BS 5499-10:2014

BSI Standards Publication

Guidance for the selection and use of safety signs and fire safety notices

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Published by BSI Standards Limited 2014

ISBN 978 0 580 78349 4

ICS 01.080.10, 13.220.01

The following BSI references relate to the work on this document:
Committee reference PH/8/1
Draft for comment 14/30260340 DC

Publication history

First published July 2006
Second (present) edition August 2014

Amendments issued since publication

Date	Text affected

Contents

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 50, an inside back cover and a back cover.

Foreword

Publishing information

This part of BS 5499 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 August 2014. It was prepared by Subcommittee PH/8/1, *Safety signs*, under the authority of Technical Committee PH/8, *Graphical symbols*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This part of BS 5499 supersedes BS 5499-10:2006, which is withdrawn.

Relationship with other publications

This part of BS 5499 is part of a series that contains the following current part:

- Part 4: *Code of practice for escape route signing*.

The original suite of standards on safety signs in BS 5499 included BS 5499-1, BS 5499-5, BS 5499-6 and BS 5499-11. They were all crosslinked. All have been superseded as follows:

- BS ISO 3864-1 supersedes BS 5499-1.
- BS ISO 3864-4 is new and covers material replacing that in the previous edition of ISO 3864-1, specifically the colour of safety signs.
- BS ISO 3864-3 supersedes BS 5499-6.
- BS EN ISO 7010 supersedes BS 5499-5.
- BS ISO 20712-1 supersedes BS 5499-11.

Information about this document

The purpose of this part of BS 5499 is to improve public safety by providing guidance on the use of safety signs and fire safety notices, excluding escape route signing, fire action notices and water safety signs.

The provisions of this standard are intended to be applied in situations in which a formal risk assessment has established the need for safety signs and fire safety notices.

This is a full revision of the standard and the principal changes are a consequence of the adoption of ISO 3864-1, ISO 3864-3 and ISO 3864-4 as British Standards and the graphical images of the registered safety signs in BS EN ISO 7010 with regard to colour specification and presentation. Fire safety notices are now included. Additional guidance is provided on viewing distances and viewing zones for safety signs and associated supplementary text, including the effects of viewing angle.

Use of this document

The colours represented in the electronic file of this British Standard can be neither viewed on screen nor printed as true representations. Although the copies of this British Standard have been produced to correspond (with an acceptable tolerance as judged by the naked eye) to the colour requirements, it is not intended that these printed copies be used for colour matching. Instead, colorimetric and photometric properties together with, as a guideline, references from colour order systems are provided in BS ISO 3864-4.

This part of BS 5499 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.

Any user claiming compliance with this part of BS 5499 is expected to be able to justify any course of action that deviates from its recommendations.

It has been assumed in the preparation of this part of BS 5499 that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is "should".

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

The word "should" is used to express recommendations of this standard. The word "may" is used in the text to express permissibility, e.g. as an alternative to the primary recommendation of the clause. The word "can" is used to express possibility, e.g. a consequence of an action or an event.

Notes and commentaries are provided throughout the text of this standard. Notes give references and additional information that are important but do not form part of the recommendations. Commentaries give background information.

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.

Introduction

Safety signs and fire safety notices can make a major contribution to good communication and the development of good safety culture.

This code of practice is intended to assist the facilities manager of the premises and others responsible for selecting and installing safety signs and fire safety notices. This code of practice reflects best practice and shows how to use safety signs and fire safety notices in a standardized manner to ensure consistent application throughout a particular environment or an entire organization.

Safety signs using graphical symbols provide important benefits in the field of communication. Properly used they can:

a) provide information in a compact form;

b) provide information in a form that is independent of language;

c) have visual impact; and

d) guide the viewer to a desired outcome or appropriate decision.

However, these benefits are not always achieved in practice. If safety signs are used in a consistent manner they will become familiar to the viewers and thus be widely understood and effective. There might, however, be instances when optimum results can only be achieved by the provision of supplementary text. The use of the appropriate combination of safety signs with suitable supplementary text assists the process of education on the meaning of safety signs and the action(s) to be taken to control risk.

It is important that safety signs clearly convey the intended message to the viewers. In particular, safety signs need to clearly differentiate between information that relates to safety requirements (including those associated with unsafe use or misuse of products and equipment) and those that relate to public information.

A fire safety notice is a notice that consists of a specific geometrical format and colour with text to convey a specific action or identify specific types of fire equipment.

1 Scope

This part of BS 5499 provides guidance on how to select, install, position and maintain safety signs conforming to BS ISO 3864-1 and BS EN ISO 7010, excluding escape route signs, to present specific safety information. Fire safety notices are also covered in Annex A.

This part of BS 5499 satisfies the requirements of the Health and Safety (Safety Signs and Signals) Regulations 1996 [1] and the Regulatory Reform (Fire Safety) Order 2005 [2].

This part of BS 5499 is applicable to all premises, with the exception of private domestic premises. However, it is applicable to the common access areas within multi-occupied dwellings.

This part of BS 5499 is intended for use by building owners, facility managers of premises, safety managers and others responsible for selecting, installing and/or inspecting safety signs.

This part of BS 5499 is not applicable to:

a) road traffic signs;

b) public information symbols;

c) actions to be taken in the event of a fire;

d) International Maritime Organization symbols;

e) labels provided under the Carriage of Dangerous Goods by Road Regulations 1996;

f) labels provided under the International Maritime Dangerous Goods Code.

This part of BS 5499 does not give guidance on the use of escape route signs or water safety signs.

NOTE 1 A code of practice for the use of escape route signing is given in BS 5499-4.

NOTE 2 Specification of water safety signs and guidance for use are covered by BS ISO 20712-1 and BS ISO 20712-3 respectively.

NOTE 3 The illustrations in this standard are as accurate as possible within the limitations of the printing process.

2 Normative references

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

BS 5266-1, *Emergency lighting – Part 1: Code of practice for the emergency escape lighting of premises*

BS EN ISO 7010, *Graphical symbols – Safety colours and safety signs – Registered safety signs (ISO 7010)* [1)]

BS EN 60598-1, *Luminaires – Part 1: General requirements and tests*

BS ISO 3864-1:2011, *Graphical symbols – Safety colours and safety signs – Part 1: Design principles for safety signs and safety markings*

BS ISO 3864-3, *Graphical symbols – Safety colours and safety signs – Part 3: Design principles for graphical symbols for use in safety signs*

[1)] All current safety signs included in ISO 7010 and ISO amendments are available for viewing in the ISO OnLine Browsing Platform (OBP) [3], https://www.iso.org/obp/ui/.

BS ISO 3864-4:2011, *Graphical symbols – Safety colours and safety signs – Part 4: Colorimetric and photometric properties of safety sign materials*

BS ISO 17398:2004, *Safety colours and safety signs – Classification, performance and durability of safety signs*

3 Terms and definitions

For the purposes of this part of BS 5499, the following terms and definitions apply.

3.1 assessment area
premises, or a specific part of the premises, under consideration for safety signing

3.2 audit
systematic and independent process for obtaining evidence and evaluating it objectively to determine the extent to which specified criteria are fulfilled

NOTE Independent does not necessarily mean external to the organization.

3.3 combination sign
sign that combines a safety sign and one or more associated supplementary signs on the same rectangular carrier

[SOURCE: BS ISO 3864-1:2011, **3.1**]

3.4 externally illuminated safety sign
safety sign that is illuminated, when required, by an external source

[SOURCE: BS ISO 3864-4:2011, **3.4**]

3.5 factor of distance, *z*
relationship between the height (*h*) of a sign and the observation distance (*l*), used to determine observation distances of signs

$z = l/h$

[SOURCE: BS ISO 3864-1:2011, **3.2**]

3.6 fire equipment notice
notice that indicates the location of specific fire equipment to be used by competent persons

3.7 fire equipment sign
safety sign that indicates the location or identification of fire equipment

[SOURCE: BS ISO 3864-1:2011, **3.3**]

3.8 fire safety notice
notice of specific geometrical format and colour with text to convey a specific action or identify specific types of fire equipment

3.9 graphical symbol
visually perceptible figure with a particular meaning used to transmit information independently of language

[SOURCE: BS ISO 17724:2003, **Definition 31**]

3.10 hazard
source of potential harm

[SOURCE: BS ISO 17724:2003, **Definition 36**]

3.11 identifiability
property of a graphical symbol which enables its elements to be perceived as the objects or shapes depicted

[SOURCE: BS ISO 9186-2:2008, **3.1**]

3.12 internally illuminated safety sign
safety sign that is illuminated, when required, by an internal source

[SOURCE: BS ISO 3864-4:2011, **3.5**]

3.13 letter height
nominal height of the lower case letter "x"

3.14 mains-failure
failure of the power supply to the normal lighting

3.15 manager
person in overall control of the premises, exercising this responsibility either in his/her own right or by delegation

NOTE There may be more than one person in charge of the premises.

3.16 mandatory fire safety notice
notice that indicates that a specific course of action is to be taken

3.17 mandatory sign
safety sign that indicates that a specific course of action is to be taken

[SOURCE: BS ISO 3864-1:2011, **3.5**]

3.18 ordinary material
material which is neither retroreflecting nor fluorescent nor phosphorescent nor involves powered light emission nor is activated by a radioactive source

[SOURCE: BS ISO 3864-4:2011, **3.11**]

3.19 phosphorescent material
material incorporating phosphors that, if excited by UV or visible radiation, store energy, which is emitted as light over a period of time

[SOURCE: BS ISO 3864-4:2011, **3.12**]

NOTE A phosphorescent sign is the same as "photoluminescent" commonly used in the literature of the photoluminescent safety sign industry.

3.20 premises
building, including any ancillary accommodation and any area under the control of the building occupier, construction site or other area

3.21 prohibition sign
safety sign that indicates that a specific behaviour is forbidden

[SOURCE: BS ISO 3864-1:2011, **3.7**]

3.22 risk
combination of the probability of occurrence of harm and the severity of that harm

[SOURCE: BS ISO 17724:2003, **Definition 65**]

3.23 risk assessment
process of identifying hazards and evaluating the risks to health and safety arising from these hazards taking account of the existing risk controls (or, in the case of new activity, the proposed risk controls)

3.24 risk control
selection and application of suitable measures to reduce risk

3.25 safe condition sign
safety sign that indicates an evacuation route, the location of safety equipment or a safety facility, or a safety action

[SOURCE: BS ISO 3864-1:2011, **3.8**]

3.26 safe observation distance
distance a person can be from a safety sign while still able to identify the safety sign and have the opportunity to follow the message

NOTE Adapted from ISO 3864-2.

[SOURCE: BS ISO 3864-1:2011, **3.9**]

3.27 safety culture
product of individual and group values, attitudes, competencies and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organization's approach to health and safety

3.28 safety sign
sign that gives a general safety message, by means of a combination of a safety colour and a geometric shape and which, by the addition of a graphical symbol, gives a particular safety meaning

3.29 sign height
diameter of a circular geometric shape or height of a rectangular or triangular geometric shape

[SOURCE: BS ISO 3864-1:2011, **3.13**]

3.30 warning sign
safety sign that indicates a specific source of potential harm

[SOURCE: BS ISO 3864-1:2011, **3.6**]

3.31 zone of influence
viewing space which encompasses the eye positions of people from where the graphical symbol elements of a safety sign can be correctly identified and a safety sign located

4 System design

4.1 General

A safety signing system, consisting of safety signs and, where appropriate, fire safety notices, should ensure that all personnel within the premises (or the part of the premises under review) are reliably informed, instructed and aware of the location and nature of hazard(s) and the measure(s) required to control risk to an acceptable level as necessary to meet the requirements of health and safety legislation and the health and safety management requirements of the organization.

NOTE Fire safety notices are required for security and fire management purposes to meet relevant fire safety requirements (see Annex A).

All safety signs and fire safety notices should maintain their intrinsic features under mains-failure circumstances.

The designer of the safety signing system or the specifier of the safety signs and fire safety notices should follow the principles set out within this code of practice to ensure a uniformity of application of safety signs and fire safety notices which will lead to increased familiarity, consistent correct interpretation, maximum influence and good understanding of the safety message.

4.2 Decision on the need for a safety signing system

NOTE It is assumed that the organization has established and maintained procedures for the ongoing identification of hazards, the assessment of risk and the implementation of the necessary risk control measures, which taken together have established the need for safety signs and fire safety notices as part of the risk control process.

The organization should develop an emergency plan in case any risk control measure fails and this should form the basis for the provision of suitable emergency and fire equipment and, where necessary, any associated signing.

Before a decision is taken to use a safety signing system in a particular situation, a risk assessment should be carried out to identify the hazards and the risks associated with each hazard. For each hazard the best means of minimizing the risks associated with it should then be selected. The method of first choice should be to remove the hazard and the second choice should be to prevent people coming into contact with the hazard. If neither of these options is practical, then a safety sign should be used.

For example, if the hazard were an uneven floor surface that puts people at risk of a fall, the choices should be as follows.

- First choice: Remove the hazard by levelling the floor.
- Second choice: Prevent people coming into contact with the hazard by putting up a permanent and effective barrier.
- Third choice: If neither the first nor the second choice is a practical option, put up a safety sign to warn people of the hazard.

However, reliance should not be placed on the use of safety signs or fire safety notices where the hazard could and should be eliminated. For example, the warning of a trip hazard should be a purely temporary safety sign until the hazard has been eliminated (see Figure 1).

4.3 Assessment area

For the purpose of determining the safety signs and fire safety notices required, the premises should be divided, in all but the smallest premises, into manageable assessment areas.

NOTE This is particularly important where the premises are large or complex or where multiple functions are carried out in the premises.

The establishment of assessment areas should enable the focused scrutiny of the need, if any, for safety signs and fire safety notices and assists in avoiding the provision of unnecessary or inappropriate safety signs and fire safety notices.

Each assessment area should be an area for which there is clearly defined and nominated safety management responsibility and for which a manager or supervisor is deemed to be in control.

The assessment area should have clearly defined boundaries in respect of purpose, process and/or facility. The assessment area should generally also have clearly defined physical boundaries, such as divisions, walls, barriers or fencing.

Doors which require a mandatory fire safety notice should be identified. The location of fire fighting devices to be used by competent persons should be identified.

