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Escalators and moving walks – Code of practice for safe working on escalators and moving walks

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Contents

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 36, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI and came into effect on 31 May 2011. It was prepared by Subcommittee MHE/4/3/3, under the authority of Technical Committee MHE/4, *Lifts, hoists and escalators*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standard supersedes BS 7801:2004, which is withdrawn.

Relationship with other publications

Attention is drawn to BS EN 115-2:2010, *Rules for the improvement of safety of existing escalators and moving walks*, which provides guidance on the upgrading of escalators and moving walks, not installed to BS EN 115-1:2008+A1:2010 and BS 5656-2:2004, which provides guidance for the selection installation and location of escalators and moving walks.

Information about this document

This is a full revision of the BS 7801:2004, published to accommodate:

- the regulatory changes that have occurred since 2004;
- the publication of BS EN 115-1:2008+A1:2010;
- the publication of BS EN 115-2:2010;
- changes in training requirements.

It is intended to:

a) assist employers and owners to provide ever-safer workplaces;

b) support a risk assessment methodology as the basis for determining safe systems of work;

c) emphasize the need to demonstrate competence;

d) meet the need to have a code of practice that covers escalators and moving walks of any age, whether or not they conform to current British or European standards.

The safety of persons working on escalators and moving walks is the responsibility of all persons associated with such work, in particular:

- owners and/or persons having effective control of the premises containing the escalators and moving walks;
- employers and supervisors of persons working on escalators and moving walks;
- persons working on escalators and moving walks;
- other persons working within the premises.

All such persons have a responsibility to ensure the safety of persons who might be affected by their activities, including members of the public. Where such persons are responsible for their own safety there needs to be a formal, common, safe system of work, in terms of method statements and safety practices.

This British Standard sets out the rudiments for the assessment and planning of safe working, so that practical safe systems of work can be established to enable personnel to access their places of work safely, and be adequately protected during their work.

This British Standard gives recommendations on the best practices to be employed in order to provide the safest practicable working environment. It brings together all the known procedures for safe working into one place. It also introduces the following principal changes:

- Clause **4** gives recommendations for owners of escalators and moving walks;
- Clause **5** gives recommendations for manufacturers and installers and persons working on escalators and moving walks.

There are a number of similarities between the two clauses; this is because some recommendations were felt to be equally applicable to owners, manufacturers and installers and persons working on escalators and moving walks. However, there are also some distinct differences between the two clauses. Users of this British Standard should ensure that they are reading the appropriate clause for their responsibilities.

Use of this document

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

Users of this British Standard are reminded that as a code of practice it recommends actions to be taken by all persons involved with escalators and moving walks; it does not specify requirements for the escalators and moving walks themselves. A safe system of work normally involves definitive working practices for people and a certain level of product safety. Both of these aspects have been addressed; in the case of product safety, the emphasis has been put onto persons to provide it.

The harmonized European standards are commended to those responsible for the safety management of older escalators and moving walks, so that those escalators and moving walks can be upgraded, as far as practicable, to an equivalent level of safety to those that conform to the harmonized European standards.

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

WARNING This British Standard calls for the use of substances and/or procedures that can be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

Presentational conventions

The provisions in 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.

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.

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1 Scope

This British Standard gives recommendations for safe working practices (supported by training) for:

- owners of permanently installed and commissioned escalators and moving walks;
- persons having effective control of the premises (duty holder) on which such escalators and moving walks are installed;
- persons responsible for, and involved in, the examination, inspection, testing, service, maintenance, repair and dismantling of such escalators and moving walks.

This British Standard is applicable to persons working on all types of escalators and moving walks. However, not every recommendation is applicable for all types of escalator and moving walk that are covered by British Standards either published or in preparation.

The recommendations in this British Standard relate to the safety of persons when gaining access to and from the work areas of escalator and moving walks, and while working there. They also relate to the safety of others present in the vicinity, whether they are working or not, who could be endangered by the actions of those working on escalators and moving walks.

This British Standard does not cover the design, manufacture, construction or installation of escalators and moving walks.

2 Normative references

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

BS 5499-5, *Graphical symbols and signs – Safety signs, including fire safety signs – Part 5: Signs with specific safety meanings*

BS 7375, *Distribution of electricity on construction and demolition sites – Code of practice*

BS 7671, *Requirements for electrical installations – IEE Wiring Regulations*

3 Terms and definitions

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

3.1 authorized person
person responsible for ensuring that specific plant and equipment are safe for the intended work to be undertaken

NOTE An authorized person might have prior knowledge and experience of the plant and equipment to be assessed, or might have been given instructions and training for a specific task, enabling them to recognize potential hazards, identify ways of avoidance of hazards and ensure that risks are reduced to a minimum.

3.2 belt
power-driven and tensioned continuous surface that forms the treadway of a moving walk, which is supported along its length by various means

3.3 CDM coordinator
person (duty holder under CDM Regulations 2010 [1]) who advises and assists the client to coordinate heath and safety aspects of a notifiable project

3.4 comb
part of an escalator or moving walk that meshes with the steps, pallets or belt at each landing, in order to facilitate the transition of passengers

3.5 competent person
person suitably trained and qualified by knowledge and practical experience, and provided with the necessary instructions to enable the required work to be carried out safely

3.6 construction phase
period of time starting when construction work in any project starts and ending when construction work in that project is completed

3.7 contractor
person (duty holder under CDM Regulations 2010 [1], including a client, principal contractor, escalator/moving walk contractor), who carries out or manages construction work, including the supply, installation, modernization, repair, inspection, service, or dismantling an escalator or moving walk

NOTE For the purposes of this British Standard, the contractor is the escalator/moving walk contractor.

3.8 drive station
area within the truss of an escalator or moving walk, where the drive machinery is located

3.9 escalators

3.9.1 compact escalator
escalator where the drive machinery is located within the truss and access to the machinery is gained from the passenger side

3.9.2 escalator
power-driven installation with endless moving stairway for the conveyance of passengers in an upward or downward direction

3.9.3 remote drive escalator
escalator where the drive machinery is located external to the truss and within a separate machine room

3.10 floor plate
removable plate at the ends of an escalator or moving walk to provide access to the drive and return stations

3.11 inspection control
means of controlling an escalator or moving walk during maintenance and other operations

NOTE This is usually a portable and manually operated device.

3.12 landing
unrestricted space at the top or bottom of an escalator or moving walk to permit the manoeuvring, boarding and alighting of persons

3.13 lock-off device
device to prevent unauthorized reconnection of electrical energy

NOTE This is often a padlock that prevents movement of the operating handle of the isolator.

