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Lifts (elevators) — Requirements for lifts used to assist in building evacuation

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National foreword

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TECHNICAL SPECIFICATION

ISO/TS 18870

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Lifts (elevators) — Requirements for lifts used to assist in building evacuation

Ascenseurs — Exigences pour les ascenseurs utilisés en cas d'évacuation de bâtiments

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 178, *Lifts, escalators, and moving walks*.

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Introduction

This Technical Specification has been prepared in response to ISO/TC 178 Resolution 273/2007 in which the Technical Committee requested that WG 6 undertake to write a specification for lift features that if incorporated into an appropriate lift would enable it to be used in safety to evacuate persons from a building that was suitably designed.

This work results from a detailed study undertaken by TC 178/WG6 into the feasibility of using lifts for evacuation of persons. The study ISO/TR 25743 indicated that it was feasible to use lifts, provided that certain features were incorporated in the lift and also in the building.

Lift engineers and other specialists have been involved in the production of this specification.

It has been recognized that lift engineers are not experts in building design or fire engineering. The writing of this Technical Specification does not indicate if it is acceptable or permitted to use lifts for building evacuations. It only indicates the features required should those persons responsible wish to make such a decision. This Technical Specification does not define, in any detail, building features that will have to be provided in conjunction with a lift intended to be used for evacuation. Its aim is to make clear to those persons involved in building design and fire engineering the issues that they shall address to enable the lift to be used safely.

There are many reasons why a building might need to be evacuated, such as a fire, explosion, chemical or biological attack, flooding, storm damage, earthquake, etc. Not all of these are relevant to every building and other hazardous situations, while existing, are so unlikely to occur that they can be disregarded. Designers of buildings have to determine if a particular hazard is sufficiently great as to require addressing.

If, for example, a small office block is being designed that will be located in a mid-town area, it is within the realm of possibility that it could be subjected to an explosion or chemical attack (terrorism). It is not, however, very likely to be the case unless it has some particular reason to make it vulnerable. In most cases, the risk of these events is probably so low as to make it unnecessary for them to be addressed.

If the building is to be the headquarters of National Security, this will increase the likelihood of it being subjected to some form of attack. It might be necessary to consider the effects of an explosion in or close to the building or a chemical agent being introduced into the building.

Clearly, a building constructed in an area where earthquakes do not normally occur need not have provisions made for such an event.

If a building is to be built in the centre of a major city to form a prestigious landmark, it might be essential to consider all likely events that could occur.

The designer of the building has to determine, by risk assessment or other methods, what hazardous events needs to be reasonably addressed. Once this is completed, ISO/TR 25743 can be used to understand the lift and building features that might be required for each evacuation scenario envisaged.

A lift or lifts can enable disabled persons to evacuate a building in relative ease, but if it is thought, lifts could play a role in general evacuation, they might or might not make a significant contribution to reducing the general evacuation time. It will depend on the building size, number of lifts, etc.

This Technical Specification defines lift requirements to address common hazards that all users could be exposed to if lifts are used for evacuation.

Even if it is thought that lifts could play a part in a general evacuation, it might prove to be uneconomical. It is not suggested for lifts to replace or change the requirements for escape stairs, and that using lifts instead of stairs can increase evacuation times in many building designs. The intention is to allow lifts to play a positive role in assisting and improving the efficiency of the building evacuation strategy.

This Technical Specification is divided into sections covering the key items that have to be addressed. There is no priority intended from the order in which the items are listed.

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TECHNICAL SPECIFICATION ISO/TS 18870:2014(E)

Lifts (elevators) — Requirements for lifts used to assist in building evacuation

1 Scope

This Technical Specification details requirements for passenger carrying lifts, which are installed in buildings having a suitable comprehensive building evacuation strategy. It does not define building requirements that will have to be provided as part of the overall evacuation strategy for the building.

Excluded from this Technical Specification are the following:

— details of a building evacuation strategy;

— details of building features to reduce risks or eliminate hazards;

— national building requirements which might demand special features.

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.

ISO 4190-5, *Lift (Elevator) installation — Part 5: Control devices, signals and additional fittings*

3 Terms and definitions

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

3.1
Alternative Evacuation Exit Floor
AEEF
level defined by the building designer to be used for evacuation when systems or management determine it should be used

3.2
Building Management System
BMS
system capable of making appropriate decisions based on information sent to it

3.3
chemical incident
introduction of a gas, chemical, bacterial agent, or substance into the building

3.4
building management
persons or organization responsible for ensuring the day-to-day safe efficient running of the building and for ensuring the building is safely evacuated in line with the evacuation strategy

3.5
ETA
estimated time of arrival of the lift

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3.6
fire
combustion of material producing, heat, sometimes smoke, and/or flame

3.7
Fire Command Centre
FCC
room or area provided in the building where information is displayed showing the status of a fire detection system and lifts, etc. and where management can receive audible and visual information to determine what actions to take if lifts are to be used

3.8
fire compartment
fire separated area
area within a building bounded by walls, floor, and ceiling constructed from fire resisting material so as to provide resistance to fire for a defined period

3.9
fire warden
person appointed by the building management to assist in managing the evacuation of a floor or area of building during an emergency

3.10
hazardous area
area where due to heat, smoke, gas, etc. the environment is considered dangerous to persons

3.11
hazard detection system
system of sensors capable of automatically detecting fire, smoke, gas, etc

3.12
impaired mobility
difficulty in using stairs because of a physical impairment

3.13
lift evacuation time
time a person spends using a lift to evacuate

Note 1 to entry: It is expressed in s.

Note 2 to entry: This is measured from initiation of evacuation service for a given floor plus the time spent travelling to the floor plus the time to open doors, load the car return nonstop to main exit for evacuation, open doors, and empty lift car.

3.14
Main Evacuation Exit Floor
MEEF
floor designated by the building designer where persons should exit lifts to leave the building

Note 1 to entry: This might or might not be the normal exit floor or ground floor of the building.

3.15
required lift evacuation handling capacity
number of persons who can be moved to the main evacuation exit floor in a five-minute period, expressed as a percentage of the total number of persons to be evacuated by lifts

Note 1 to entry: This is not to be confused with normal lift handling capacity.

3.16
required lift evacuation time
time measured from start of the lift evacuation service to completion of the evacuation of a floor or number of floors

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