Figure 1 **Decision process**

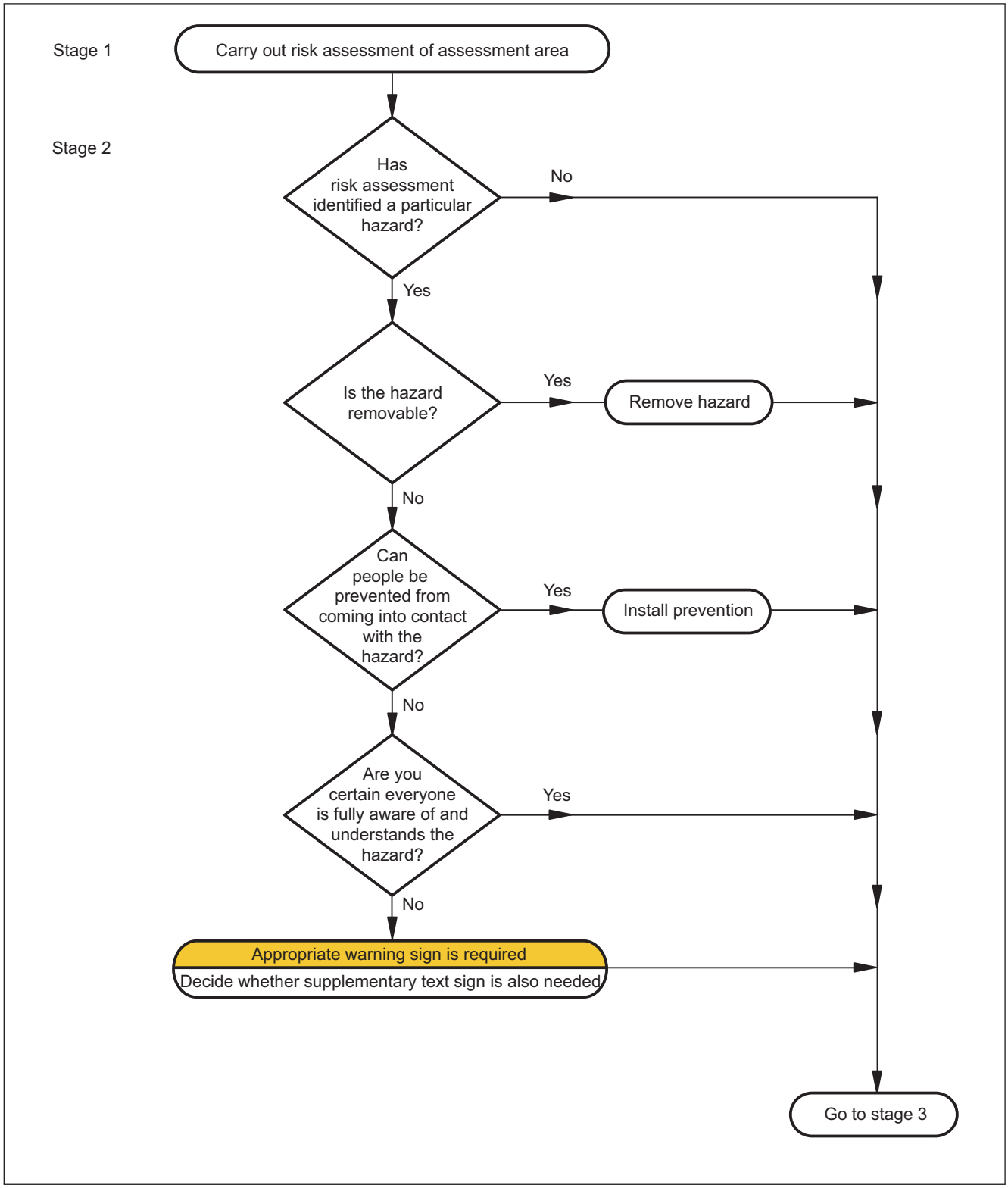


Figure 1 **Decision process**

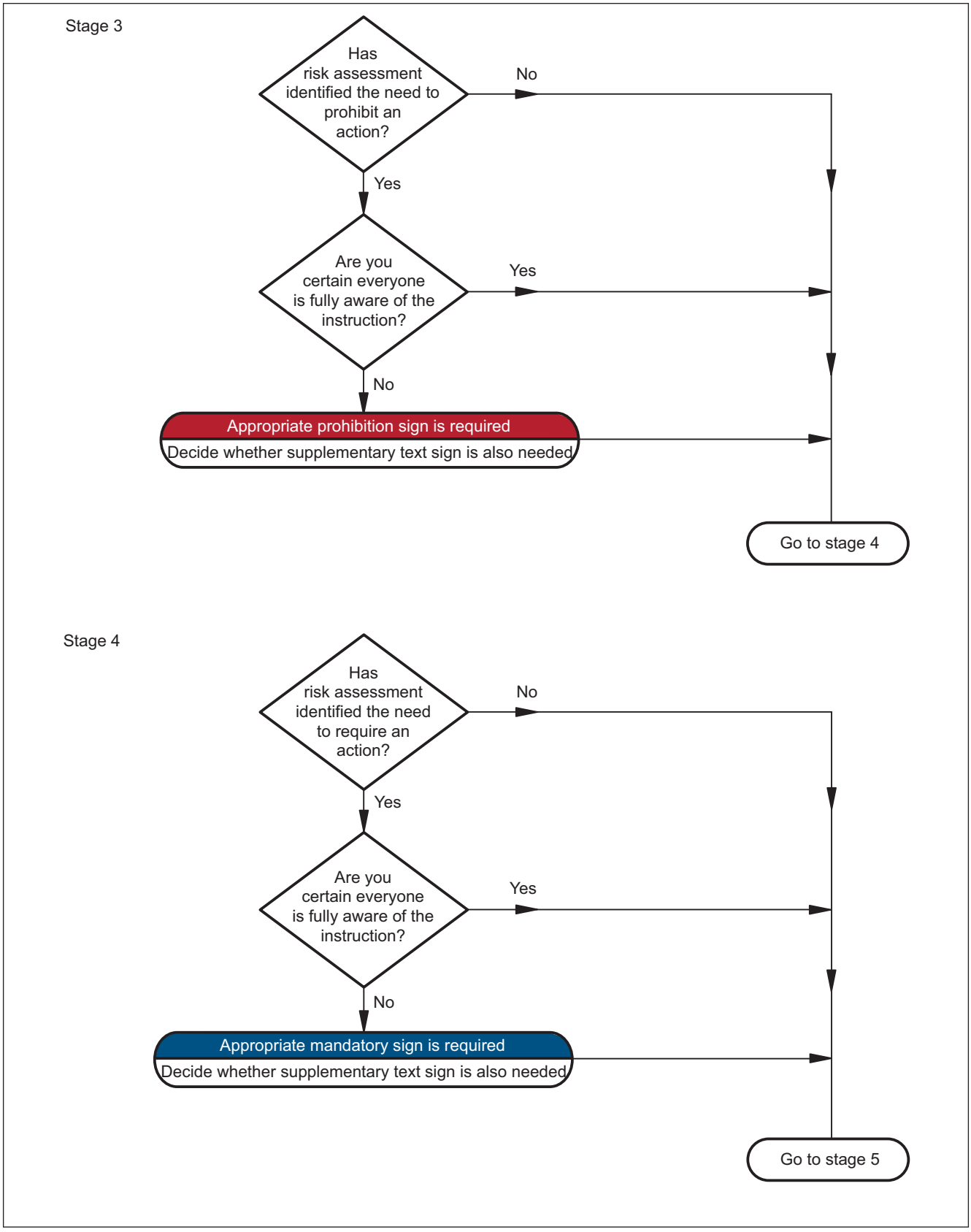
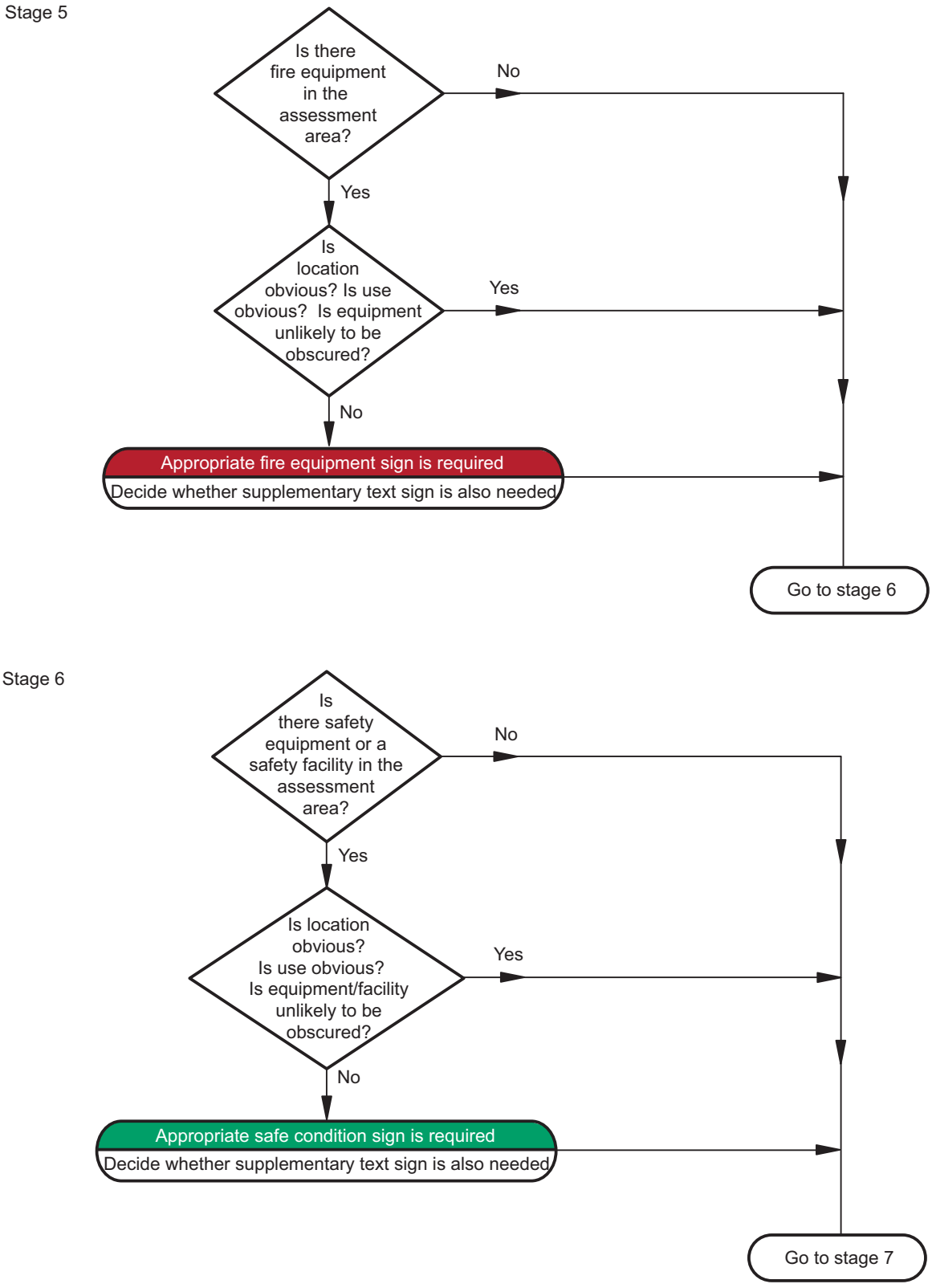
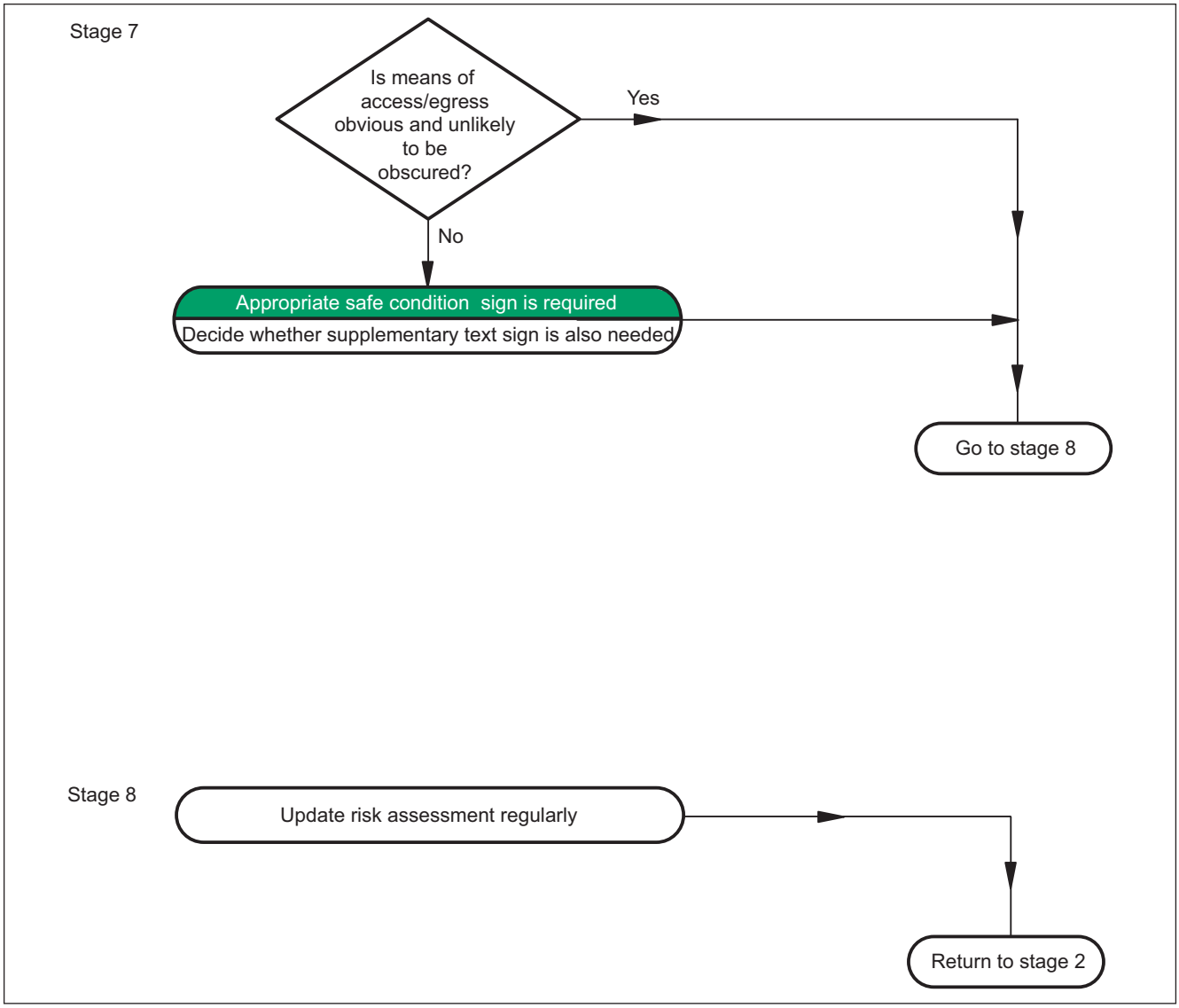


Figure 1 **Decision process**



Note Stage 6 relates to safe condition signs other than evacuation direction signs and emergency exit signs, which are covered in Stage 7 and in BS 5499-4.

Figure 1 **Decision process**



4.4 Analysis of the need

Safety signs and fire safety notices should be placed so that the occupants of premises are aware and informed of hazards and risk control measures. Safety signs and fire safety notices should address any of the following needs:

a) hazard identification: to identify and locate physical, chemical, biological or psychological hazards;

b) risk control:

   1) to prohibit hazardous actions or behaviour;

   2) to prohibit specific personnel, procedures or practices;

   3) to mandate specific actions, procedures or practices;

c) implementation of the emergency plan:

   1) by locating and identifying safety equipment;

   2) by locating and identifying fire equipment;

d) the requirements of health and safety legislation;

e) the requirements of enforcing authorities;

f) the operational needs of the health and safety manager, building manager and nominated person(s) responsible for safety.

4.5 Planning

The following should be taken into account in respect of each assessment area:

a) the use of the specific assessment area;

b) the legislation applicable to the premises and to the specific assessment area;

c) the specific requirements, if any, of the enforcing authorities;

d) the nature of all hazards within the specific assessment area;

e) the risks associated with the hazards identified within the specific assessment area;

f) the safety control measures associated with the hazards identified within the specific assessment area;

g) the safety management system controlling the process(es) within the assessment area;

h) the safety management system controlling the induction, training and continuing education of personnel within the assessment area.

However, only significant risks should be considered when planning a system of safety signs. A practical cut-off should be applied; it is neither sensible nor practicable to expend effort identifying hazards and assessing risks that are obviously minimal or unlikely to occur or with insignificant harm potential. Safety signs should emulate the documented process of the key steps in the process of risk assessment and risk control.

4.6 Categories and functions of safety signs

NOTE 1 For fire safety notices, see Annex A.

Safety signs should be in accordance with the design and colour specified in BS ISO 3864-1, BS ISO 3864-3 and BS ISO 3864-4. The format of the safety signs should be in accordance with BS EN ISO 7010.

NOTE 2 Registered safety signs are available for viewing on the ISO Online Browsing Platform (OBP) [3].

A system of safety signs should be used to indicate one or more of the following:

a) the location and nature of a particular hazard, using a warning sign;

b) a prohibition instruction to reduce the risk associated with a particular hazard, using a prohibition sign;

c) a mandatory instruction to reduce the risk associated with a particular hazard, using a mandatory sign;

d) the location and identification of fire-fighting equipment, using a fire equipment sign;

e) the location and identification of safety equipment and safety facilities and indication of means of access or egress, using a safe condition sign.

The planning process should establish:

1) the categories of safety signs required; and

2) the message to be conveyed by the safety signs required in each category.

A comprehensive statement of requirements should be prepared. This should be agreed by all persons responsible for safety within the assessment area and, where deemed necessary or appropriate, by any enforcing authority, before the safety signs and their locations are determined.

4.7 Selection of safety signs and use of supplementary text

NOTE 1 For fire safety notices, see Annex A.

Safety signs should be selected from BS EN ISO 7010 to address the requirements established by the planning process.

NOTE 2 All current safety signs included in ISO 7010 and ISO amendments are available for viewing in the ISO Online Browsing Platform (OBP) [3].

When selecting safety signs, the following should be taken into account:

a) routine and non-routine activities;

b) activities of all personnel likely to be present within the assessment area (including visitors and subcontractors);

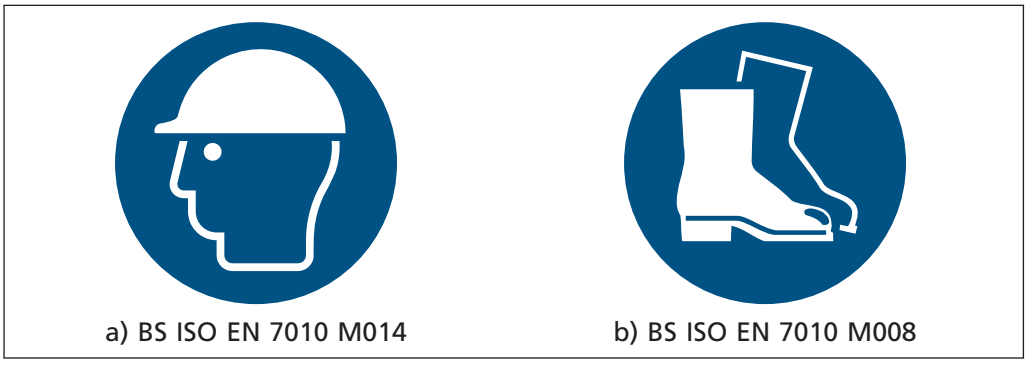
c) any facility within the assessment area whether provided by the organization or others.