3.14 machine room
machinery space outside of the truss in which one or more driving machine(s) and/or associated equipment are located

3.15 machinery space
space(s) inside or outside of the truss where the machinery as a whole or in parts is placed

3.16 main isolating switch
switch in the vicinity of the machinery, the return stations or the control devices, capable of breaking the supply to the motor, to the brake releasing device and to the control circuit in the live conductors

NOTE 1 This switch is not expected to isolate the supply to the socket outlets or to the lighting circuits necessary for inspection and maintenance.

NOTE 2 This switch can also control auxiliary equipment such as heating, balustrade lighting, comb lighting, under-step lighting, etc.

3.17 moving walk
power-driven installation with endless moving walkway (e.g. pallets, belt), for the conveyance of passengers either on the same level or between different levels

NOTE A moving walk was formerly known as a "passenger conveyor".

3.18 owner
legal entity having right of possession of an escalator or moving walk and responsibility for its safe working

NOTE The owner is usually the landlord or proprietor of the building in which an escalator or moving walk is situated.

3.19 pallet band
continuous loop of chain and pallets guided along the full length of a moving walk

3.20 passenger
person transported by an escalator or moving walk

3.21 permit to work
authority in writing which includes details of:

a) work to be undertaken;

b) procedures involved;

c) precautions needed;

d) emergency procedures to be in place;

e) persons to undertake the work;

f) timescale of the work to be undertaken;

g) restrictions on the workplace or equipment.

3.22 premises
place and its immediate vicinity, where an escalator or moving walk is situated

3.23 return station
area within the truss of an escalator or moving walk where the moving steps, pallets or belts commence their return to the drive station

3.24 risk assessment
comprehensive estimation of the probability and the degree of possible injury or damage to health in a hazardous situation, in order to select appropriate safety measures

3.25 safe system of work
formal procedure, resulting from a risk assessment, which specifies safe methods of work to ensure that risks to health and safety are minimized and the remaining risks are mitigated

3.26 step band
continuous loop of chain and steps guided along the full length of an escalator

3.27 truss
structural framework of an escalator or moving walk

3.28 workplace
premises or part of premises where work is carried out

NOTE This can include:

- *any place which is accessible to those at the workplace;*
- *any means of access to/from the workplace, e.g. staircase, corridor, road.*

3.29 work platform
designated area, moving or fixed, for carrying out work tasks

4 Safety management – Responsibilities of owners

*COMMENTARY ON CLAUSE **4***

There are certain hazards relating to moving and rotating machinery and electrical equipment, etc., that are similar to those experienced in other industrial workplaces. These are expected to have been identified in the risk assessment.

Not every escalator or moving walk is identical, modern, or similarly positioned; nor are all machinery spaces of identical size or shape, nor segregated, illuminated or located within similar environments.

*The recommendations given in this Clause are applicable to owners (duty holders) of escalators and moving walks and to persons having effective control of the premises in which escalators and moving walks are installed. Persons responsible for, and involved in, the design, thorough examination, inspection, testing, service, maintenance, repair or dismantling of escalators and moving walks, ought to read Clause **5**.*

4.1 Training

4.1.1 All of the following persons should possess demonstrable competence in basic escalator or moving walk safety and procedures, or be under relevant supervision.

a) Those who might at any time be working on an escalator or moving walk or related equipment.

b) Those who are working within the escalator or moving walk machine room or machinery space.

c) Those who are carrying out risk assessments.

NOTE Relevant supervision could be provided by any person who possesses demonstrable competence in basic escalator or moving walk safety procedures.

4.1.2 Clear instructions relating to site emergency and first aid procedures should be issued to employees, visitors, contractors and other authorized persons, where risk assessment identifies a need. Any specific regulations that apply to the premises should also be included in these instructions. Where such instructions are complex and/or specific risks exist, these instructions should be in written form and, if necessary, should be supplemented by a specific "site safety awareness" training regime and safe system(s) of work.

4.1.3 Training should be provided to authorized persons on all procedures to be carried out for normal operations and in the event of an emergency situation.

4.1.4 The competency of all trained persons should be assessed and documented annually. Documentation should list the competencies achieved relating to the type of equipment upon which the training was carried out.

4.1.5 Information and instructions should be given to persons who could be affected whenever any works are carried out on escalators or moving walks, indicating any relevant effects on their environment or their health and safety.

*NOTE 1 Examples of signs that can be encountered by persons at the premises are given in Annex A and include signs placed on safety barriers and for use on the access to a machinery space. Examples of other signs that carry instructions to passengers are given in BS EN 115-1:2008+A1:2010, **7.2.1.2**.*

NOTE 2 Where an escalator or moving walk is removed from service, it is generally advisable to provide alternative means of access/egress in all situations.

NOTE 3 Information and instructions can be provided by means of appropriate signage.

4.1.6 Information and safe working instructions should be given to persons not in the owner's employ, e.g. painting contractors, whenever they are working on or near to an escalator or moving walk. These persons should be competent in their practising professions.

*NOTE **5.1** gives recommendations for the minimum training necessary to demonstrate competence.*

4.2 General

4.2.1 Responsibility for work on site

*COMMENTARY ON **4.2.1***

The contractor or other person(s) authorized to carry out work on the escalator or moving walk is expected to advise the owner of risks that could arise as a result of the work.

The owner should ensure that any work carried out on escalators or moving walks is performed only by authorized persons.

NOTE Attention is drawn to the Workplace (Health, Safety and Welfare Regulations) 1992 [2].

A person should be appointed by the owner or the contractor's site person in charge, to be responsible for at least the following:

a) familiarization with the relevant parts of any site safety assessment undertaken by the contractor;

b) familiarization with the work site from commencement of the work, including the effect the work is likely to have on other persons in the area;

c) directing and managing the work safely;

d) ensuring that the work site is handed back to the owner in a safe condition on completion of the work.

A person should also be appointed by the owner with responsibility for the management of the escalator or moving walk and ensuring that the immediate environment is safe. These responsibilities include:

- starting and stopping the equipment;
- ensuring that maintenance is being carried out;
- ensuring that emergency procedures are in place;
- inspection.

4.2.2 Liaison

*COMMENTARY ON **4.2.2***

The contractor's site person in charge of the works on escalator(s) or moving walk(s) is expected to establish contact with the owner's site representative. It is expected that the owner's site representative will be advised before work is started or any escalator or moving walk is removed from service.

The owner should nominate a representative to summon emergency assistance if required, and to advise on special precautions or procedures required for works being undertaken within the premises.

The owner, together with the contractor's site person in charge of the works, should determine whether any special precautions or procedures need to be taken.

NOTE Such precautions can become necessary due to environmental factors, e.g. particularly where children are present in the vicinity.

