PD 7974-5:2014+A1:2020

BSI Standards Publication

Application of fire safety engineering principles to the design of buildings –

Part 5: Fire and rescue service intervention (Sub system 5)

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Contents

Summary of pages
This document comprises a front cover, and inside front cover, pages i to iv, pages 1 to 49, an inside back cover and a back cover.

Foreword

Publishing information

This Published Document is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 30 November 2014. It was prepared by Technical Committee FSH/24, *Fire safety engineering*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

PD 7974-5:2014+A1:2020 supersedes PD 7974-5:2014, which is withdrawn.

Relationship with other publications

This Published Document takes information on building characteristics and the design fire from the qualitative design review (QDR) together with the time of fire service notification from sub-system 4 (PD 7974-4) and the time of evacuation from sub-system 6 (PD 7974-6). It provides information on the effect of fire service activities on the growth of the fire, which is used by sub-system 1 (PD 7974-1).

PD 7974-5 is part of the PD 7974 series. Other documents in the series are:

- Part 1: *Initiation and development of fire within the enclosure of origin (Sub-system 1)*;
- Part 2: *Spread of smoke and toxic gases within and beyond the enclosure of origin (Sub-system 2)*;
- Part 3: *Structural response and fire spread beyond the enclosure of origin (Sub-system 3)*;
- Part 4: *Detection of fire and activation of fire protection systems (Sub-system 4)*;
- Part 6: *Human factors – Life safety strategies – Occupant evacuation, behaviour and condition (Sub-system 6)*;
- Part 7: *Probabilistic risk assessment*.

These Published Documents are intended to be used in support of BS 7974.

Where appropriate, references to relevant standards are provided in order to assist the reader in understanding the design methodologies presented and to compare different approaches or sources of data. It is therefore important that PD 7974-5 is not used in isolation and reference is made to the relevant standards, particularly in relation to additional notes and subclauses describing its application.

Information about this document

This is an amendment of the Published Document and introduces updated and new guidance on the relationship between building design and fire and rescue service operating procedures. The guidance provided within this Published Document may be considered incomplete at this time, particularly requiring a fundamental review of firefighting access provisions.

There are a number of matters under recent national regulatory consultation and review. These include (but are not limited to):

a) the maximum permitted building heights denoting a range of firefighting access measures in both new and refurbished buildings;

b) the physiological limitations placed on firefighters, firefighter safety particularly in extended corridors and single stair buildings;

c) the adequate provision of modern firefighting lifts;

d) external wall hazards;

e) wayfinding;

f) mass evacuation of tall residential and other high-rise buildings;

g) evacuation alert systems;

h) sprinkler provisions;

i) basement ventilation for firefighting access;

j) smoke control provisions;

k) specific materials used in construction; and

l) along with a range other matters that may be subject to the outcomes of ongoing national review.

All of these issues directly impact on existing fire and rescue service operating procedures and will therefore be dealt with in a future revision of this Published Document. Users of the current edition of this Published Document need to ensure that the local fire and rescue service is consulted as a stakeholder, as part of the Qualitative Design Review process, where a fire safety engineering approach to access and facilities for the fire service is proposed.

Text introduced by or altered by Amendment No. 1 is indicated in the text by tags ▌A1⟩ ⟨A1▌. Minor editorial corrections are not tagged.

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

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

Use of this document

As a guide, this Published Document takes the form of guidance and recommendations. It should not be quoted as if it were a specification or a code of practice and claims of compliance cannot be made to it.

This publication is not regarded as a British Standard.

Presentational conventions

The guidance in this Published Document is presented in roman (i.e. upright) type. Any 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.

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 Published Document cannot confer immunity from legal obligations.

Introduction

This Published Document is one of a series of documents intended to support BS 7974. BS 7974 provides a framework for developing a rational methodology for design using a fire safety engineering (FSE) approach through the application of scientific and engineering principles to the protection of people, property and the environment from fire. The Published Documents (PDs) contain guidance and information on how to undertake quantitative and detailed analysis of specific aspects of the design. They are a summary of current practice and it is intended that they be updated as new theories, calculation methods and/or data become available. They do not preclude the use of appropriate methods and data from other sources. BS 7974 can be used to define one or more fire safety design issues to be addressed using FSE. The appropriate PD(s) can then be used to set specific acceptance criteria and/or to undertake detailed analysis. A FSE approach that takes into account the total fire safety package can often provide a more fundamental and economical solution than more prescriptive approaches to fire safety. It might in some cases be the only viable means of achieving a satisfactory standard of fire safety in some large or complex buildings. FSE can have many benefits. The use of BS 7974 can facilitate the practice of FSE and in particular it can:

a) provide the designer with a disciplined approach to fire safety design;

b) allow the safety levels for alternative designs to be compared;

c) provide a basis for selection of appropriate fire protection systems;

d) provide opportunities for innovative design; and

e) provide information on the management of fire safety for a building.

Fire is an extremely complex phenomenon and there are still gaps in the available knowledge. When used by suitably qualified persons, experienced in FSE, the series of documents can provide a means of establishing acceptable levels of fire safety economically and without imposing unnecessary constraints on aspects of building design.

1 Scope

This part of PD 7974 provides guidance on FSE and the necessary interaction with fire service intervention activities. This published Document applies irrespective of whether the design objective, or fire service activities are intended to support life safety, property, business, mission, or heritage protection objectives as defined in the qualitative design review (QDR) process described in [A1] BS 7974 [A1]. The guidance provides an understanding of both the capabilities and limitations of fire service intervention, and takes into account the physiological demands on fire-fighters, the fire-fighting procedures that are used and the limitations of fire-fighting equipment.

This part of PD 7974 is intended to be applied to the design of new and, where appropriate, the appraisal of existing, buildings and plant.

It also contains analytical tools that allow an analysis of fire and rescue service intervention and offers a range of approaches that could improve the efficiency and effectiveness of fire and rescue service intervention if analysis indicates that design objectives might not be achieved.

The fire and rescue service can request access and facilities to assist them with emergencies other than fire. The recommendations contained in this document could be of value when considering such requests but the primary purpose of this document is concerned with fire.