When a safety sign with the required meaning cannot be found in BS EN ISO 7010, a new safety sign should be designed in accordance with BS ISO 3864-1 and BS ISO 3864-3 and submitted to BSI for potential standardization and registration by ISO before use.

The need to provide supplementary text to inform people of the meaning of the safety sign should take into account information on comprehension criteria given under "Additional information" for the BS EN ISO 7010 safety sign.

Figure 2 shows examples where comprehension testing showed that the safety sign exceeded the criteria of acceptability, however, supplementary text may be used to increase comprehension.

Figure 2 **Examples of safety signs without supplementary text**



a) BS ISO EN 7010 M014 b) BS ISO EN 7010 M008

Supplementary text should be used with some safety signs (see BS EN ISO 7010 "Additional information" for the specific safety sign). When a risk assessment has determined that people within the assessment area might be unfamiliar with the safety sign or the specific action that is intended, safety signs should include supplementary text to convey the meaning of the safety sign. Supplementary text should be used to:

a) give the meaning of the safety sign; or

b) provide more information to expand or particularize the meaning of the safety sign.

The supplementary text should not conflict in any way with the meanings given in BS EN ISO 7010.

Supplementary text should be in lower case letters with an initial upper case letter. The supplementary text should not overpower the graphical symbol. The height of the lower case letters should be a minimum of 6 mm or 5% of the sign height, whichever is the greater (see Figure 6 for the measurement of sign height).

For a hazard sign, the word "Warning" should be used to draw attention to the supplementary text. The height of the lower case letters should be a minimum of 10% of the sign height.

The supplementary text should not be used to determine the maximum viewing distance (see **4.8** and Annex B). Supplementary text should not be used on its own.

The font used should be either a sans serif typeface, for example Helvetica bold or Helvetica medium, or a typeface with very small serifs with the following characteristics:

a) widths of strokes throughout the letters constant within 10%;

b) widths of strokes at least one sixth of the letter height;

c) width of lower case letter "x" not less than 70% of the letter height;

d) not condensed, expanded, italic, script, outline or shaded;

e) letters individually formed and not joined together.

Figure 3 shows examples of combination safety signs with supplementary text.

Figure 3 **Examples of combination safety signs with supplementary text**

a) BS EN ISO 7010 W021 b) BS EN ISO 7010 P002 c) BS EN ISO 7010 P013

Where the risk assessment has identified the need for more than one safety sign to communicate a complete safety message at a specific location, the safety signs and appropriate supplementary text should be mounted on the same rectangular carrier. The multiple safety signs should be laid out so that each safety sign is clearly associated with the relevant supplementary text, if any. Figure 4 shows examples of multiple safety signs with supplementary text.

Figure 4 **Examples of multiple signs with supplementary text**

In order to establish the location, size and position of each safety sign, the required zone of influence of each safety sign or safety signing system should be established.

4.8 Zone of influence

NOTE 1 The zone of influence is a visual space which encompasses the eye positions of people from where a person is able to correctly identify the graphical symbol elements of a safety sign.

The viewing sphere for identification distances in BS ISO 3864-1:2011, Annex A should be used to workout the zone of influence. The size of the sphere depends upon a factor of distance, z_0, the value of which depends on a range of conditions (see BS ISO 3864-1:2011, Annex A). Although observers outside the spherical zone of influence may be able to perceive and some correctly identify the graphical symbol of the sign, at and within the spherical zone a high proportion of observers should be able to correctly identify the graphical symbol elements.

NOTE 2 A spherical zone applies to externally or internally illuminated safety sign with Lambertian luminous characteristics.

*NOTE 3 Identification is concerned with the perceptual quality of the graphical symbol elements (see BS ISO 9186-2) and is not the same as understanding (comprehending) the safety message being conveyed. To gauge whether supplementary text is required for the safety message to be understood, refer to **4.7**.*

The spherical zone is a consequence of the apparent size of detail of the graphical symbol depending upon the cosine of the observation angle α, measured as the angle from the normal to the sign. As the observation angle becomes further away from the normal/perpendicular to the sign, the distance between the position of the observer's eye and the graphical symbol decreases, i.e. the observer needs to move closer to the sign. The spherical zone touches the sign and has a diameter which depends upon the multiplication of the safety sign height, h, (see Figure 6) and the value of factor of distance, z_0, appropriate to the type of sign and illumination conditions (see **4.10**). Figure 5 shows a spherical zone and horizontal and vertical rings of diameter of z_0h centred at a perpendicular distance of $z_0h/2$ from the sign. In Figure 5, the safety sign is mounted at a height of 1.7 m above the floor and the size of the sphere has been scaled for a value h of 60 mm with z_0 of 60. The horizontal red ring (diameter 3.6 m) is in the horizontal plane at the mounting height of the sign. The person denoted in green with an eye height of 1.7 m is positioned at the circumference/edge of the sphere of influence at the maximum perpendicular distance from the sign. At other observation angles to the sign, the "green person" should be positioned on or within the circular zone of the red horizontal ring. The person denoted in grey is outside the sphere of influence.

NOTE 4 When the angle between the direct line of sight and line of the normal to the sign (from the centre point of the sign) is α, the observation distance is $z_0h\cos\alpha$; see Annex B for further details.

When the eye height of the person is above or below the mounted height of the sign, the radius of the horizontal circular zone, r, is smaller than $0.5\ z_0h$.

NOTE 5 See Annex B for details of the calculation of r and examples of the effect of height differences.

Figure 5 shows an example of a wheelchair user with an eye height of 1.16 m. The circular zone of influence for the wheelchair user is denoted by the horizontal blue circular ring.

A spherical zone for the legibility of text should apply to any supplementary text present (see Annex B for examples of circular zones for legibility).

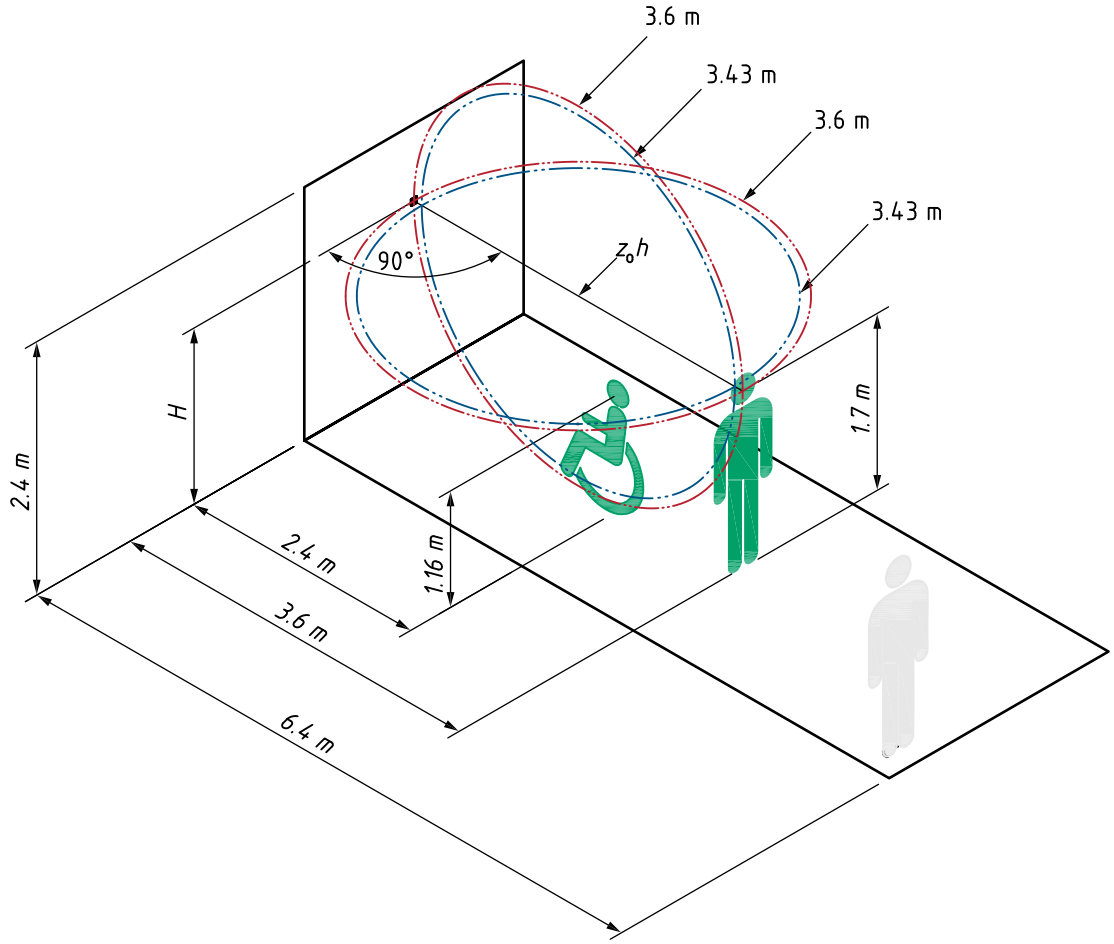
*NOTE 6 See **A.3** for application to the text of fire safety notices.*

NOTE 7 In general, the height of letters is such that the sphere for legibility of letters is smaller than the sphere for identifiability of the graphical symbols.

The surface of the spherical zone represents positions at which an observer should be able to correctly identify the graphical symbol elements of the safety sign. Because correct identification distance varies between people, even those of similar visual acuity, the diameter of the spherical zone should be such that a high proportion of the population would correctly identify the graphical elements or letters.

NOTE 8 This section covers people with normal visual acuity of 1.0 and the effect of the reduced visual acuity of visually impaired people.

Figure 5 **Zone of influence**



Key

z_{SIGN}	60		Person(s) within the sphere of influence
E	100 lux		Person(s) outside the sphere of influence
h	60 mm		
H	1.7 m		

4.8.1 Required zone of influence and legibility zone

NOTE The zone of influence is concerned with the maximum viewing distance to identify a safety sign from different relevant viewing positions ranging from normal to oblique and up and down.

By the time a person from the intended user population has reached the boundary to the spherical zone of influence, the person should be able to correctly identify the graphical symbols of the safety sign and have the opportunity to correctly follow the message before reaching a safe observation distance.

Where the safety sign has supplementary text to give further understanding of the safety message, by the time a person has reached the spherical legibility zone the person should be able to correctly read the text before reaching a safe observation distance.

Safe observation distance should take into account the category of safety sign and nature of the message and hazard.

Some safety messages are concerned with locating facilities and equipment which are not intrinsically hazardous to contact and for these messages, the concern is that facilities and equipment should be speedily located and operated. For example, a safety sign on a door indicating "push door to open" or "slide door to open" need only be identified and understood from a short distance from the door and when operated.

Where the safety message concerns hazards, the safe observation distance should be such that the location of the hazard is identified before it is reached, for example a warning sign "Warning flammable materials" or "Warning explosive materials" on the entry door, or "Warning floor-level obstacle"; or is contacted, for example "Warning corrosive substance" or "Warning crushing of hands".

In order to establish the location, size and position of each safety sign, the required zone of influence and safe observation distance of each safety sign or safety signing system should be established.

4.8.2 Sign height and size of zones

The measurement of sign height, *h*, is given in Figure 6.

NOTE 1 Registered safety sign originals in BS EN ISO 7010 are in a uniform 70 mm size with corner marks to enable accurate enlargement and reduction scaling. A border is not shown.

In order to determine the maximum size of a safety sign needed, the maximum viewing distance at which a safety sign is required to be conspicuous and identifiable, taking viewing angle into account, should be determined. This maximum viewing distance normal/perpendicular to the sign is the diameter of the spherical zone of influence.

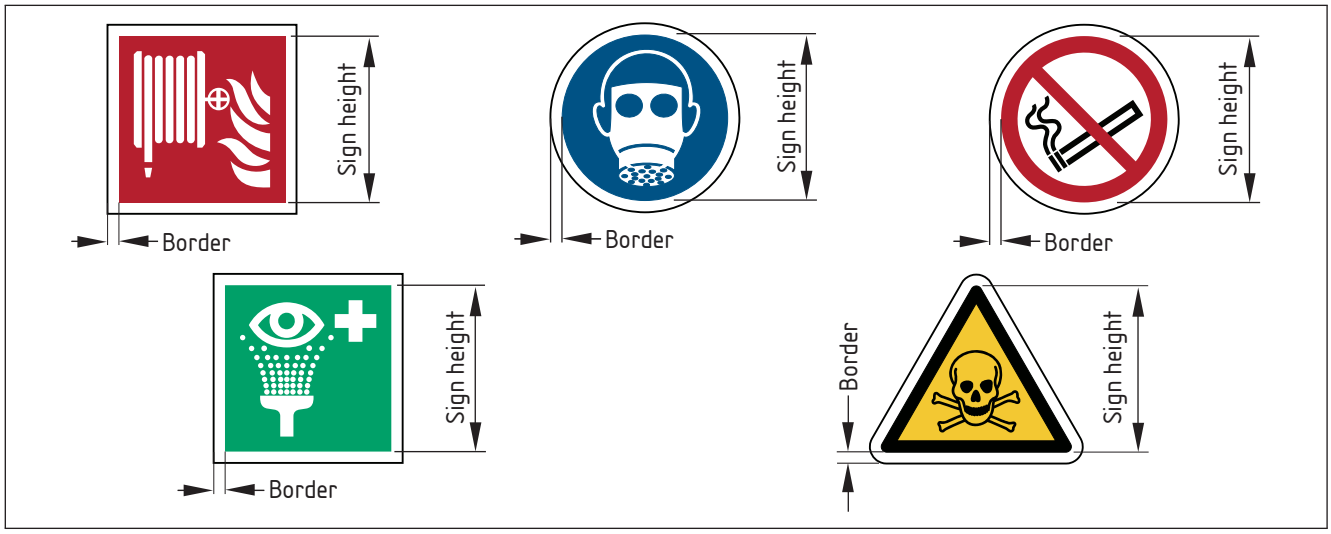
NOTE 2 The maximum diameter of the spherical zone of influence at which a safety sign of a particular size is conspicuous and identifiable depends on the illumination of the safety sign.

The maximum viewing distance normal (perpendicular) to the sign, *l*, should be calculated from the sign height, *h*, using the appropriate distance factor, z_0:

$$l = z_0 h$$

where *l* and *h* have the same dimensional units; this is typically measured in mm.

Figure 6 **Measurement of sign height**



The viewing distance of a safety sign is affected by the vertical illumination on the sign or its luminance in the case of an internally illuminated sign. The lower the vertical illuminance on externally illuminated safety signs, the larger the sign should be for any chosen viewing distance as shown by the limits of Table 3 and Table 4.

In accordance with BS ISO 3864-1, Table 1 provides the distance factors for externally illuminated safety signs under a range of vertical illuminance. The default distance factor for internally illuminated signs meeting the requirements of **4.10.4** should be 60 under emergency and normal lighting conditions.

NOTE 3 The values for distance factors in Table 1 and Table 2 relate to people with a visual acuity of 1.0.

Table 1 **Distance factor, z_0, for externally illuminated safety signs based on ordinary materials or phosphorescent materials**

Vertical illuminance at sign	Distance factor, z_0, for normal to the sign
lux	
≥5	30
≥100	60

NOTE Over the illuminance range up to about 200 lux, z_0 varies approximately linearly with the logarithm of illuminance.

Table 2 **Distance factor, z_0, for supplementary text of externally illuminated safety signs based on ordinary materials or phosphorescent materials**

Vertical illuminance at sign	Distance factor, z_0, for lower case letters for normal to the sign
lux	
≥5	110
≥100	225

NOTE Over the illuminance range up to about 200 lux, z_0 varies approximately linearly with the logarithm of illuminance.

People with visual impairment can have low visual acuity; for example for people with visual acuity of 0.5, values of z_0 in Table 1 and Table 2 and for internally illuminated safety signs should be multiplied by a factor of 0.5.

For externally illuminated safety signs, Table 3 and Table 4 give maximum viewing distances normal to safety signs/diameter of zone for identification and maximum viewing distances for lower case letters/diameter of zone for legibility under a vertical illuminance of 100 lux and 5 lux respectively.

Table 3 **Examples of maximum viewing distances/diameter of zones for identification of safety signs and legibility of supplementary text for externally illuminated safety signs of different sign height subject to a vertical illuminance of 100 lux**

Sign height	Lower case letter height	Identification distance normal to the safety sign/diameter of zone of influence [C]	Legibility distance normal to the safety sign/diameter of zone for legibility of text [D]
mm	mm	m	m
60	6 [A]	3.6	1.3
80	6 [A]	4.8	1.3
120	6 [A]	7.2	1.3
180	9 [B]	10.8	2.0
240	12 [B]	14.4	2.7

[A] The height of the lower case letters is at least 6 mm.
[B] The height of the lower case letters is 5% of the sign height.
[C] The appropriate value for z_0 selected from Table 1 is 60.
[D] The appropriate value for z_0 selected from Table 2 is 225.