4.2.3 Personal protective equipment

A risk assessment (see **4.3**) should be carried out to identify the need for any appropriate type(s) of personal protective equipment and/or clothing, for example high-visibility vests.

The owner should ensure that appropriate personal protective equipment and/or clothing is provided to ensure the health and safety of persons working on escalators and moving walks.

Where work is carried out in a hostile environment, specialized protective clothing/equipment should be provided by the owner.

4.2.4 Electrical equipment

The owner should enable the contractor to have access to the electrical supplies.

The owner should ensure that existing electrical conductors and their terminations that could give rise to danger are:

a) of the appropriate rating;

b) insulated;

c) marked with appropriate signs.

NOTE The integrity of the electrical supply is solely the responsibility of the owner.

4.2.5 Removal of escalator or moving walk from service

The owner should establish procedures that a safety sign(s) is displayed where an escalator or moving walk is removed from service (see Annex A, Figure A.1) and that an effective safety barrier is erected whenever necessary (see **4.5.2**).

4.2.6 Housekeeping

*COMMENTARY ON **4.2.6***

A high standard of cleanliness and general housekeeping is necessary as a precaution against the risk of fire, especially when flame cutting, welding or grinding work is being carried out. In particular, attention is drawn, where applicable, to the following:

- *regular, frequent cleaning of dust trays or other devices for collecting debris that passes through the comb;*
- *prevention of the build-up of excessive grease, oil, dust and fluff;*
- *regular cleaning of machinery, machine rooms and machinery spaces;*
- *removal of all surplus materials and debris from the site at the conclusion of each working shift;*
- *appropriate control measures on the storage of materials on site;*
- *the need for fire extinguishers to be located in the vicinity appropriate to the work to be carried out, and for personnel to be trained in their correct use;*
- *regular maintenance, testing and certification of fire protection and detection equipment.*

The owner, in conjunction with the contractor, should establish procedures to deal with potential hazards arising from:

a) the build-up of waste materials in the workplace;

b) the disposal of waste and other items and substances that are potentially injurious to health and safety and the environment;

c) the cleaning of the exterior (particularly for continuous banks of escalators);

d) the build-up of water from weather conditions entering the tread plates.

NOTE 1 Attention is drawn to The Control of Substances Hazardous to Health Regulations 2004 [3].

NOTE 2 Weil's Disease is an example of a potential hazard.

Steps, skirts, pallets, truss, etc. should be regularly cleaned to reduce any build-up of dirt harmful to the operation of the equipment, and all debris or other foreign materials collecting on the escalator or moving walk, particularly at the comb plates, should be removed.

Steps, skirts, pallets, truss, etc. should be protected from the likelihood of ingress of water in order to prevent slipping hazards and electrical malfunction.

WARNING Attention is drawn to the potential hazard of using strong and corrosive cleaning agents and the effect these can have if they come into contact with persons or parts of the equipment.

4.2.7 Health and safety file

Persons working on an escalator or moving walk should be aware that information specific to the work is held within the health and safety file, including the following information.

- Record, or "as built" drawings and plans used and produced throughout the construction.
- General details of the construction process and materials used.
- Details of the equipment and maintenance facilities.
- Servicing and maintenance requirements, including cleaning.
- Manuals produced by specialist contractors.
- Any special operations where a particular method needs to be adopted.
- Details of the location and nature of services, including emergency and fire-fighting systems.
- Instructions for the dismantling and disposal of the equipment at the end of its working life.

During the construction phase the principal contractor and other contractors should have provided all relevant information to the CDM coordinator to enable the file to be reviewed, amended or additions made.

NOTE 1 Attention is drawn to the CDM Regulations 2010 [1], Regulation 14, which requires the client to appoint a CDM coordinator to produce a health and safety file and to Regulation 17(1) which requires the client to provide the CDM coordinator with all health and safety information relating to the project.

NOTE 2 The health and safety file alerts persons to the risks to be managed during the repair, service, renovation or demolition of the structure and plant, after the escalator or moving walk has been put into service.

NOTE 3 Attention is drawn to the ACOP to the CDM Regulations 2010 [1], which details what needs to be included and what does not need to be included in the health and safety file.

Following the installation or major modernization of an escalator or moving walk, the health and safety file should given to the owner and be made available to persons who subsequently work on the escalator or moving walk.

NOTE 4 Where the owner does not hold copy of the health and safety file, they ought to endeavour to obtain a copy from the original installer.

NOTE 5 Products installed prior to the existence of the CDM Regulations are not likely to have a health and safety file.

4.2.8 Effects on persons at the premises

Potential disruption, arising from any work, to persons at the premises should be assessed jointly by the owner and the contractor, and minimized.

4.2.9 Access for tools, equipment and materials

Arrangements should be made between the owner and the contractor for:

a) the safe access to all tools, equipment and materials at workplaces;

b) the provision of suitable and clearly identified storage space for tools, equipment, materials and any portable access equipment;

c) the provision of alternative access routes as might become necessary during the works being undertaken.

NOTE These are some elements of the provision of safe systems of work.

4.2.10 Permit to work

There should be a safe system of work for all those undertaking tasks within designated workplaces.

NOTE It is expected that such a safe system of work would include the use of lock-off/tag-out devices on all electrical isolators.

Effective control should be imposed over all persons carrying out specific hazardous tasks, e.g. cutting and welding, by permit to work. The details of any permit to work that are required, and the conditions imposed by them, should be made known to all persons to whom they apply.

4.2.11 Modernization, major repair and dismantling

Where, modernization, major repair or dismantling is taking place, the procedures given in Annex B should be followed.

*NOTE The procedures given in Annex B are specific to the activities associated with modernization, major repair and dismantling. They are additions, not alternatives, to the procedures detailed in Clause **4**.*

4.2.12 Access and egress

The owner should provide authorized persons with a safe and convenient means of access to and egress from all workplaces, including suitable access equipment if necessary.

NOTE This includes the provision of access to all workplaces that is free from obstacles, tripping hazards and projections. It also includes the provision of safe means of access through potentially hazardous areas.

Access routes should be illuminated to not less than 50 lux at floor level.

4.2.13 Emergency lighting

Emergency lighting and temporary electrical supplies (where necessary) should be provided for all workplaces.

NOTE BS 5266-1 gives recommendations for emergency lighting.

4.2.14 Safe workplaces

It should be ensured that all workplaces are safe to accommodate:

a) the work activity being undertaken;

b) all contractors, together with their necessary working equipment.

4.2.15 Access to machinery spaces

Access to machinery spaces should be restricted to authorized persons or to persons under the supervision of authorized persons.

4.3 Risk assessment

*COMMENTARY ON **4.3***

Guidance on risk assessments, including a list of the significant hazards of which owners of escalators and moving walks need to be aware, is given in Annex C.

