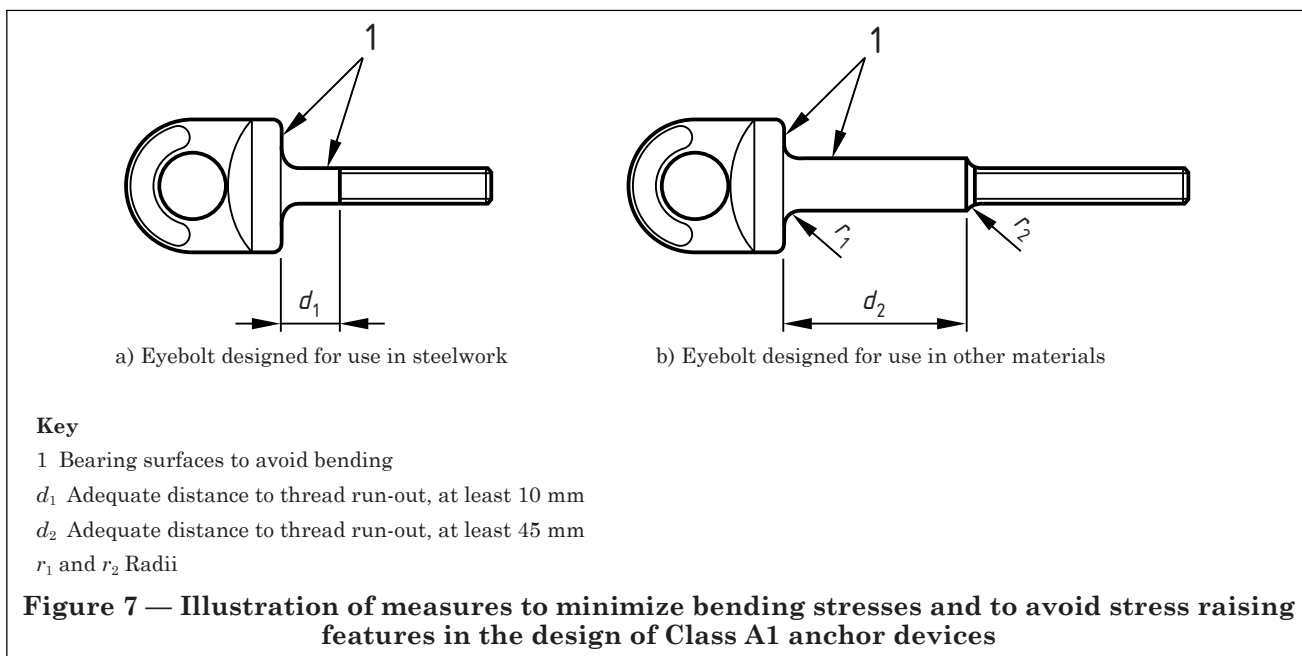
When selecting materials to ensure that anchor devices conform to BS EN 795, particular attention should be given to the operating environment (e.g. temperature, pollution, humidity) and anticipated life span.

6 Design aspects for manufacturers and installers

6.1 General

6.1.1 Designers should avoid stress raising features in the design of anchor devices by, for example:

- the provision of a suitable radius between the collar and shank of an eyebolt;
- ensuring that the run-out of male threads which are intended to be loaded in shear or bending is at a sufficient distance from the bearing surface, e.g. for eyebolts with M12 diameter threads, if designed for installation in steelwork, not less than 10 mm and, if designed for installation in other materials, 45 mm (see Figure 7).



6.1.2 BS EN 795:1997, 4.2 specifies that anchor points and mobile anchor points have to be designed so as to accept other personal fall protection equipment in the system and to ensure that it is not possible for such equipment, which has been correctly connected, to become detached unintentionally in use.

6.1.3 BS EN 795:1997, 4.2 specifies that if an anchor device comprises more than one element, the design has to be such that those elements cannot appear to be correctly assembled without being positively locked together.