Table 4 **Examples of maximum viewing distances/diameter of zones for identification of safety signs and legibility of supplementary text for externally illuminated safety signs of different sign height subject to a vertical illuminance of 5 lux**

Sign height	Lower case letter height	Identification distance normal to the safety sign/diameter of zone of influence [C]	Legibility distance normal to the safety sign/diameter of zone for legibility of text [D]
mm	mm	m	m
60	6 [A]	1.8	0.6
80	6 [A]	2.4	0.6
120	6 [A]	3.6	0.6
180	9 [B]	5.4	1.0
240	12 [B]	7.2	1.3

[A] The height of the lower case letters is at least 6 mm.
[B] The height of the lower case letters is 5% of the sign height.
[C] The appropriate value for z_0 selected from Table 1 is 30.
[D] The appropriate value for z_0 selected from Table 2 is 110.

The maximum identification distance from a safety sign and maximum legibility distance from supplementary text, if present, should be longer than the safe observation distance.

NOTE 4 Examples of identification rings/circles for safety signs and legibility rings/circles for supplementary text of different heights and the effect of mounting height of the safety sign are given in Annex B.

Drawing appropriately sized circles on a scaled plan can assist in determining an appropriate height of the safety sign for a particular location and range of approach towards the sign of people of different eye heights.

4.9 Position of safety signs and fire safety notices

Safety signs and fire safety notices should be positioned:

a) conspicuously within the required zone of influence;

NOTE 1 Care is to be taken to ensure that safety signs are not conspicuous outside the assessment area where this might cause confusion.

b) so as to be conspicuous to those who are intended to be informed of the safety message;

c) in close proximity to any hazard or equipment to be identified;

NOTE 2 Examples of the use of safety signs to indicate the location and identification of safety equipment, fire equipment, safe drinking water and multiple safety sign are illustrated in Annex C.

d) where they are not obscured by architectural features, décor, barriers, plants or other equipment, or other signs;

e) so as not to be adjacent to any other sign that could divert attention from the safety sign;

f) so that safety signs conveying the same message are sited consistently at the same height and juxtaposition to the specific hazard and/or type of safety equipment;

g) within the normal field of vision of the intended viewer;

NOTE 3 The horizontal eye line may be taken to be 1.7 m from ground or floor level. The horizontal eye line of a person in a wheelchair may be taken to be 1.16 m from floor level.

h) so that they contrast with the background on which they are mounted or against which they are viewed;

i) where the space in front of the sign can be kept clear so that people with uncorrected visual impairments are able to get close enough to identify the sign.

4.10 Safety sign and fire safety notice illumination

4.10.1 General

Safety signs and fire safety notices should be conspicuous and identifiable so adequate illumination is necessary. Safety signs and fire safety notices should continue to be effective upon removal of the usual light source. It is not normally considered satisfactory to rely on daylight alone for illumination unless the safety signs or fire safety notices are only required to be effective during daylight hours, for example in an external environment.

Effective artificial illumination is usually necessary in both normal and in mains-failure conditions unless the hazard has been eliminated by the failure of the normal supply, for example if machinery stops on mains failure.

Some types of lighting, e.g. low pressure sodium, do not enable effective colour recognition and are therefore unlikely to be suitable for the illumination of safety signs and fire safety notices.

Where emergency lighting is the source of illumination of the safety sign or fire safety notice in the mains-failure condition, the response time of the emergency lighting should conform to BS 5266-1, which also provides a minimum duration requirement for the emergency lighting.

*NOTE Various ways of ensuring the satisfactory illumination of safety signs and fire safety notices are detailed in **4.10.2**, **4.10.3** and **4.10.4**.*

4.10.2 Externally illuminated signs and notices

The colour and photometric properties of externally illuminated safety signs and fire safety notices should conform to BS ISO 3864-4. Where a sign or notice is illuminated by an external source, the vertical illumination should be not less than 100 lux under normal lighting conditions and should provide not less than 5 lux on any part of the face of the sign or notice under mains-failure conditions.

4.10.3 Phosphorescent signs and notices

The colour and photometric properties of externally illuminated phosphorescent safety signs and fire safety notices should conform to BS ISO 3864-4. The phosphorescent material should be not less than BS ISO 17398:2004, classification C. Where a phosphorescent sign or notice is used, the vertical illumination should be not less than 100 lux under normal lighting conditions.

In premises with emergency lighting, the vertical illumination should provide not less than 5 lux on any part of the face of the sign or notice under mains-failure conditions.

4.10.4 Internally illuminated signs and notices

The colour and photometric properties of internally illuminated safety signs and fire safety notices should conform to BS ISO 3864-4. The light source of an internally illuminated sign or notice should provide a luminous contrast appropriate to its environment without producing glare.

In premises with emergency lighting, the safety sign or fire safety notices under mains-failure conditions should conform to BS 5266-1.

NOTE Non-maintained internally illuminated signs require external illumination under normal, non-mains-failure conditions.

4.11 Construction, durability and suitability

Safety signs and fire safety notices should be selected to be suitable for their operating environment. The following should be considered.

a) Durability:

   1) of the base material, with respect to its suitability for internal and/or external applications and environments and the intended service life of the safety sign or fire safety notice. The thickness and density of the base material are factors that contribute to its durability;

   2) of the colour, with respect to light fastness and resistance to fading.

      NOTE 1 Safety signs and fire safety notices rely on colour as well as shape to convey the safety message so it is important that the colour does not change during the intended service life of the safety sign or fire safety notices.

b) Safety:

   1) combustibility and resistance to flame. It is good practice to ensure that all permanent safety signs and fire safety notices are made from material that is not readily combustible;

      NOTE 2 Purely temporary safety signs may be made of paper where this is appropriate to the operating environment.

   2) electrical safety. Electrically powered safety signs should conform to BS EN 60598-1. Installed safety signs should have a degree of protection suitable for the expected environmental conditions.

      NOTE 3 Refer to BS EN 60529 for additional information on protection.

It is also recommended that assurance from the supplier of the safety signs or fire safety notices should be sought in these respects.

NOTE 4 Refer to BS ISO 17398:2004 for additional information on durability.

4.12 Fixing

Fixing(s) should be selected to ensure that the safety sign(s) and fire safety notice(s) remain in-situ for the intended duration or life expectancy of the safety message.

Fixings to be considered should include:

a) mechanical;

b) adhesive;

c) suspension.

The surface to which the safety sign or fire safety notice is to be fixed should be suitable for the method chosen, for example, mechanical or suspension fixing requires a stable surface. Surfaces should be clean, dry, dirt and dust free prior to fixing adhesives.

Advice should be sought from the supplier of the safety signs or fire safety notices as to the most suitable fixing method to be used.

5 Documentation

Safety signs and fire safety notices should not contradict any formal safety management documentation or safety management systems.

Safety signs and fire safety notices used in conjunction with any operating manual or formal safety management procedure and practice should be recorded as part of the formal safety management documentation system.

The date of installation of each safety sign and fire safety notice should be noted in a log.

6 Training and education

The organization should identify and implement any training and ongoing education needed as a result of the installation of a safety signing or fire safety notice system. Employees and contractors within any specific assessment area should be provided with instruction and training in respect of the meaning of safety signs and the purpose of fire safety notices and actions required in conjunction with them.

7 Audit

Once the installation of the safety signing or fire safety notice system is complete the organization should carry out a formal audit to ensure the effectiveness and relevance of the system and of each individual safety sign or fire safety notice.

8 Servicing and maintenance

Safety signs and fire safety notices should be visually inspected and cleaned at regular intervals. Any defects should be remedied.

Safety signs and fire safety notices should be replaced or immediate action should be taken as a result of any of the following defects:

a) surface dirt, dust or grease;

b) fading of the colour;

c) other changes in the colour;

d) evidence of deformation, cracking, peeling or flaking of the material;

e) evidence of fixing failure;

f) obstruction;

g) insufficient illumination;

h) defacement.

If a defective safety sign or fire safety notice requires replacement, it should be replaced with one conveying the same meaning and of the same or similar type so as to remain consistent with the safety signing or fire safety notice system in place.

Cleaning intervals should be scheduled to ensure that safety signs and fire safety notices remain effective. These intervals should be individually determined according to the assessment area and the activities undertaken within that assessment area. For example, in order to maintain the integrity and identifiability of safety signs, an assessment area producing dust should have a more regular maintenance and inspection programme compared to that in an office environment.

A general, non-abrasive cleaner and a soft cloth should be used in most cases. However, advice from the supplier of the safety signs or fire safety notices should be sought to clarify the most effective cleaning method to be used.

9 Monitoring and review

The organization should:

- provide for the continuing monitoring of the effectiveness and continued relevance of the safety signing or fire safety notice system and of each individual safety sign and fire safety notice;
- ensure that safety signs and fire safety notices are properly maintained;
- ensure that safety signs and fire safety notices are removed immediately the specific hazard has been eliminated or any risk control measure is no longer deemed appropriate.

A formal review of the safety signing or fire safety notice system should be carried out annually.

NOTE This may form part of the formal status review of the safety management system.

The following factors should be considered as part of the review:

a) the use of the assessment area;

b) the legislation applicable to the premises and the assessment area and the requirements, if any, of the enforcing authorities;

c) the safety management system controlling processes within the assessment area;

d) the safety management system controlling the training, induction and continuing education of personnel within specific assessment areas.

If the premises are modified or the use of the premises changes, or if any of the design considerations detailed as part of the status review change significantly, the safety signing or fire safety notice system should be reviewed and modified as necessary.

Annex A (normative) Fire safety notices

A.1 Design principles

The geometrical format of mandatory notices and fire equipment notices should be in accordance with Figure A.1a) and Figure A.1b) respectively. The safety colour and contrast colour should be in accordance with BS ISO 3864-4.

NOTE The geometrical format for fire equipment notices incorporates a "flame determinant".

Text within the geometrical format should give a specific message. The text should be in lower case with an initial upper case letter. The font used should be either a sans serif typeface, for example Helvetica bold or Helvetica medium, or a typeface with very small serifs with the following characteristics:

a) widths of strokes throughout the letters constant within 10%;

b) widths of strokes at least one sixth of the letter height;

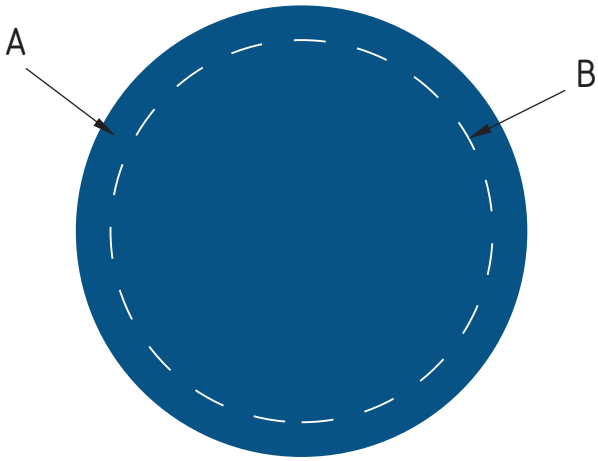
c) width of lower case letter "x" not less than 70% of the letter height;

d) not condensed, expanded, italic, script, outline or shaded;

e) letters individually formed and not joined together."

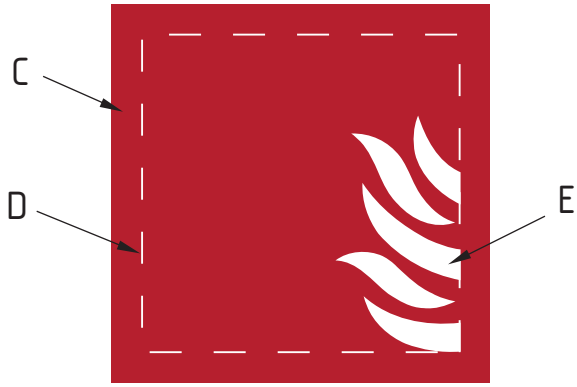
No part of the text should enter an exclusion zone of width 0.08 x notice height, or the determinant (see Figure A.1).

Figure A.1 **Geometrical formats for fire safety notices and exclusion zones**



a) Mandatory notice

Exclusion zone: A zone, set within the circle, which has a width equal to 0.08 of the outer diameter of the notice. The boundary of the exclusion zone is shown by a dotted white line.



b) Fire equipment notice

Exclusion zone: A zone, set within the square, which has a width equal to 0.08 of the outer square of the notice. The boundary of the exclusion zone is shown by a dotted white line.

Key

A Mandatory notice
B Exclusion zone 0.08 notice diameter
C Fire equipment notice
D Exclusion zone 0.08 height of square
E Flame determinant

A.2 Selection of fire safety notices

A comprehensive statement of requirements for fire safety notices should be prepared. This should be agreed by all persons responsible for safety within the assessment area and, where deemed necessary or appropriate, by any enforcing authority, before the fire safety notices and their locations are determined.

Fire safety notices should be selected from the examples in Table A.1 or Table A.2. When a fire notice of the required meaning is not within Table A.1 or Table A.2, a new fire safety notice should be designed in accordance with A.1.

NOTE 1 The examples in Table A.1 and Table A.2 include fire safety notices that had been in BS 5499-5.

NOTE 2 Borders are excluded from the dimension of the geometrical format.

Table A.1 **Examples of mandatory notices**

	**Reference No. FNM1** **Function** To signify that the fire door has to be kept shut **Dimensions** Lower case letter height 4.5 mm Notice diameter 60 mm
	**Reference No. FNM2** **Function** To signify that the fire door has to be kept locked shut **Dimensions** Lower case letter height 4.5 mm Notice diameter 60 mm
	**Reference No. FNM3** **Function** To signify that the automatic fire door has to be kept clear **Dimensions** Lower case letter height 4.5 mm Notice diameter 60 mm
	**Reference No. FNM4** **Function** To signify that the door has to be closed at night **Dimensions** Lower case letter height 4.5 mm Notice diameter 60 mm
	**Reference No. FNM5** **Function** To signify that the security door is alarmed **Dimensions** Lower case letter height 4.5 mm Notice diameter 60 mm

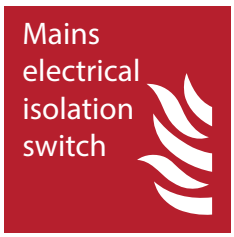
Table A.1 **Examples of mandatory notices**

	**Reference No. FNM6** **Function** To signify that the secure door has to be open when premises are occupied **Dimensions** Lower case letter height 4.5 mm Notice diameter 80 mm
	**Reference No. FNM7** **Function** To signify that security fastenings have to be removed when premises are occupied **Dimensions** Lower case letter height 4.5 mm Notice diameter 80 mm
	**Reference No. FNM8** **Function** To signify that the escape route has to be kept clear **Dimensions** Lower case letter height 14 mm Notice diameter 180 mm
	**Reference No. FNM9** **Function** To signify that the fire exit has to be kept clear **Dimensions** Lower case letter height 14 mm Notice diameter 180 mm

Table A.2 **Examples of fire equipment notices**

	**Reference No. FNF1** **Function** To indicate the location of a foam inlet **Dimensions** Lower case letter height 15 mm Height of square 120 mm
	**Reference No. FNF2** **Function** To indicate the location of a dry riser **Dimensions** Lower case letter height 15 mm Height of square 120 mm
	**Reference No. FNF3** **Function** To indicate the location of a wet riser **Dimensions** Lower case letter height 15 mm Height of square 120 mm
	**Reference No. FNF4** **Function** To indicate the location of a sprinkler stop valve **Dimensions** Lower case letter height 10 mm Height of square 120 mm
	**Reference No. FNF5** **Function** To indicate the location of a gas shut off valve **Dimensions** Lower case letter height 10 mm Height of square 120 mm
	**Reference No. FNF6** **Function** To indicate the location of a sprinkler control valve **Dimensions** Lower case letter height 10 mm Height of square 120 mm

Table A.2 **Examples of fire equipment notices**

	**Reference No. FNF7** **Function** To indicate the location of automatic smoke vent **Dimensions** Lower case letter height 10 mm Height of square 180 mm
	**Reference No. FNF8** **Function** To indicate the location of fire-fighter's switch **Dimensions** Lower case letter height 8 mm Height of square 120 mm
	**Reference No. FNF9** **Function** To indicate the location of mains electrical isolation switch **Dimensions** Lower case letter height 8 mm Height of square 120 mm
	**Reference No. FNF10** **Function** To indicate the location of smoke vent manual control **Dimensions** Lower case letter height 8 mm Height of square 120 mm
	**Reference No. FNF11** **Function** To indicate the location of mains water stop valve **Dimensions** Lower case letter height 8 mm Height of square 120 mm

A.3 Zone of influence

Whereas the geometric format of fire safety notices indicates the presence/location of a fire safety notice, it is the text which gives the specific fire safety instruction. Hence the viewing zone for legibility of the text is the primary element of concern.

By the time a person has reached the spherical legibility zone, the person should be able to correctly read the text to identify the specific fire equipment or operational management of a secure door.

In order to establish the location, size and position of each fire safety notice, the required zone for legibility of each fire safety notice should be established. Situations of normal lighting of the fire safety notice and if present, under emergency lighting should be taken into account.

The legibility distance of a fire safety notice is affected by the vertical illumination on the notice. The distance factors for lower case letters given in Table 2 should be used.