4.3.1 The owner should undertake risk assessments, incorporating those carried out by the escalator/moving walk contractor, to form the basis of the site-specific safety plan. These risk assessments should identify the safety measures required to ensure the safety of persons engaged in or affected by the work. All risk assessments should be subject to ongoing review.

4.3.2 The safety measures identified by risk assessment should be implemented. All measures should be undertaken which could improve the safety of those persons engaged in the works or using the escalators or

moving walks. Any recommendations issued by the manufacturers, the maintenance company, competent persons, or enforcing authorities should be acted upon.

NOTE Attention is drawn to Clause 3 (i) of The Management of Health and Safety at Work Regulations 1999 and its 2007 Amendment [4, 5].

4.3.3 All works should be planned in advance in order to eliminate or reduce to a controllable level the risks to those persons undertaking the works and all persons who might be affected by them.

4.3.4 The owner should plan the works, where appropriate, to coincide with the "shut-down" period of hazardous processes or for when public areas are less busy or closed.

4.3.5 Details of any changes to the risks which might be encountered during the progress of the works, and which become apparent from subsequent risk assessments, should be recorded and made known to the responsible person (see 4.2.1).

4.4 Well-being of persons working alone

4.4.1 The owner should ensure that authorized persons never work alone in unoccupied premises.

4.4.2 Where a risk assessment identifies specific hazards to persons working alone, control measures should be put in place to mitigate the risks. In such cases an authorized person should be accompanied by another person who has received appropriate instruction.

NOTE This is an element of the provision of a safe system of work.

4.4.3 The owner should ensure that:

a) a procedure is available to ensure that the authorized person registers their presence with the owner's site representative before commencing work (see **4.2.1**);

b) suitable arrangements are made to ensure that the continued well-being of the authorized person is confirmed periodically, at intervals as identified by risk assessment;

c) suitable arrangements are made to organize assistance in the event of an emergency;

d) the specific arrangements and frequency for confirming an authorized person's continued well-being are described in the relevant safe working procedure and acted upon.

4.5 Working on landings and outside the step band/pallet band

*COMMENTARY ON **4.5***

Escalators and moving walks are part of the general pedestrian circulation routes within a premise, unlike lifts, which transport passengers in a controlled environment. Escalators and moving walks are thus in very close proximity to other pedestrian movements, making total separation difficult. Additional precautions might need to be taken in railway stations, airports, underground stations, or shopping centres. These include the removal from service of successive escalators where there is restricted circulation space.

4.5.1 The owner and the contractor should undertake a risk assessment to establish safety measures to be taken at escalator and moving walk landings to ensure the safety not only of persons engaged in undertaking the work, but also of persons passing close to, or under, the work area. Particular care should be taken to ensure that emergency routes are not blocked or obstructed by work carried out on an escalator or moving walk.

4.5.2 Effective safety barriers should be provided to prevent unauthorized persons gaining access to the area of work (see Annex D for an example of a typical safety barrier).

NOTE Potential hazards at escalator and moving walk landings include the possibility of person(s) falling into the machine rooms or machinery spaces and the accidental or unauthorized interference with person(s) working in machinery spaces.

4.5.3 The owner should provide a means of securing safety barriers to prevent unauthorized or accidental displacement, where members of the public have access to adjacent escalator or moving walk landings during the work.

4.5.4 All safety barriers should incorporate relevant safety signs in accordance with BS 5499-5 (see Annex A, Figure A.1).

4.5.5 The owner should ensure that all floor plates can be raised without obstruction. Appropriate lifting facilities and devices should be provided on the premises.

NOTE In some cases floor plates are very heavy, e.g. inlaid stone.

4.5.6 The area around the floor plate should not be obstructed by decorative or other finishes.

4.5.7 Suitable and sufficient general lighting should be provided at the work area.

NOTE Reduced or security lighting levels are not deemed to be suitable or sufficient for this purpose.

4.5.8 To reduce the likelihood of accidents, including whenever the works are left unattended, the owner should put in place effective arrangements, such as barriers, to ensure the safety of any persons likely to be in the vicinity of the work area.

4.5.9 The owner should ensure that safe methods of working for cleaning activities are in place to provide protection for the operatives and those persons affected by them.

NOTE Special care is needed where the equipment is located in an open area, e.g. atria, owing to the increased risk of persons and objects falling, which might necessitate the provision of special equipment.

4.6 Working within the escalator or moving walk

*COMMENTARY ON **4.6***

*For the purposes of this British Standard, work within an escalator or moving walk is taken to mean work carried out inside the safety barriers erected in accordance with **4.5.2**, e.g. in the drive and return stations, machinery spaces, truss, inside step bands or pallet bands.*

There are certain hazards in machinery spaces relating to moving and rotating machinery and electrical equipment, etc., that are similar to those experienced in other industrial workplaces. These are expected to have been identified in the risk assessment.

Not every escalator or moving walk is identical, modern, compact or similarly positioned; neither are all machinery spaces of identical size or shape, nor segregated, illuminated or located within similar environments. In addition, the space available for persons to work could vary significantly between installations; the means of access to various parts of the machinery could also differ. Some machinery spaces might also contain more than one unit, perhaps sited within close proximity.

4.6.1 Permanently fixed main isolating switches should be available for use by authorized personnel gaining access into the escalator or moving walk, in order to interrupt the power supply. This switch should be capable of being locked-off/tagged-out in the open position, with the use of a padlock or equivalent, to ensure no inadvertent operation.

4.6.2 Escalators and moving walks should be provided with inspection controls to permit operation during maintenance, repair or inspection by means of portable and manually operated control devices.

4.6.3 A fixed and stable maintenance position should be provided where control panels are removable from the machinery space.

4.6.4 Suitable and sufficient lighting should be provided in work spaces, the separate drive and return stations, and machinery spaces. For compact escalators and moving walks, lighting should be provided by means of a portable lamp permanently available in one of these places.

4.6.5 Switched socket outlets provided in any machine room or machinery space should conform to BS 7671.

4.6.6 All socket outlets should be easily accessible.

4.6.7 Accurate electrical circuit diagrams should be available for maintenance personnel.

4.6.8 The owner should ensure that any modifications to any part of the electrical power and safety circuits are appropriately authorized and legibly recorded on the circuit diagrams by the company responsible for making the modifications. Any such modifications should be subject to recorded design risk assessment.

4.7 Machine rooms (machinery spaces outside of the truss)

*COMMENTARY ON **4.7***

The space available for persons to work could vary significantly between installations; the means of access to various parts of the machinery could also differ. Some machinery spaces might also contain more than one unit, perhaps sited within close proximity.

Attention is drawn to BS EN 115-1:2008+A1:2010, Annex A.3.