For externally illuminated fire safety notices, Table A.3 gives the maximum legibility distances normal to fire safety notice/diameter of zone for legibility of lower case letters under a vertical illuminance of 100 lux and 5 lux respectively.

Table A.3 **Examples of maximum viewing distances/diameter of zones for legibility of text for externally illuminated fire safety notices of different height of lower case letters subject to a vertical illuminance of 100 lux or 5 lux**

Lower case letter height [A)]	**Legibility distance normal to fire safety notice/diameter of zone for legibility of text subject to a vertical illuminance of 100 lux** [B)]	**Legibility distance normal to fire safety notice/diameter of zone for legibility of text subject to a vertical illuminance of 5 lux** [C)]
mm	m	m
4.5	1.0	0.5
8	1.8	0.9
10	2.2	1.1
14	3.1	1.5
15	3.3	1.6

[A)] The height of the lower case letters selected from Table A.1 and Table A.2.
[B)] The appropriate value for z_0 selected from Table 2 is 225.
[C)] The appropriate value for z_0 selected from Table 2 is 110.

Where the required legibility distance is longer than the examples in Table A.3, the geometrical format of the fire safety notices can be enlarged proportionally to encompass the appropriate height for the lower case letters.

Drawing appropriately sized circles on a scaled plan can assist in determining an appropriate height of the lower case letters for a particular location and range of approach towards the fire safety notice of people of different eye heights.

Annex B (informative) Examples of application of distance factor for safety signs

B.1 Introduction

Figure A.1 of BS ISO 3864-1 shows that as a consequence of the distance of observation of a safety sign depending upon a multiplying factor of cosα (where α is the angle from the normal from the sign) the boundary to the observation distance at different angles of α lies on the surface of a sphere. For a safety sign of height h and distance factor normal to the sign z_0, the sphere has a diameter of z_0h centred at a perpendicular distance of $z_0h/2$ from the sign.

B.2 Horizontal plane at level of safety sign

Figure B.1 shows that on the horizontal viewing plane of the sign and looking towards the sign, the boundary to the observation distances is a circle of diameter z_0h. The examples illustrate a safety sign with a z_0 of 60 and different safety sign heights of 60 mm, 80 mm, 120 mm, 180 mm and 240 mm. At the observation position "P" on the circle, the sideways distance from the normal to the sign is given by $0.5z_0h\sin 2\alpha$ and the observation distance is $z_0h\cos\alpha$. The maximum sideways distance is $0.5z_0h$ where the observation distance is $0.707z_0h$.

Figure B.1 **Circular boundaries of observation distances in horizontal plane**

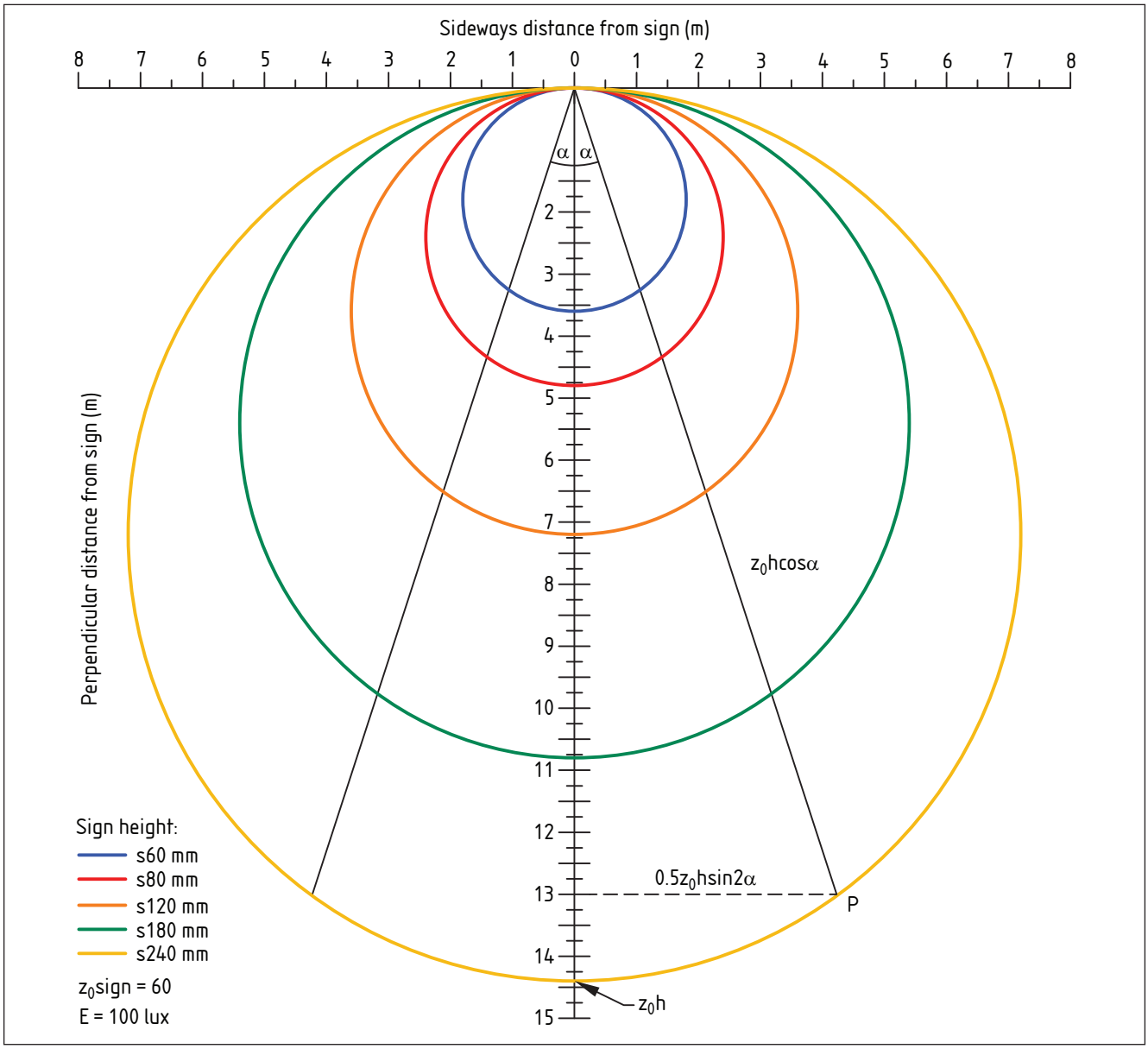
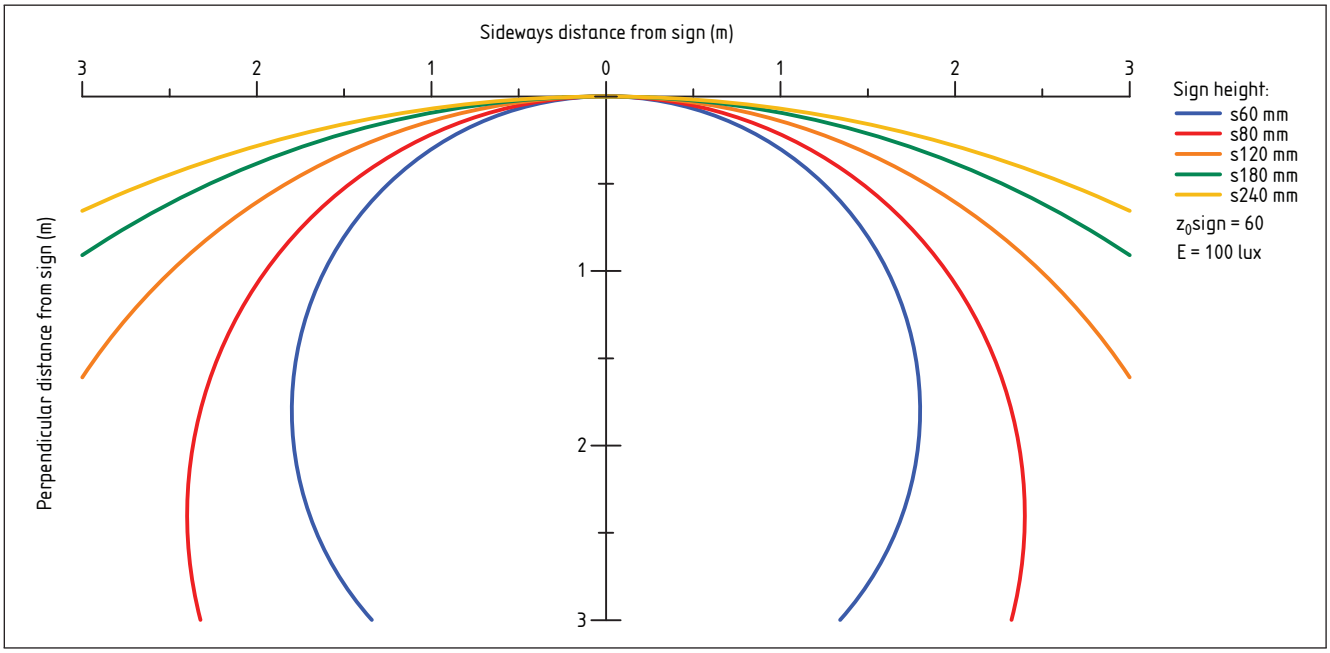


Figure B.2 shows the circular boundaries when within 3 m distance from the sign.

Figure B.2 **Circular boundaries of observation distances in horizontal plane**



B.3 Horizontal plane above or below the level of safety sign

When the observation is made at an eye height of ΔH above or below the height of the sign, the radius of the circular boundary is reduced. The radius of the circle, centred at a perpendicular distance of $z_0h/2$ from the sign, is given by:

$$r = \sqrt{((0.5z_0h)^2 - (\Delta H)^2)}$$

Figure B.3 shows how the radius "r" varies with differences in height ΔH for different safety sign heights for an externally illuminated safety sign under not less than 100 lux with a z_0 of 60. As the difference in eye height from the safety sign height increases, the radius "r" within which the observer needs to be positioned to identify the safety sign decreases.

NOTE r can be calculated in terms of observation angle α. The height difference ΔH is given by $0.5z_0h\sin 2\alpha$ and r is given by $0.5z_0h\cos 2\alpha$.

Figure B.3 **Variation of radius "r" against difference in observation height ΔH for an externally illuminated safety sign under 100 lux**

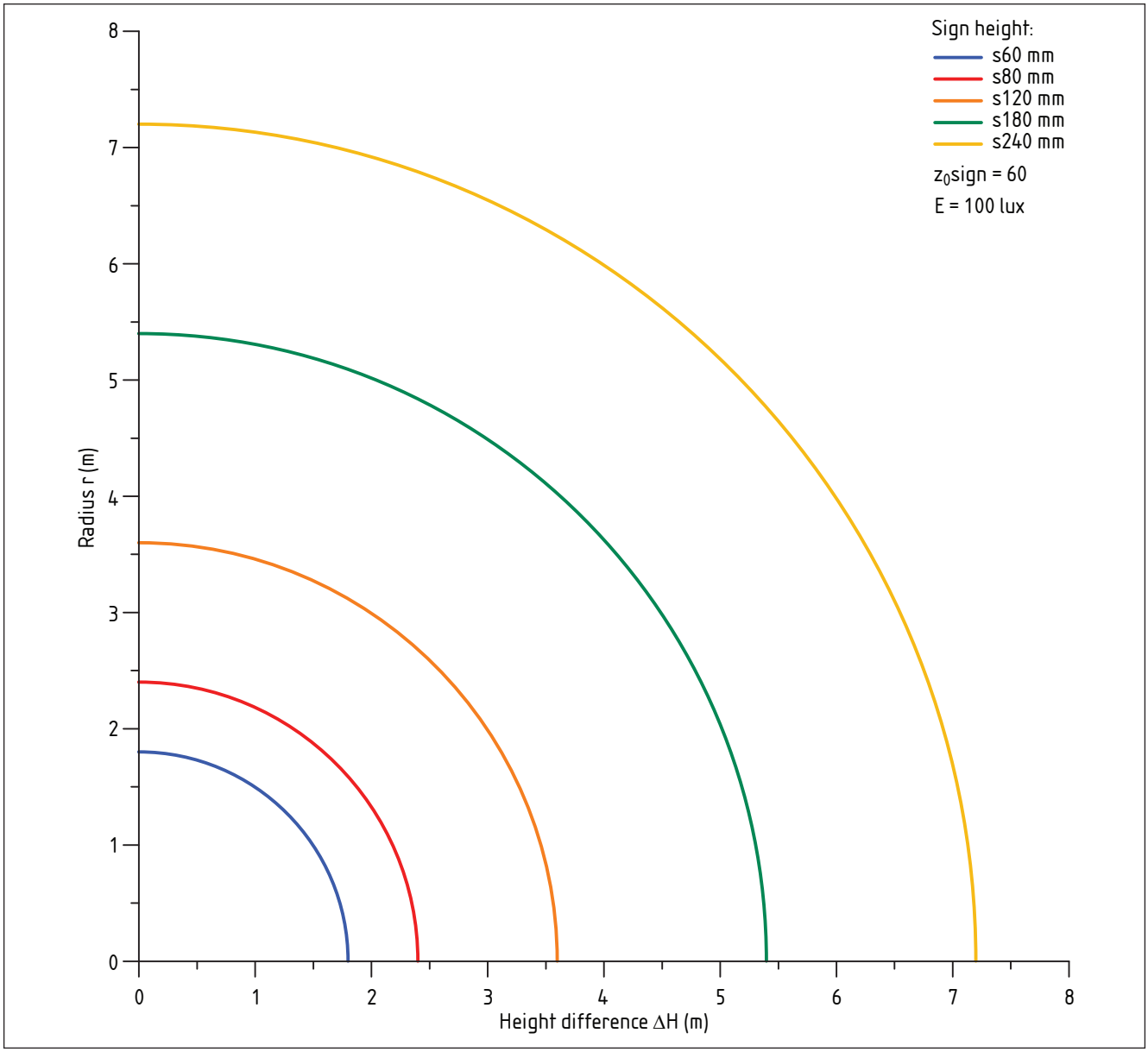
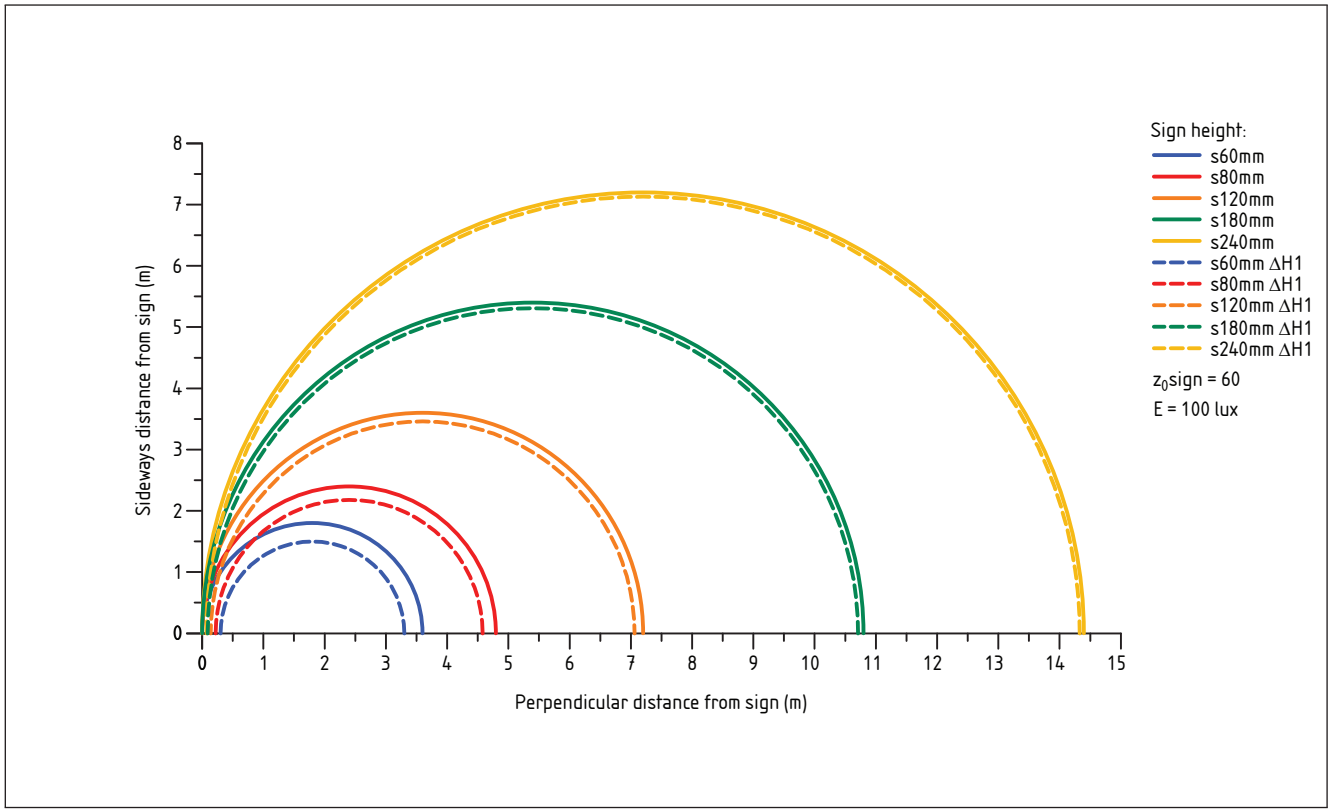


Figure B.4 shows the slightly smaller circles when ΔH is ± Δ1 m. The effect of eye height relative to the height (location) of a safety signs reduces the observation distance and is more marked for the smaller sign heights (60 mm and 80 mm).