4.7.1 A safe means of access/egress should be provided to all machine rooms and machinery spaces. A permanent safety sign should be displayed (see Annex A, Figure A.1).

NOTE It is sometimes necessary for security reasons, and to avoid identifying the function of individual rooms, to display the safety sign on the inside of the access door.

4.7.2 Where access is via a trap door into the machine room or machinery space, the owner should ensure that a permanent safety sign is displayed inside the room adjacent to the trap door (see Annex A, Figure A.2).

4.7.3 Other than when work activities are being carried out within the machine room or machinery space, the entrance door(s) to the rooms should be kept locked to prevent unauthorized access.

4.7.4 For remote drive escalators and moving walks, the lighting level within the machine room should be not less than 200 lux wherever work is being carried out.

4.7.5 Emergency lighting should be provided to assist in the safe evacuation of all personnel working in a machinery space.

NOTE This lighting is not intended for the continuation of maintenance or other activities.

4.7.6 Switched socket outlets provided in any machine room or machinery space should conform to BS 7671.

4.7.7 All socket outlets should be easily accessible.

4.7.8 Accurate electrical circuit diagrams for each installation should be available for maintenance personnel.

4.7.9 The owner should ensure that any modifications to any part of the electrical power and safety circuits are appropriately authorized and legibly recorded on the circuit diagrams by the company responsible for making the modifications. Any such modifications should be subject to recorded design risk assessment.

4.7.10 Electrically insulated mats of suitable dimensions should be provided in front of each controller and also where necessary at the rear.

NOTE Attention is drawn to The Low Voltage Electrical Equipment (Safety) Regulations 1989 [6].

4.7.11 The owner should ensure that stop switches are installed in the drive and return stations.

4.7.12 Means should be provided to ensure that each escalator and moving walk and any of their component parts, located within the machinery space, can be positively identified.

4.7.13 All permanently installed lifting equipment provided in machine rooms or external machinery spaces should be clearly marked with its rated capacity.

4.7.14 The floors of all machine rooms should be constructed with non-slip materials, e.g. trowelled concrete or chequer plate.

4.8 Hand-winding

Where a hand-winding facility is provided, the manufacturer's or other authorized instructions for the escalator or moving walk should be permanently displayed in the form of a notice in the machinery space.

4.9 Entrapments

4.9.1 In the event of an entrapment of a person the following actions should be carried out as quickly as possible.

a) The escalator or moving walk should be stopped.

b) The emergency services should be called, i.e. the ambulance services, specifically including paramedical personnel, and the fire service.

4.9.2 No attempt should be made to release persons entrapped in an escalator or moving walk, unless under the control and supervision of a paramedic.

4.9.3 The escalator or moving walk maintenance organization should be requested to attend to offer technical assistance.

NOTE Attention is drawn to BS EN 13015 for the definitions of maintenance and maintenance organization.

4.9.4 Following the release of a person who has been entrapped, the escalator or moving walk should not be returned to service until appropriate investigations have been carried out.

4.9.5 In the event of the trapping of an object, the escalator or moving walk should be stopped, and trained and authorized staff in the employment of either the owner or the maintenance organization should affect the release of the object.

4.9.6 Following the removal of a trapped object, the escalator or moving walk should be checked by a competent person to ensure that it is safe to be returned to service.

5 Safety management – Responsibilities of manufacturers, installers, maintainers and persons working on escalators and moving walks

*COMMENTARY ON CLAUSE **5***

There are certain hazards in machinery spaces relating to moving and rotating machinery and electrical equipment, etc., that are similar to those experienced in other industrial workplaces. These are expected to have been identified in the risk assessment.

*The recommendations given in this clause are applicable to persons (duty holders) responsible for, and involved in, the design, installation, thorough examination, inspection, testing, service, maintenance, repair or dismantling of escalators and moving walks. Owners of escalators and moving walks and persons having effective control of the premises in which escalators and moving walks are installed, should read Clause **4**.*

It should be noted that not every escalator or moving walk or their environment and associated facilities are identical, modern, or similarly positioned, nor should it be assumed that they comply with the current standards.

5.1 Training

5.1.1 All personnel

All of the following persons should possess demonstrable competence in basic escalator or moving walk safety and procedures, or be under relevant supervision.

a) Those who might at any time be working on an escalator or moving walk or related equipment.

b) Those who work within the escalator or moving walk machine room or machinery space.

c) Those who carry out risk assessments.

NOTE 1 Relevant supervision could be provided by any person who possesses demonstrable competence in basic escalator and moving walk safety procedures.

NOTE 2 A suitable level of qualification is NVQ EOR/204, although other equivalent qualifications exist.

NOTE 3 Where a full range of work activities is not contemplated, training need only be provided for those activities that are to be carried out, e.g. cleaning, lighting maintenance, electrical installation work.

5.1.2 Escalator and moving walk crafts persons

Escalator and moving walk crafts persons should possess demonstrable competence and an appropriate qualification for the tasks they are to carry out.

NOTE 1 All escalator and moving walk qualifications are awarded by an approved assessment centre. An approved assessment centre is one that is licensed by the awarding body to approve registration, assessment, verification and certification for competencies outlined in registered evidence routes.

NOTE 2 A suitable minimum level of qualification is NVQ Level 3 Pathway or its equivalent.

5.1.3 Competent persons carrying out the inspection of escalators and moving walks

*COMMENTARY ON **5.1.3***

The competent person is commonly referred to as an engineer surveyor.

Competent persons who inspect escalators and/or moving walks should, as a minimum stipulation, be competent in their practising profession.

They should also possess demonstrable competence in the safe operation of all escalator and moving walk equipment.

NOTE Competent persons might need to seek appropriate safety training when first practising in the escalator and moving walk industry.

5.1.4 Escalator and moving walk consultants

Escalator and moving walk consultants should, as a minimum stipulation, be competent in their practising professions.

They should also possess demonstrable competence in the safe operation of all escalator and moving walk equipment. Alternatively, they should work under the relevant supervision of a person who is competent in escalator and moving walk safety.

5.1.5 Escalator and moving walk commissioning technicians (or persons carrying out such functions)

Escalator and moving walk commissioning technicians should possess demonstrable competence and an appropriate qualification for the tasks they are to carry out.

NOTE A suitable minimum level of qualification is NVQ Level 3 Pathway or its equivalent.

They should also be trained in the safe working procedures contained within this British Standard and should have the experience, skill and knowledge to undertake the commissioning of escalators and moving walks following installation or refurbishment.

5.1.6 Other tradespersons

Other tradespersons, e.g. cleaners, electricians, welders, working within the escalator or moving walk industry should be competent in their practising trades. They should also possess demonstrable competence in basic escalator or moving walk safety and procedures, or be under relevant supervision.

Other persons not in the owner's employment and not working in the escalator or moving walk industry, e.g. painting contractors, should be competent in their practising trades and might need to be under appropriate supervision when working on or near an escalator or moving walk.

5.2 General

5.2.1 Responsibility for work on site

A suitably qualified person (see **5.1**) should be appointed to be responsible for all work on the site relating to the escalator or moving walk installation, and should be fully aware of their duties.

The contractor's site person in charge should ascertain who is acting on behalf of the owner in order that they can report the start, progress and completion of the work.

Any work carried out on escalators and moving walks should be performed only by authorized persons, supervised and instructed in the work and on how it is to be carried out safely. The instructions should:

- where necessary, be in the form of written safe systems of work, which might already be included in training programmes;
- ensure the safety of other persons who could be at risk even if they are not involved in the actual work being undertaken on the escalator or moving walk.

The escalator/moving walk contractor or other persons authorized to carry out work on a escalator or moving walk installation should advise the owner of risks that could arise as a result of the work.

5.2.2 Liaison

Before starting work, taking an escalator or moving walk out of or returning to service, or completing work, the escalator/moving walk contractor should advise the owner's site representative of their intention.

The contractor's site person in charge should establish contact with these representatives in order that emergency assistance can be summoned if required, and also to determine whether any special precautions or procedures need to be taken.

NOTE Such precautions can become necessary owing to environmental factors, e.g. particularly where children are present in the vicinity.

5.2.3 Personal protective equipment

Personal protective equipment should be provided as identified by risk assessment. Head protection, gloves, eye protection, hearing protection, respirators, face masks, safety harnesses, etc. should be provided, and used by personnel as required. Such equipment should be maintained in a serviceable condition and replaced as necessary.

NOTE Attention is drawn to The Personal Protective Equipment at Work Regulations 1992 [7].

5.2.4 Electrical equipment

*COMMENTARY ON **5.2.4***

The integrity of the electrical supply, whether temporary or permanent, is solely the responsibility of the owner.

The escalator/moving walk contractor should use only the electrical supplies provided by the owner.

NOTE Attention is drawn to The Electricity at Work Regulations 1989 [8].

Work should not be carried out on or near to live electrical equipment, unless working in this way is unavoidable. In such circumstances, work should be carried out only by an authorized person, implementing a safe system of work that has been established by risk assessment (see **5.3**).

5.2.5 Removal of escalator or moving walk from service

If delegated to do so by the owner, the escalator/moving walk contractor should display a safety sign and erect effective safety barriers, whenever necessary, when an escalator or moving walk is removed from service (see Annex A, Figure A.1).

5.2.6 Housekeeping

*COMMENTARY ON **5.2.6***

A high standard of cleanliness and general housekeeping is necessary as a precaution against the risk of fire, especially when flame cutting, welding or grinding work is being carried out. In particular, attention is drawn, where applicable, to the following:

- *regular, frequent cleaning of dust trays or other devices for collecting debris that passes through the comb;*
- *prevention of the build-up of excessive grease, oil, dust and fluff;*
- *regular cleaning of machinery, machine rooms and machinery spaces;*
- *removal of all surplus materials and debris from the site at the conclusion of each working shift;*
- *appropriate control measures on the storage of materials on site;*
- *the need for fire extinguishers to be located in the vicinity appropriate to the work to be carried out, and for personnel to be trained in their correct use.*

The contractor, in conjunction with the owner, should establish procedures for:

a) the avoidance of build-up of waste materials in the workplace, including escalator and moving walk machinery spaces, trusses, etc.;

b) the control and safe disposal of waste and other items and substances that are potentially injurious to health and safety and the environment;

c) the cleaning of the exterior (particularly for continuous banks of escalators);

d) the avoidance of the build-up of water from weather conditions entering the tread.

NOTE Attention is drawn to The Control of Substances Hazardous to Health Regulations 2004 [3].

Steps, skirts, pallets, truss, etc. should be protected from the likelihood of ingress of water in order to prevent slipping hazards and electrical malfunction.

WARNING Attention is drawn to the potential hazard of using strong and corrosive cleaning agents and the effect these can have if they come into contact with persons or parts of the equipment.

5.2.7 Health and safety file

Persons working on an escalator or moving walk should be aware that information specific to the installation is held within the health and safety file, including the following information.

a) Record or "as built" drawings and plans used and produced throughout the construction.

b) General details of the construction process and materials used.

c) Details of the equipment and maintenance facilities.

d) Servicing and maintenance requirements, including cleaning.

e) Manuals produced by specialist contractors.

f) Any special operations where a particular method needs to be adopted.

g) Details of the location and nature of services, including emergency and fire-fighting systems.

h) Instructions for the dismantling and disposal of the equipment at the end of its working life.

During the construction phase the principal contractor and other contractors should have provided all relevant information to the CDM coordinator to enable the file to be reviewed, amended or additions made.

NOTE 1 Attention is drawn to Regulation 14 of the CDM Regulations 2010 [1], which requires the client to appoint a CDM coordinator to produce a health and safety file.

NOTE 2 The health and safety file alerts persons to the risks to be managed during the repair, service, renovation or demolition of the structure and plant, after the escalator or moving walk has been put into service.

NOTE 3 Attention is drawn to the ACOP to the CDM Regulations 2010 [1], which detail what ought to be included and what ought not to be included in the health and safety file.

Following the installation or major modernization of an escalator or moving walk, the health and safety file should be made available to persons who subsequently work on the escalator or moving walk.

5.2.8 Effects on persons at the premises

Potential disruption, arising from any work, to persons at the premises should be assessed jointly by the contractor and the owner, and minimized.

5.2.9 Access to tools, equipment and materials

Arrangements should be made between the contractor and the owner for:

a) safe access to all tools, equipment and materials at workplaces;

b) the provision of suitable and clearly identified storage space for tools, equipment, materials and any portable access equipment;

c) the provision of alternative access routes as might become necessary during the works being undertaken.

NOTE These are some elements of the provision of safe systems of work.

5.2.10 Permit to work

Where appropriate, the contractor should obtain a permit to work from the owner. There should be a safe system of work for all those undertaking tasks within designated workplaces.

NOTE It is expected that such a safe system of work would include the use of lock-off/tag-out devices on all electrical isolators.

5.2.11 Modernization, major repair and dismantling

Where, modernization, major repair or dismantling is taking place, the procedures given in Annex B should be followed.

*NOTE The procedures given in Annex B are specific to the activities associated with installation, modernization, major repair and dismantling. They are additions, not alternatives, to the procedures detailed in Clause **5**.*

5.3 Risk assessment

5.3.1 The escalator/moving walk contractor should undertake risk assessments to establish safe systems of work. These assessments should then be submitted to the owner for approval and integration into the site-specific safety plan.