Figure B.4 **Circular boundaries of observation distances in horizontal plane: at eye level of sign and eye levels of ±1 m above and below the height of sign**



B.4 Sign and lower case supplementary text: Horizontal plane at level of safety sign

A safety sign (graphical symbol) is often accompanied by a supplementary text sign. For an externally illuminated safety sign under not less than 100 lux, a distance factor z_0 of 225 is taken for lower case letters.

Figure B.5 shows the circular boundaries for observation distances for safety signs (graphical symbols, labelled "s") and lower case letters (labelled "lc") in supplementary text signs under a vertical illumination condition of 100 lux. In these examples, for each combination of sizes of safety sign and lower case letters, the observation distance is shorter for the lower case text.

Figure B.5 **Circular boundaries of observation distances for safety sign and lower case supplementary text in horizontal plane under a vertical illumination condition of 100 lux**

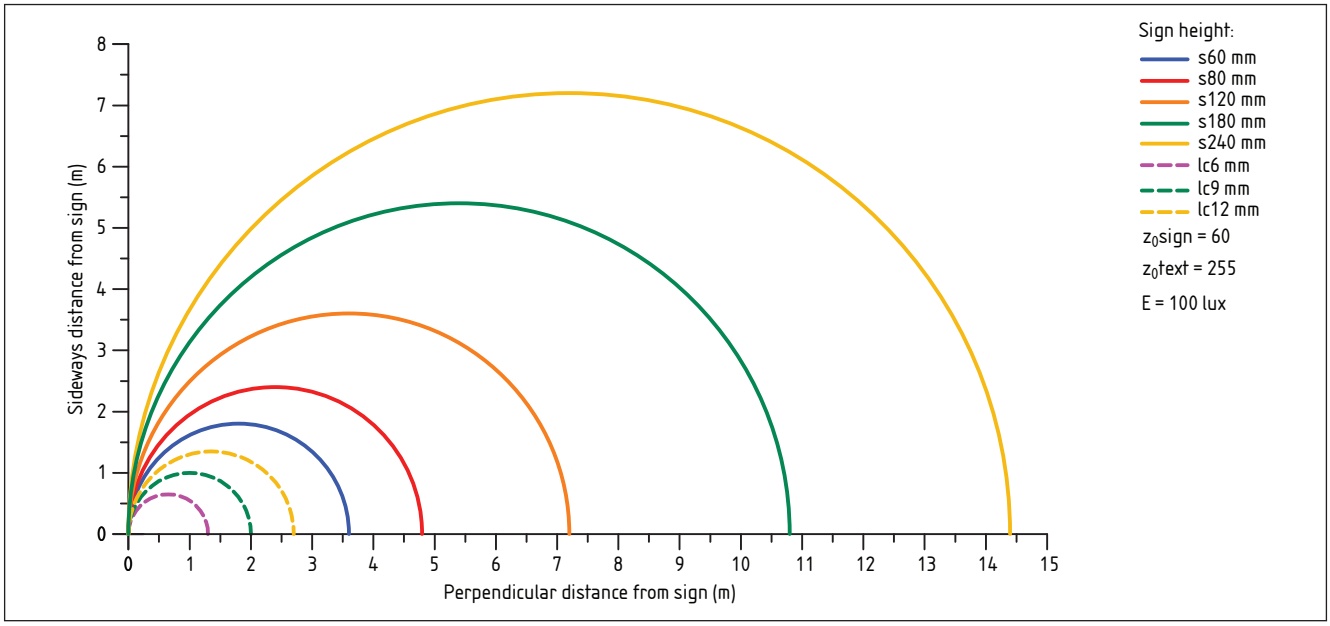


Figure B.6 shows the circular boundaries when within 3 m distance from the sign under a vertical illumination condition of 100 lux.

Figure B.6 **Circular boundaries of observation distances for safety sign and lower case supplementary text in horizontal plane when within 3 m distance from the sign under a vertical illumination condition of 100 lux**

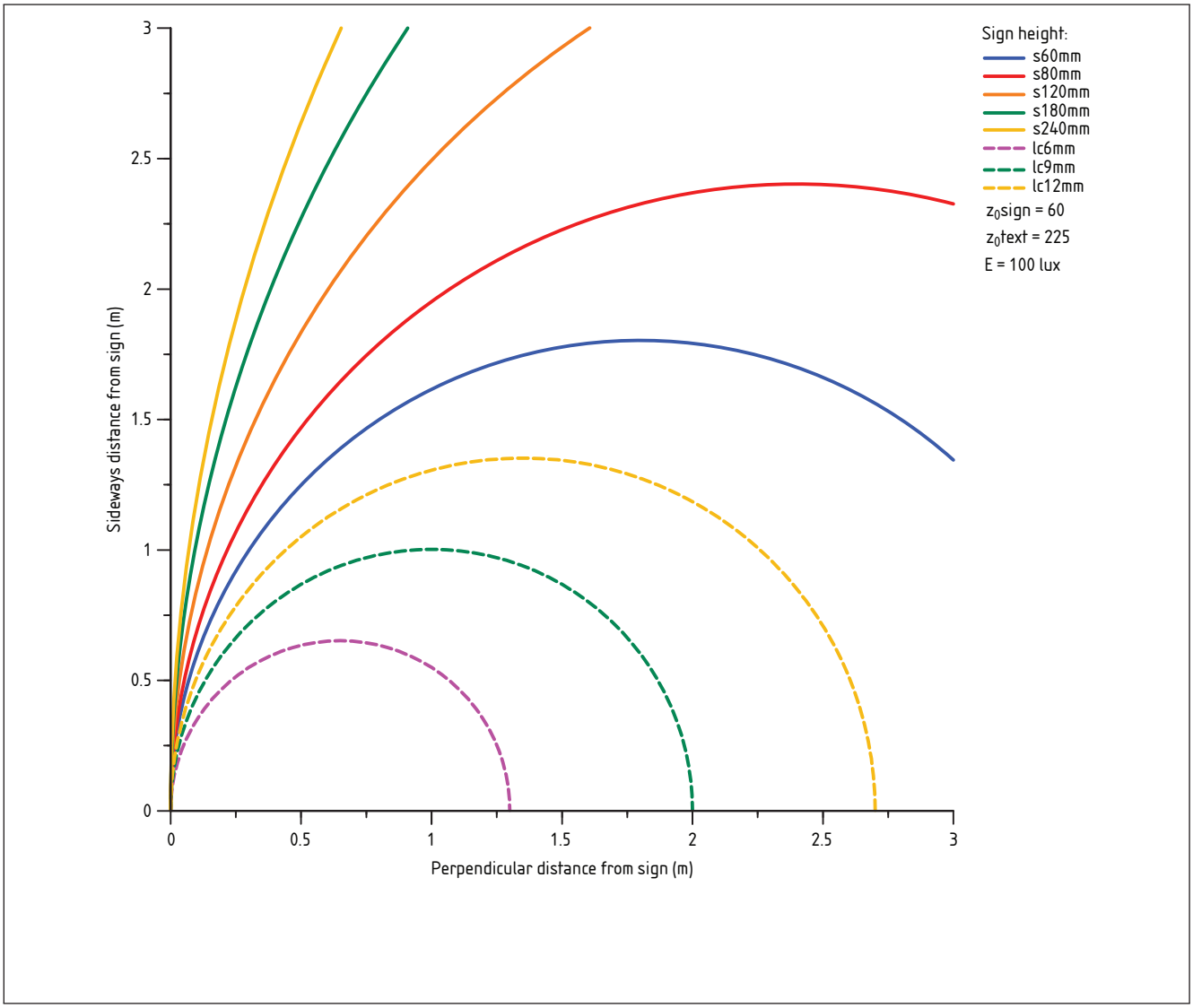


Figure B.7 shows the circular boundaries for observation distances for safety signs (graphical symbols, labelled "s") and lower case letters (labelled "lc") in supplementary text signs under a vertical illumination condition of 5 lux.

Figure B.7 **Circular boundaries of observation distances for safety sign and lower case supplementary text in horizontal plane under a vertical illumination condition of 5 lux**

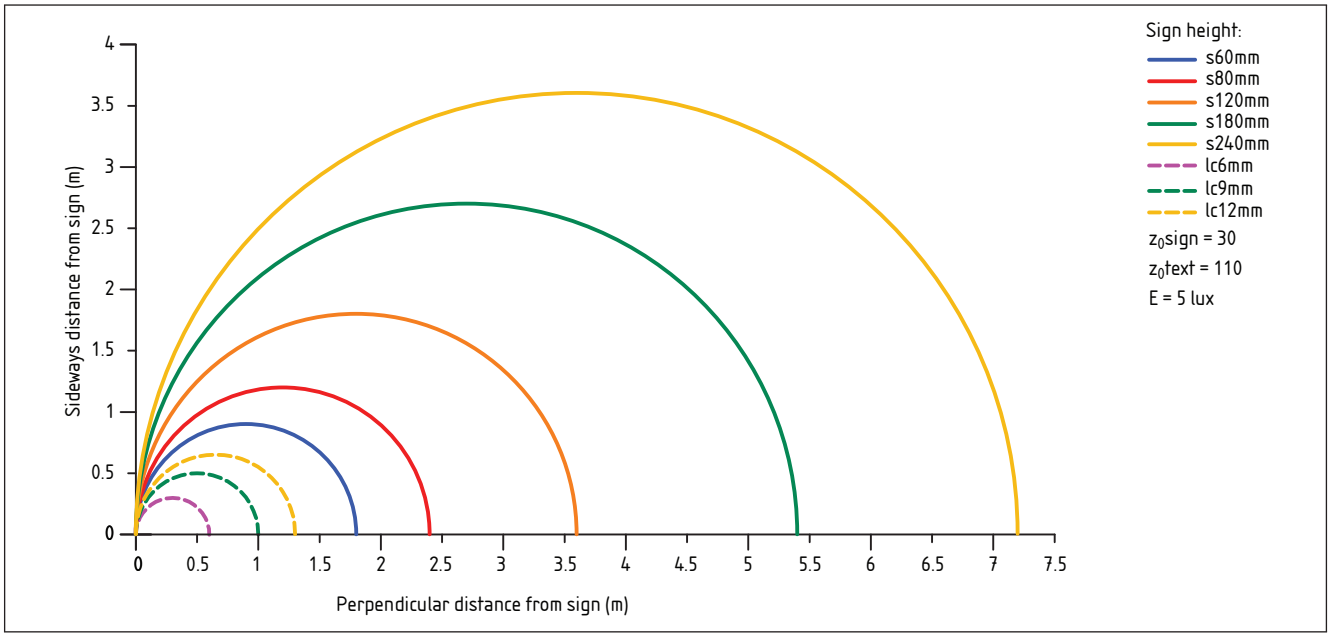
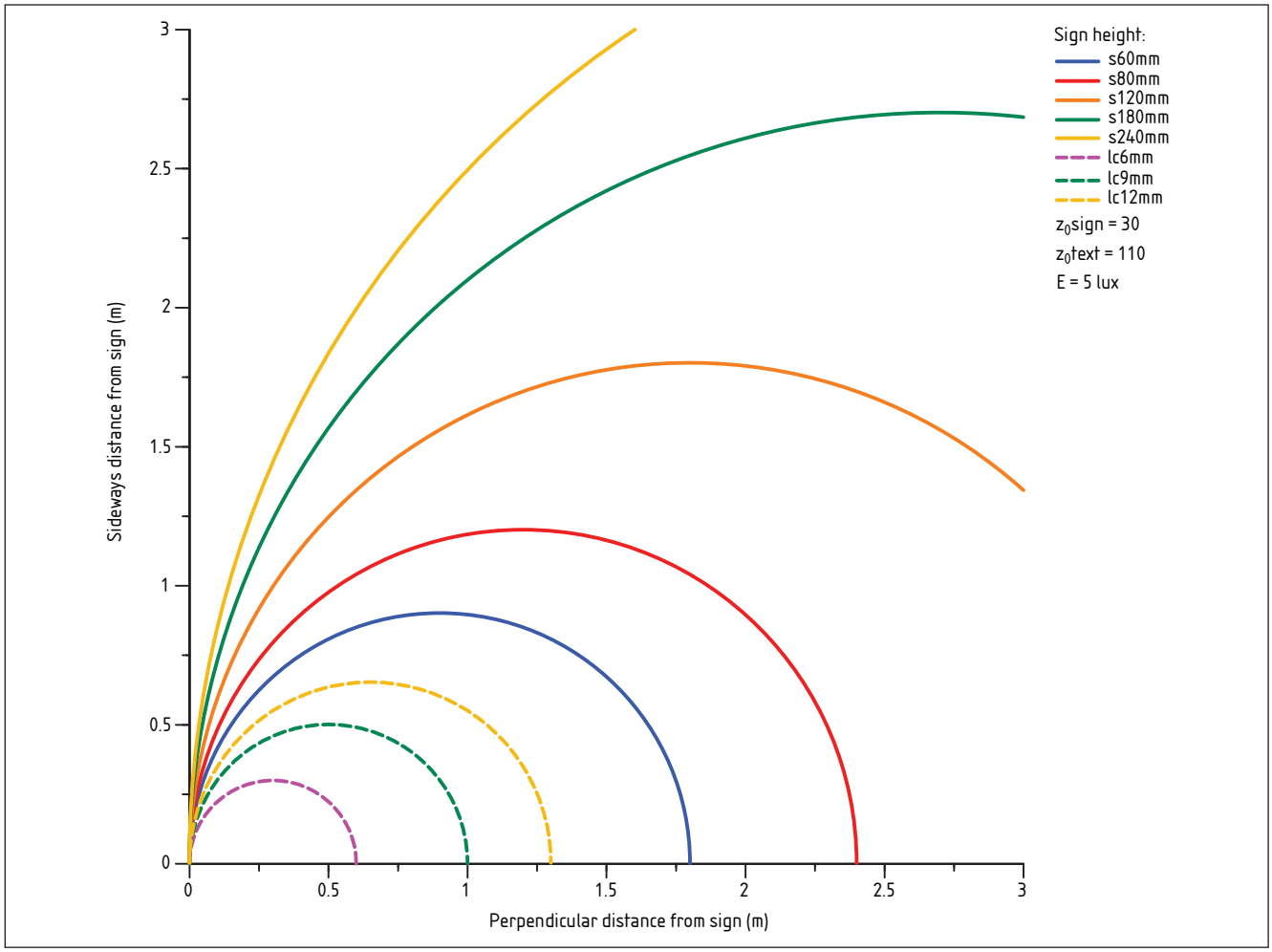


Figure B.8 shows the circular boundaries when within 3 m distance from the sign under a vertical illumination condition of 5 lux.