NOTE 1 Guidance on risk assessments, including a list of the significant hazards of which escalator/moving walk contractors should be aware, is given in Annex C.

NOTE 2 Attention is drawn to The Management of Health and Safety at Work Regulations 1999 [4].

5.3.2 Before commencing or re-commencing work, the work area should be assessed for any changes that might affect the safety of persons working on the escalator or moving walk. Any such changes should be recorded and the work practices amended accordingly.

5.4 Well-being of persons working alone

5.4.1 No authorized person should work alone in unoccupied premises.

5.4.2 Before any persons are authorized to work alone on an escalator or moving walk, a full site-specific/task-specific risk assessment should be carried out and relevant control measures should be implemented.

5.4.3 When an authorized person is working alone the following procedures and provisions should be adopted.

a) Before commencing work the authorized person should register their presence with the owner's site representative as recommended in **5.2.2**.

b) Suitable arrangements should be made to ensure that the continued well-being of the authorized person is confirmed periodically, at intervals as identified by risk assessment.

c) Any persons checking the well-being of authorized persons working alone should have knowledge of how to organize assistance in the event of an emergency.

d) The specific arrangements and frequency for confirming the well-being of the authorized person should be described in the relevant safe working procedure.

e) The authorized person working alone should inform a responsible person off-site of their proposed movements during this period.

NOTE In some escalator or moving walk locations it can be inappropriate for certain activities, e.g. when working with long travel units, to be undertaken by persons working alone.

5.5 Working on landings and outside the step band/pallet band

*COMMENTARY ON **5.5***

Escalators and moving walks are part of the general pedestrian circulation routes within a premise, unlike lifts, which transport passengers in a controlled environment. Escalators and moving walks are thus in very close proximity to other pedestrian movements, making total separation difficult. Additional precautions might need to be taken in railway stations, airports, underground stations, or shopping centres. These include the removal from service of successive escalators where there is restricted circulation space.

5.5.1 The contractor and the owner should undertake a risk assessment to establish safety measures to be taken at escalator and moving walk landings to ensure the safety not only of persons engaged in undertaking the work, but also of persons passing close to, or under, the work area. Particular care should be taken to ensure that emergency routes are not blocked or obstructed by work carried out on an escalator or moving walk.

5.5.2 The safety barriers supplied by the owner (see **4.5.2**) should be erected to prevent unauthorized persons gaining access to the area of work (see Annex D for an example of a typical safety barrier).

NOTE Potential hazards at escalator and moving walk landings include the possibility of person(s) falling into the machine rooms or machinery spaces and the accidental or unauthorized interference with person(s) working in machinery spaces.

5.5.3 The contractor should ensure that the safety barriers incorporate relevant safety signs in accordance with BS 5499-5 (see Annex A, Figure A.1).

5.5.4 To reduce the likelihood of accidents, whenever the works are left unattended or suspended for any period of time appropriate control measures should be instigated, which can include some or all of the following:

a) isolating the equipment at the main isolating switch, and lock-off/tag-out of this switch;

b) replacing all floor plates;

c) closing and locking access doors/traps;

d) replacing safety barriers with hoardings where appropriate;

e) engaging any mechanical means of preventing the escalator/moving walk from moving.

NOTE It can be advisable to provide a mechanical means of preventing the step/pallet band from moving if it is possible to use it as a stationary walkway.

5.5.5 Where two or more persons are working, a reliable and effective system of communication should be implemented. The communication system should take account of noisy conditions, large separation distances, etc.

NOTE This is of particular importance to avoid dangers from unexpected start/stoppage, movements where steps/pallets have been removed, etc.

5.5.6 After completion of work and before putting the escalator or moving walk back into normal operation, the following procedures should be followed and remedial action taken where necessary.

a) All tools, equipment (e.g. safety barriers, notices, etc.) and personnel should be accounted for.

b) A final test should be carried out, with the escalator or moving walk making at least one circuit of the steps, to ensure that all step/pallets are in place.

c) All safety devices that might have been affected by the works carried out should be tested to ensure that they are operating correctly.

d) All passenger emergency stop switches should be tested to ensure that they are operating correctly.

5.5.7 Whenever cleaning activities are undertaken, all operatives should ensure that all measures are in place to enable the work to be carried out safely.

5.5.8 Special care should be taken where the equipment is located in an open area, e.g. atria, owing to the increased risk of persons and objects falling, which might necessitate the provision of special equipment.

5.6 Working within the escalator or moving walk

*COMMENTARY ON **5.6***

*For the purposes of this British Standard, work within an escalator or moving walk is taken to mean work carried out inside the safety barriers erected in accordance with **5.5.2**, e.g. in the drive and return stations, machinery spaces, truss, inside step bands or pallet bands.*

There are certain hazards in machinery spaces relating to moving and rotating machinery and electrical equipment, etc., that are similar to those experienced in other industrial workplaces. These are expected to have been identified in the risk assessment.

Not every escalator or moving walk is identical, modern, compact or similarly positioned; neither are all machinery spaces of identical size or shape, nor segregated, illuminated or located within similar environments. In addition, the space available for persons to work could vary significantly between installations; the means of access to various parts of the machinery could also differ. Some machinery spaces might also contain more than one unit, perhaps sited within close proximity.

5.6.1 Whenever an escalator or moving walk is to be removed from service, the following procedures should be followed.

a) A safety barrier should be erected at the entrance landing (having due regard for passengers).

b) It should be ensured that there are no persons remaining on the escalator or moving walk.

c) The escalator or moving walk should be stopped.

d) A safety barrier should be erected at the exit landing.

NOTE See Annex D for an example of a typical safety barrier.

5.6.2 Unauthorized persons should be prevented from entering the area defined by the safety barriers.

5.6.3 A safe means of access into and out of the escalator/moving walk and associated areas should be established and maintained during all phases of the work activity.

5.6.4 Before commencing work on an escalator or moving walk, it should be decided if it is necessary for the electrical supply to be maintained for the work to be carried out. Whenever possible, work should be carried out with the electrical supply isolated.

5.6.5 The supply to the drive motor should be isolated by the main isolating switch (which should then be locked-off and tagged-out) before access is first gained into the drive/return stations and/or step band or pallet band.

5.6.6 Before commencing work a person entering a machinery space should check that the inspection control functions correctly.

5.6.7 Before using inspection controls, persons should check that the inspection control functions correctly.

5.6.8 Once access has been established into the escalator or moving walk, it should only be operated by means of inspection controls.

5.6.9 Where control panels are removable from the machinery space they should always be fixed securely at their intended maintenance position.