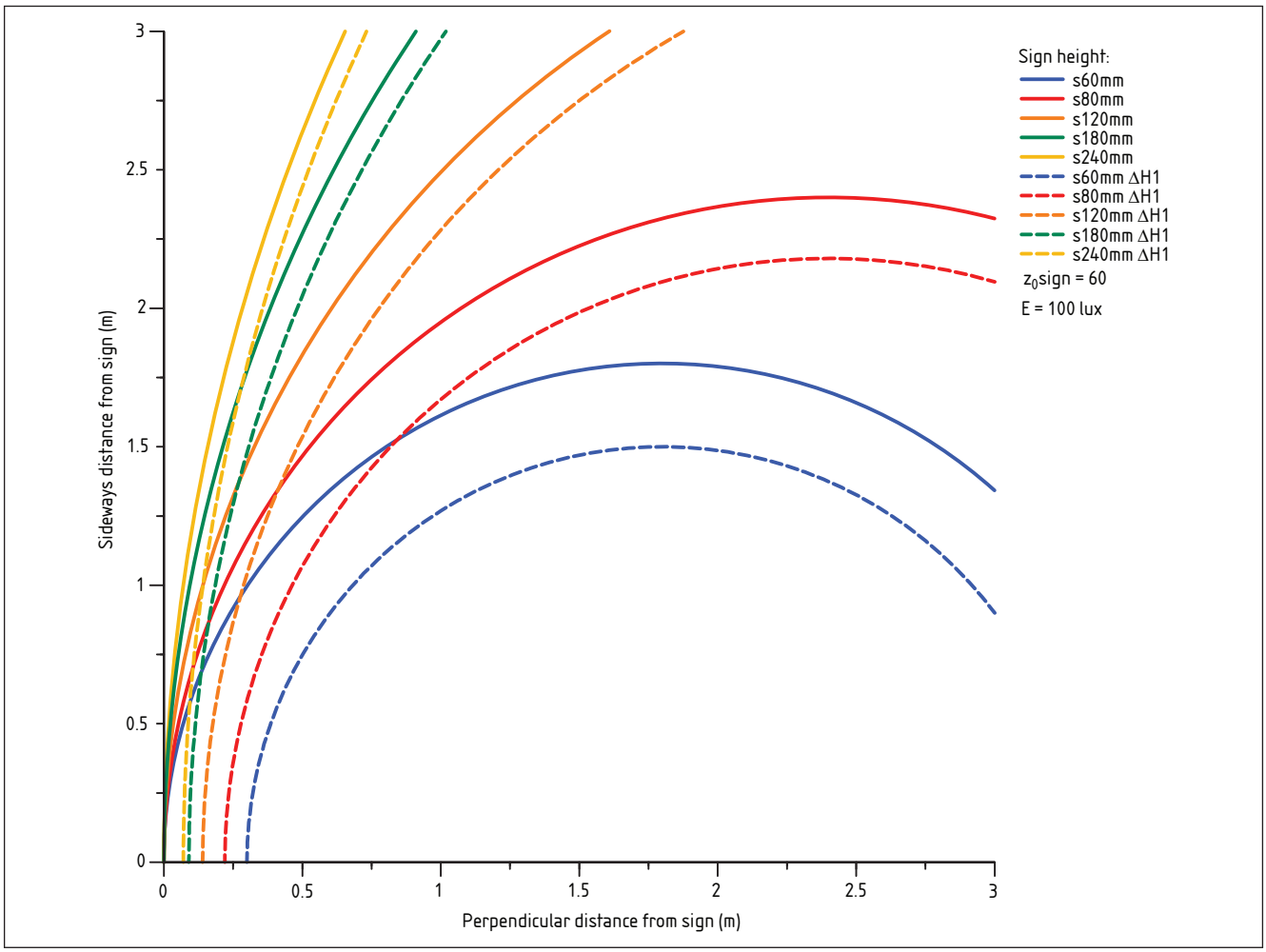
Figure B.8 **Circular boundaries of observation distances for safety sign and lower case supplementary text in horizontal plane when within 3 m distance from the sign under a vertical illumination condition of 5 lux**



B.5 Safety signs on walls and doors in a corridor

When passing along a corridor, safety signs on the corridor walls and doors are at an oblique angle such the observation distance is much shorter that when observed directly ahead. Figure B.9 shows an example of a 3 m wide corridor, where the eye line is at least 0.3 m from either wall of the corridor with the safety sign under a vertical illumination condition of 100 lux. For a safety sign of height of 60 mm, to identify the sign from a distance of 1.5 m before reaching the sign, the observer would need to be at least 1 m from the wall of the sign. The effect of observing from ± 1 m above/below the sign location reduces the observation distance, being more marked for the smaller sign heights.

Figure B.9 **Approaching a safety sign side-on: Circular boundaries of observation distances in horizontal plane: at eye level of sign and eye levels of ±1 m above and below the height of sign**



Annex C (informative)

Examples of the use of safety signs to indicate the location and identification of safety equipment, fire equipment and safe drinking water, and of the hierarchy of safety signs

C.1 Examples of the use of safety signs to indicate the location and identification of safety equipment, fire equipment and safe drinking water are illustrated in Figures C.1 to C.9.

Figure C.1 **Illustration of the use of a safety sign to identify a particular switch as being a first aid call point**

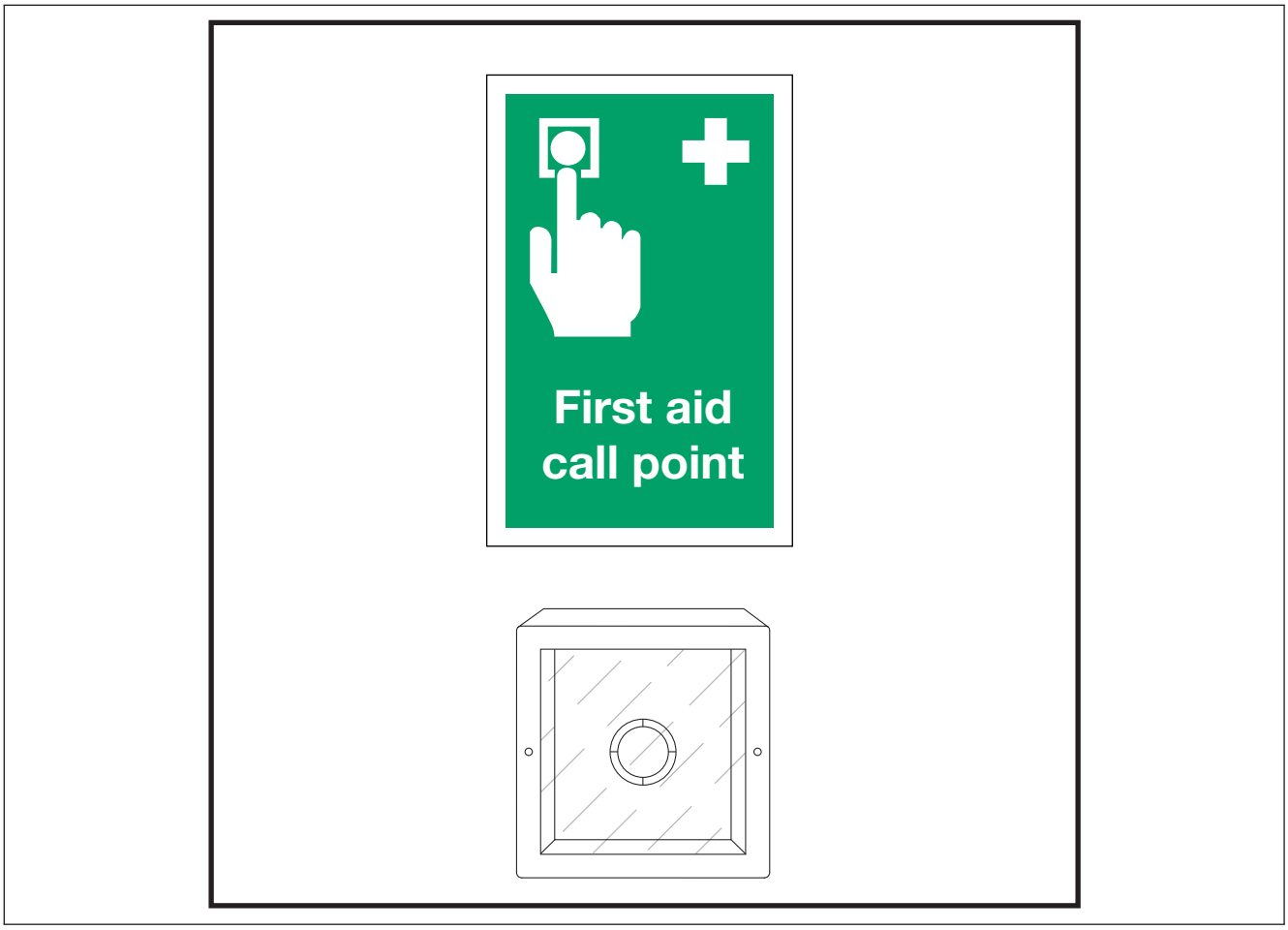


Figure C.2 **Illustration of the use of a safety sign to identify a particular telephone as being one for emergency use**

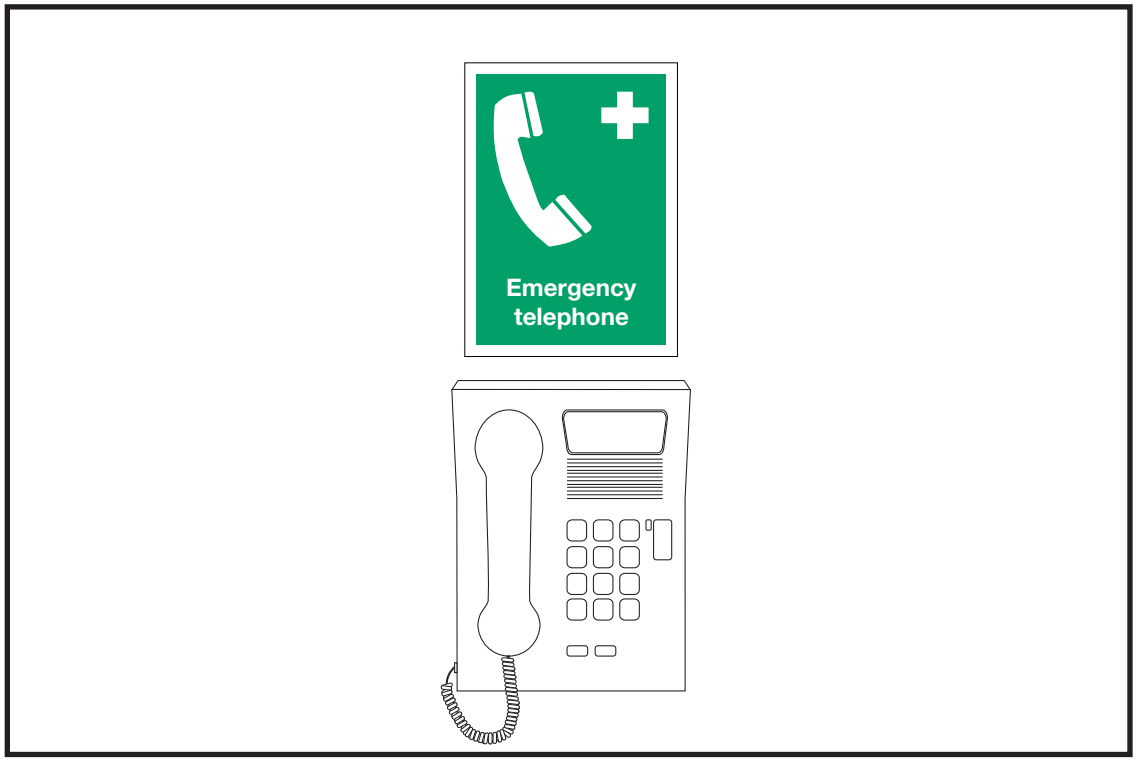


Figure C.3 **Illustration of the use of a safety sign to indicate the position of an emergency shower so that it can be located**

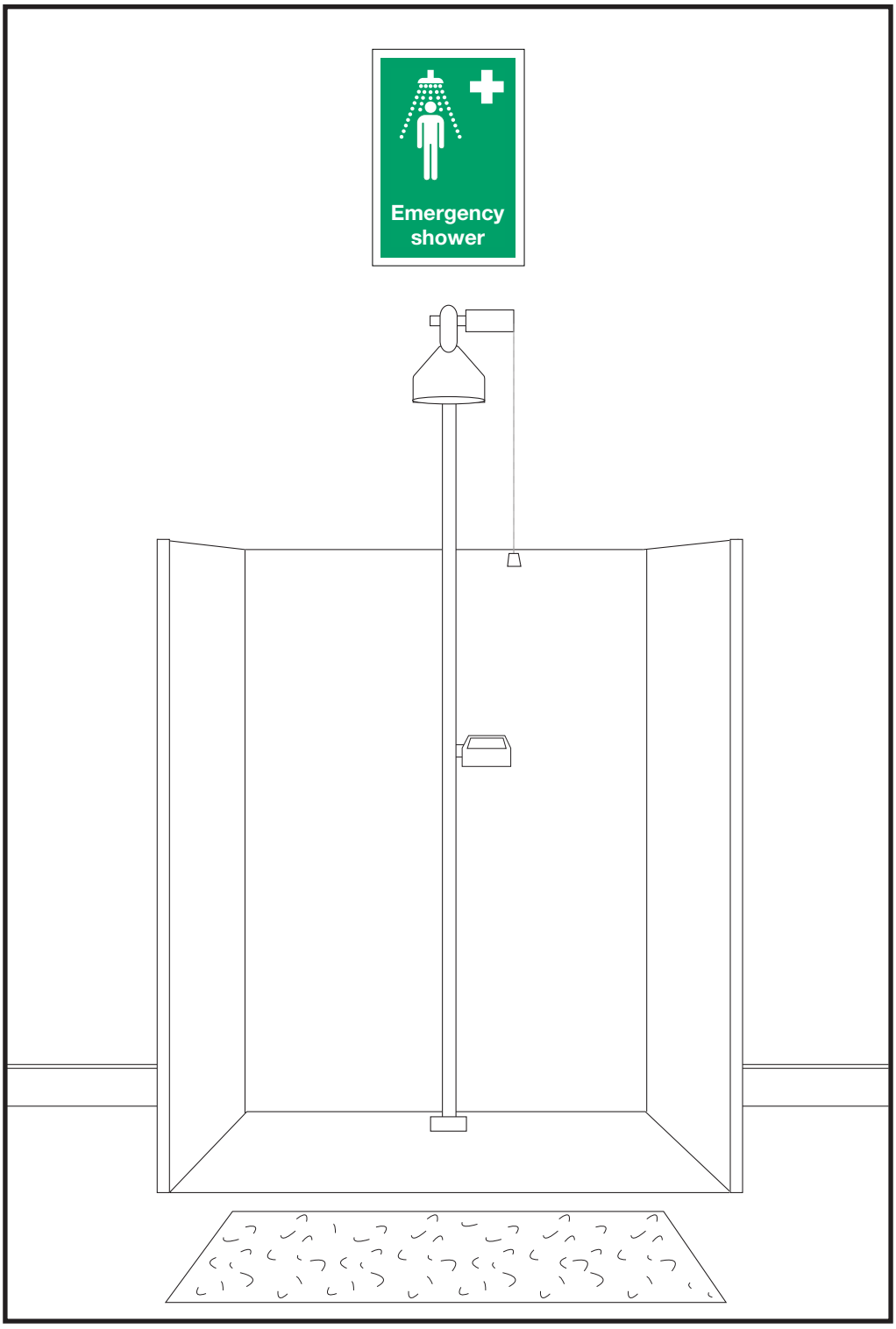


Figure C.4 **Illustration of the use of a safety sign to indicate that water from a particular tap is safe for drinking**

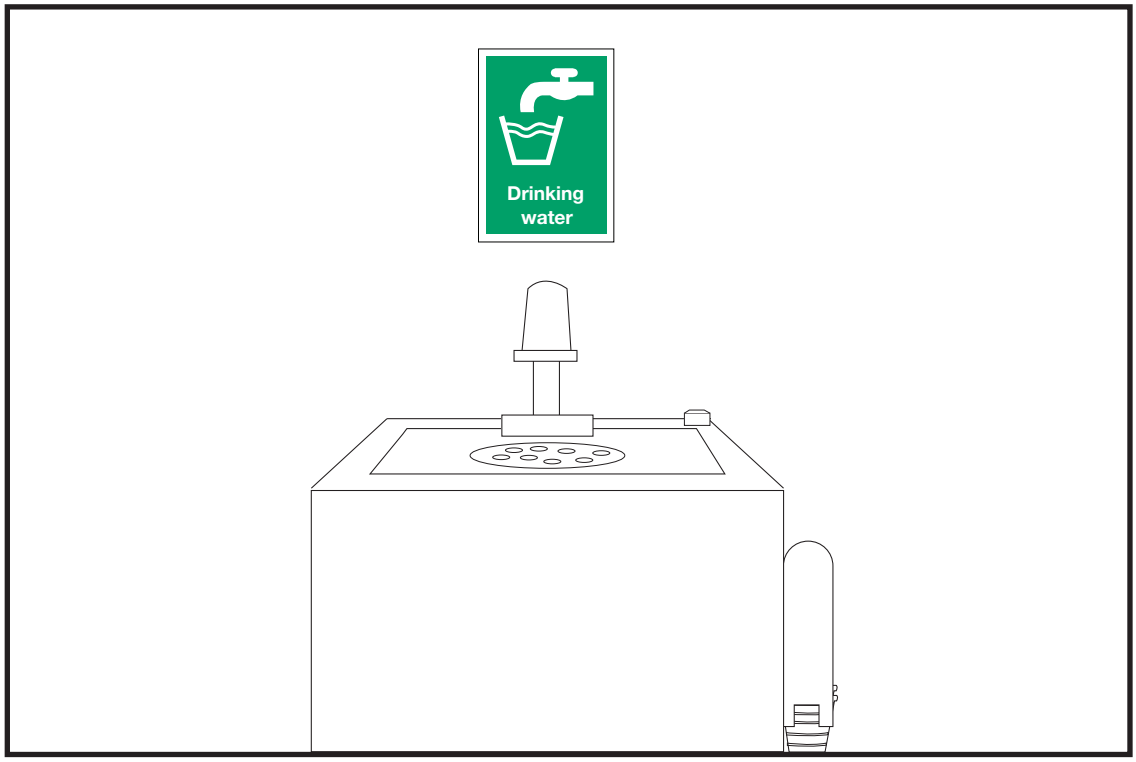
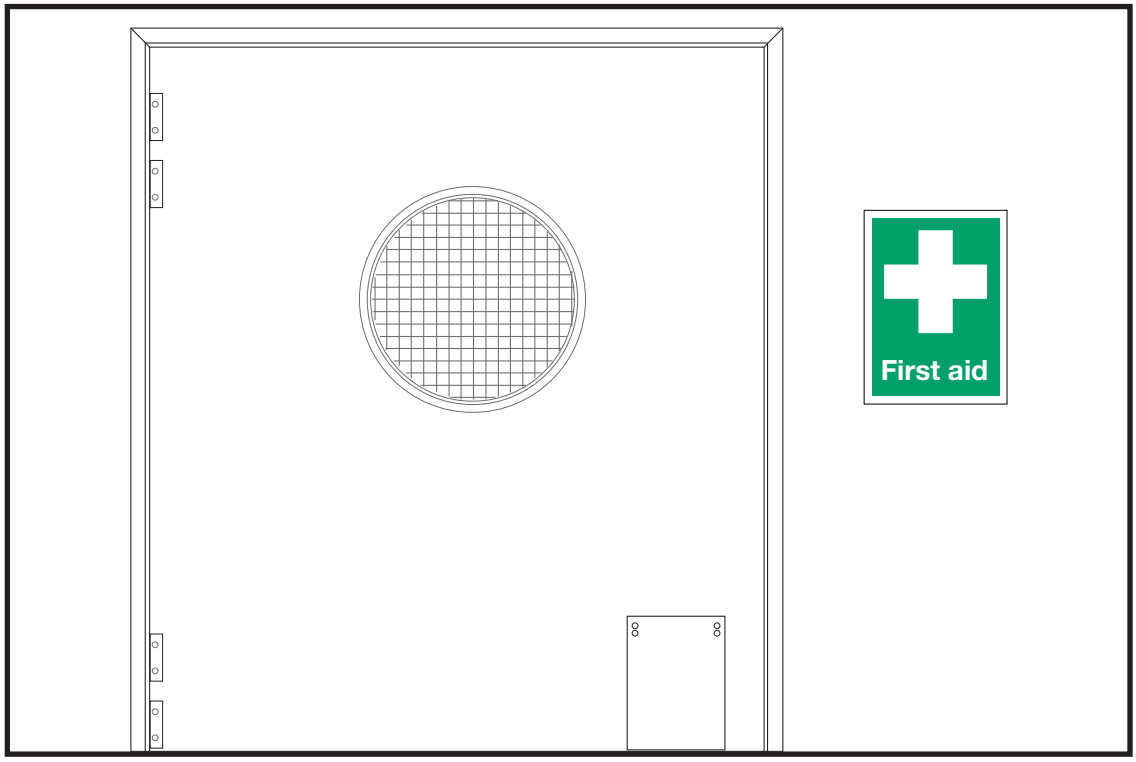


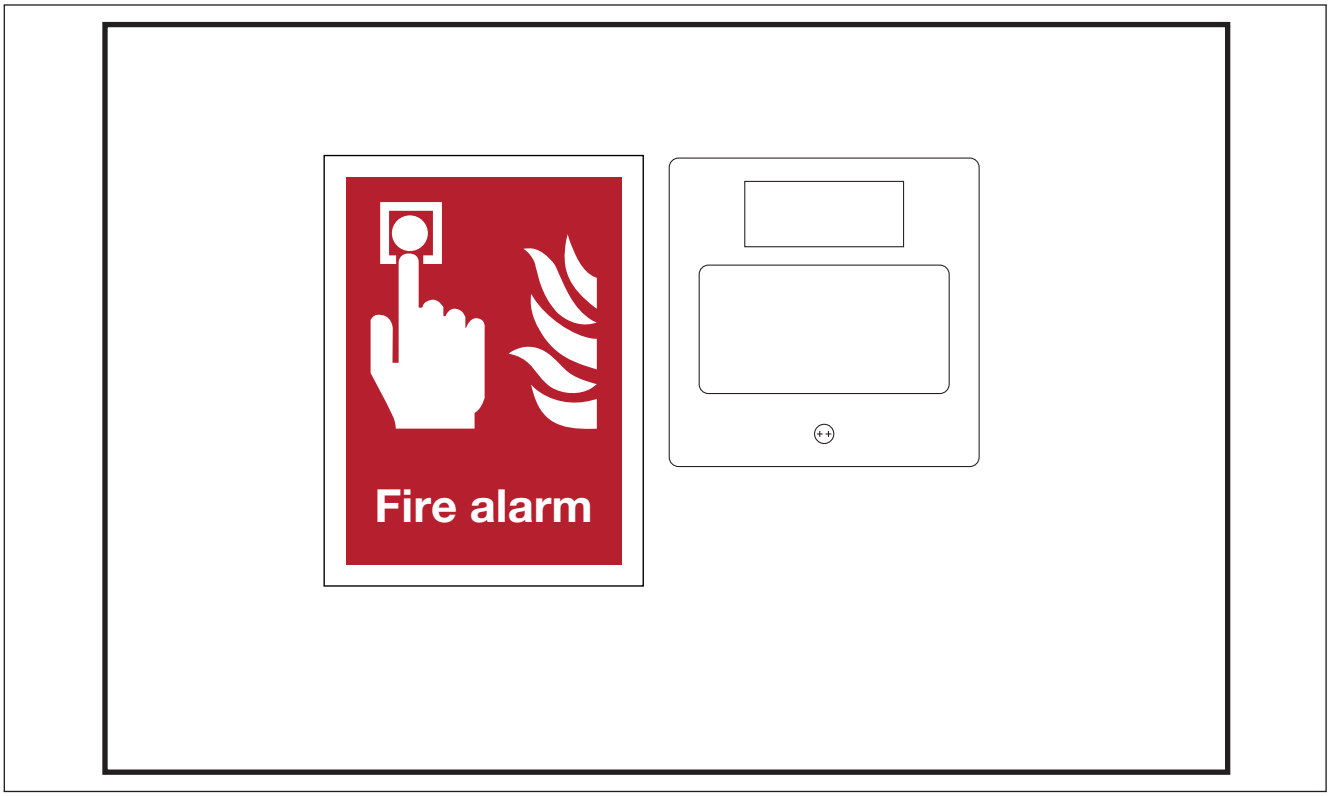
Figure C.5 **Illustration of the use of a safety sign to indicate the location of a first aid station**



NOTE The sign is not positioned on the door as the door might be left open.

Figure C.6 **Illustration of the use of a safety sign to indicate that a particular locker houses a stretcher**

Figure C.7 **Illustration of the use of a safety sign to identify the unit as being a fire alarm call point**



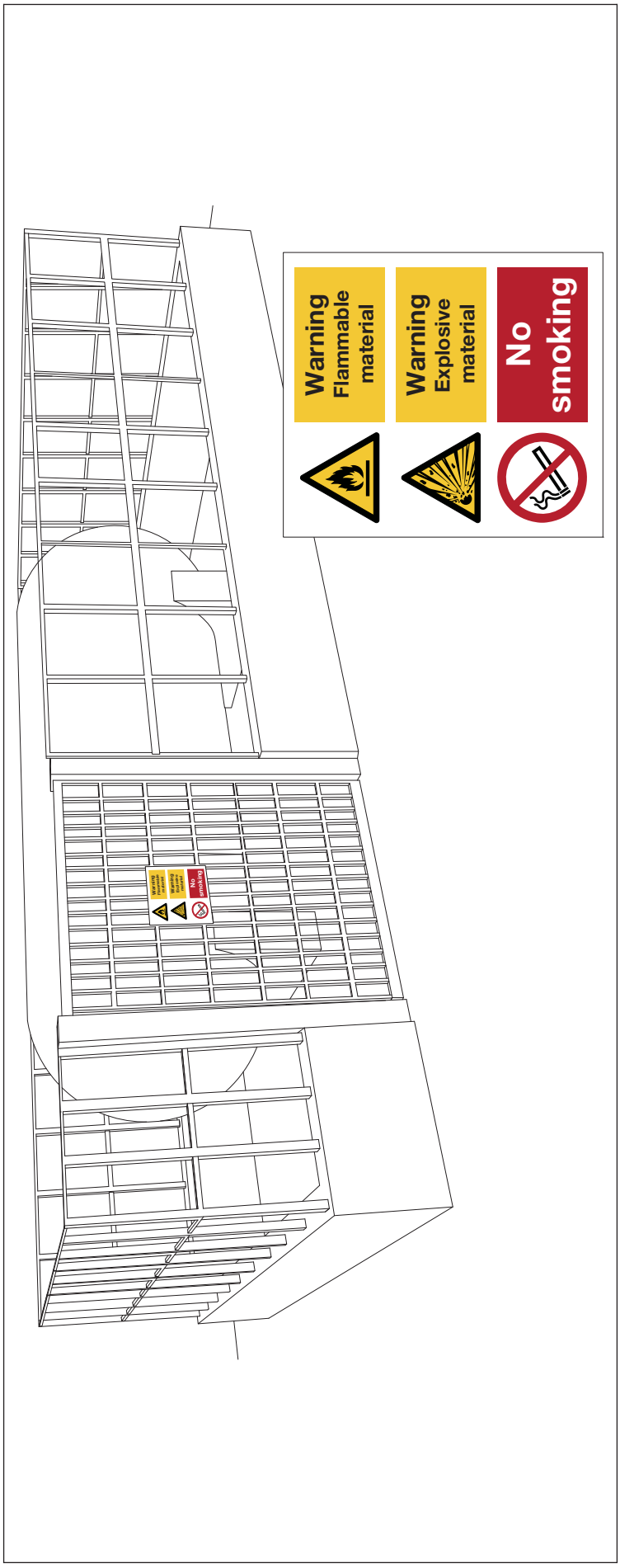
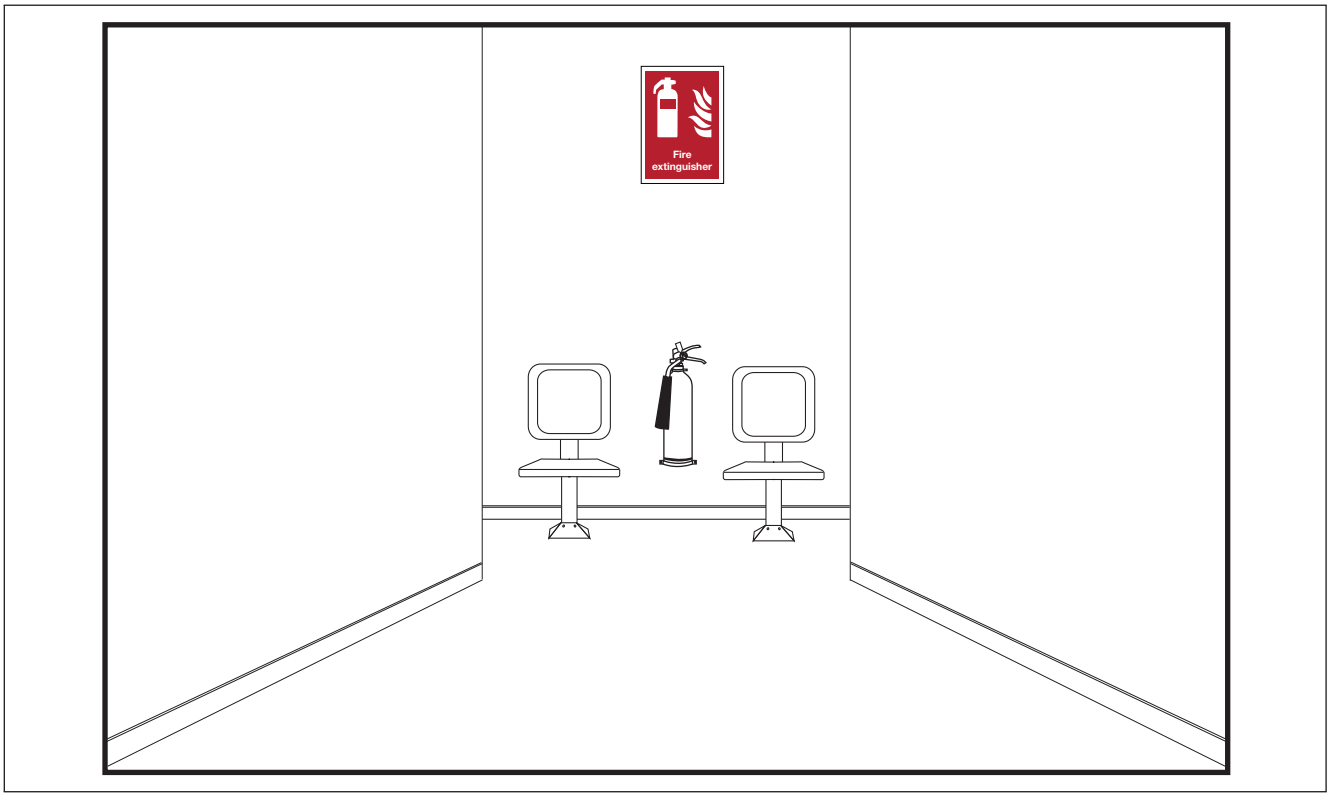


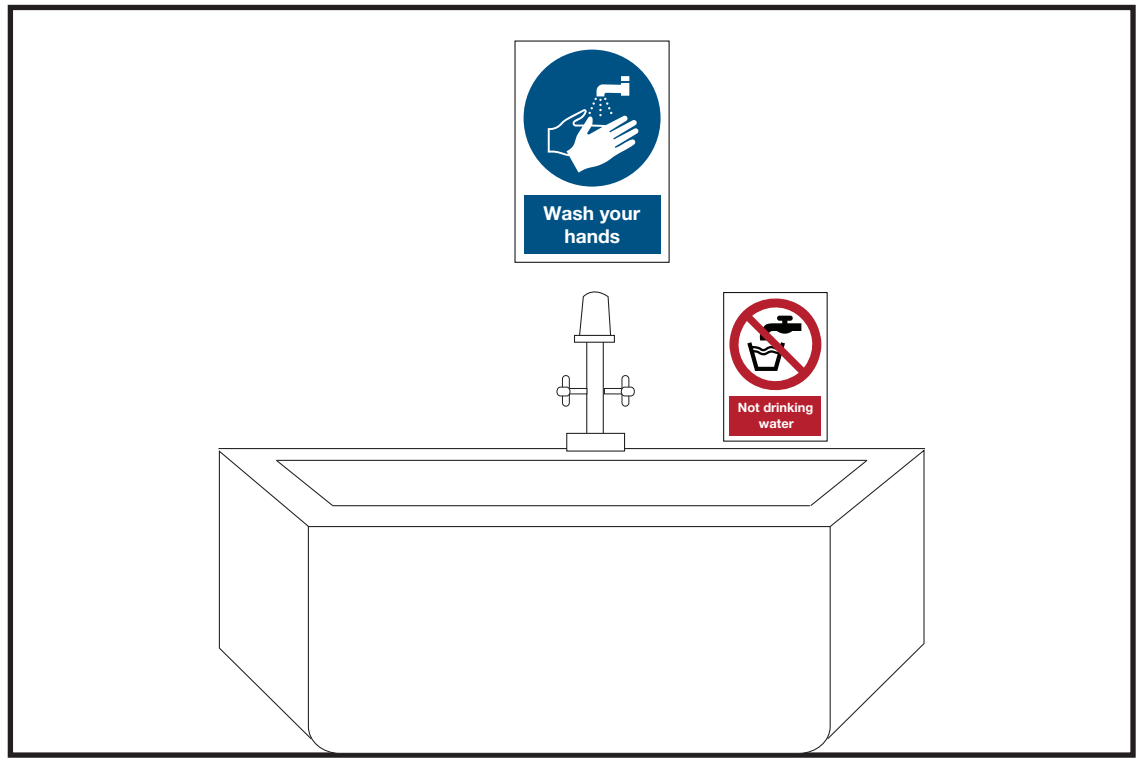
Figure C.8 Illustration of the use of a multiple safety sign to identify the risk(s) and prohibited action(s) upon entering an oil/gas tank enclosure

Figure C.9 **Illustration of the use of a safety sign to indicate the position of a fire extinguisher so that it can be located from a distance in a situation where other objects (in this case chairs) might distract the viewer**



C.2 The concept of hierarchy of signs (see **4.8**) is illustrated in Figure C.10. If the facility shown in Figure C.10 were to be provided in a kitchen, for example, where food is regularly handled, the hand washing facility needs to be clearly identified. When the viewer reaches the hand washing facility the smaller prohibition sign gives extra safety information by indicating that the water is not for drinking.

Figure C.10 **Illustration of the use of a hierarchy of safety signs**



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BS ISO 17724:2003, *Graphical symbols – Vocabulary*

BS ISO 20712-1, *Water safety signs and beach safety flags – Part 1: Specifications for water safety signs used in workplaces and public areas*

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Other publications

[1] GREAT BRITAIN. Health and Safety (Safety Signs and Signals) Regulations 1996, (SI 1996 No. 341). London: The Stationery Office.

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[4] GREAT BRITAIN. The Safety Representatives and Safety Committees Regulations 1977 (as amended). London: The Stationery Office.

Further reading

BS 18004, *Guide to achieving effective occupational health and safety performance*

BS ISO 9186-1, *Graphical symbols – Test methods – Part 1: Method for testing comprehensibility*

ISO/IEC Guide 74, *Graphical symbols: Technical guidelines for the consideration of consumers' needs*

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