5.6.10 Before moving the step band or pallet band a check should be made that no unauthorized persons are on the escalator or moving walk.

5.6.11 Work that causes the generation of excessive noise, harmful dusts or fumes should, wherever possible, be avoided. If such work is unavoidable, personnel should wear appropriate personal protective equipment (see **5.2.3**) and should take suitable precautions to protect others in the vicinity of the work from these hazards.

5.6.12 Where two or more persons are working, a reliable and effective system of communication should be implemented. The communication system should take account of noisy conditions, large separation distances, etc.

NOTE This is of particular importance to avoid dangers from unexpected start/stoppage, movements where steps/pallets have been removed, etc.

5.6.13 The contractor should ensure that the permanent electric lighting provided by the owner (see **4.6.4**) is adequate for the work activities to be carried out. For compact escalators and moving walks, lighting should be provided by means of a portable lamp permanently available in one of these places. For remote drive escalators and moving walks, the lighting level should be not less than 200 lux wherever work is being carried out.

5.6.14 The contractor should ensure that any temporary lighting is provided at a voltage not exceeding 110 V, derived from a transformer supply with centre-tapped earth conforming to BS 7375.

5.6.15 The levels of lighting in the machinery space(s) should be adequate to provide a safe working environment.

NOTE Guidance is given in BS EN 115-1.

5.7 Machine rooms (machinery spaces outside of the truss)

*COMMENTARY ON **5.7***

The space available for persons to work could vary significantly between installations; the means of access to various parts of the machinery could also differ. Some machinery spaces might also contain more than one unit, perhaps sited within close proximity.

Attention is drawn to BS EN 115-1:2008+A1:2010, Annex A.3.

5.7.1 A safe means of access/egress should be provided to all machinery rooms and machinery spaces. The contractor should ensure that a permanent safety sign is displayed on the outside of machinery space and machinery room doors (see Annex A, Figure A.2).

NOTE It is sometimes necessary for security reasons, and to avoid identifying the function of individual rooms, to display the safety sign on the inside of the access door.

5.7.2 Machinery spaces should not be accessible to unauthorized persons.

5.7.3 All installed lifting equipment provided in machine rooms or machinery spaces should be used only within its rated capacity.

5.7.4 Where two or more persons are working, a reliable and effective system of communication should be implemented. The communication system should take account of noisy conditions, large separation distances, etc.

NOTE This is of particular importance to avoid dangers from unexpected start/stoppage, movements where steps/pallets have been removed, etc.

5.7.5 Persons working on controllers and other live equipment should do so in accordance with an appropriate live working procedure. This might necessitate the use of an insulating mat, insulation gloves, insulated shoes etc.

5.8 Hand-winding

Where a hand-winding facility is provided, all operations should be carried out by authorized persons according to the manufacturer's or other authorized instructions for the escalator or moving walk concerned.

NOTE It is the responsibility of the owner to ensure that such instructions are permanently displayed in the form of a notice at the machinery.

5.9 Entrapments

5.9.1 In the event of an entrapment of a person the following actions should be carried out as quickly as possible.

a) The escalator or moving walk should be stopped.

b) The emergency services should be called, i.e. the ambulance services, specifically including paramedical personnel, and the fire service.

5.9.2 No attempt should be made to release persons entrapped in an escalator or moving walk, unless under the control and supervision of a paramedic.

5.9.3 The escalator or moving walk maintenance organization should be requested to attend to offer technical assistance.

NOTE Attention is drawn to BS EN 13015 for the definitions of maintenance and maintenance organization.

5.9.4 Following the release of a person who has been entrapped, the escalator or moving walk should not be returned to service until appropriate investigations have been carried out.

5.9.5 In the event of the trapping of an object, the escalator or moving walk should be stopped, and trained and authorized staff in the employment of either the owner or the maintenance organization should affect the release of the object.

5.9.6 Following the removal of a trapped object, the escalator or moving walk should be checked by a competent person to ensure that it is safe to be returned to service.

Annex A (informative)

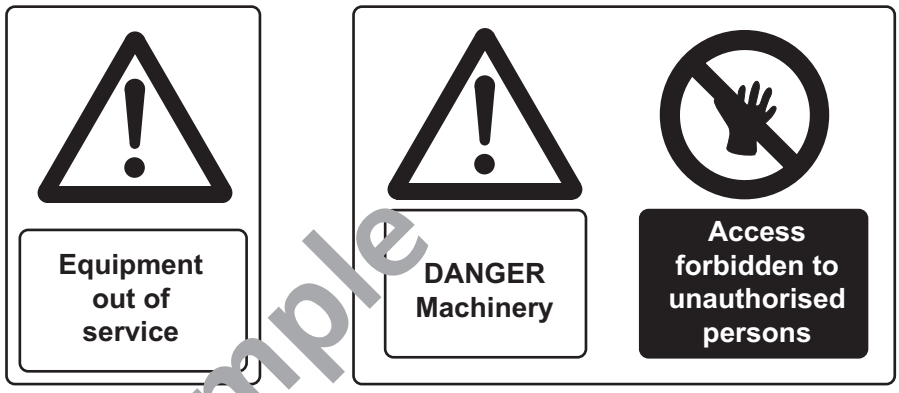
Typical signs and notices

Figure A.1 and Figure A.2 show black-and-white reproductions of the coloured safety signs that are recommended for use when work is being carried out on escalators and moving walks. The signs are in accordance with BS 5499-5.

NOTE 1 Attention is drawn to The Health and Safety (Safety Signs and Signals) Regulations 1996 [9], which required specific safety signs to be provided in workplaces, where the risk that has not been avoided or controlled by other means, e.g. by engineering controls.

*NOTE 2 Owners are advised that there are other signs that can be encountered by employees in a building, which are applicable to passenger usage (see **4.1.5**).*

Figure A.1 **Safety sign for use on a safety barrier when an escalator or moving walk is taken out of service**



Symbol
left-hand: black exclamation mark, yellow background, white background
middle: black exclamation mark, yellow background, black triangle
right-hand: black hand, red ring and bar, white remainder

Panel
left-hand: black lettering, yellow background
middle: black lettering, yellow background
right-hand: white lettering, red background

Remainder
white

Figure A.2 **Safety sign for use on a machinery space**

Symbol
upper: black exclamation mark, yellow background, black triangle;
middle: black hand, red ring and bar, white remainder;
lower: white exclamation mark on blue background.

Panel
upper: black lettering, yellow background
middle: white lettering, red background
lower: white lettering, blue background

Remainder
white

Annex B (normative)

Additional procedures for modernization, major repair and dismantling – Responsibilities of owners and persons working on escalators and moving walks

COMMENTARY ON ANNEX B

Many of the activities associated with the modernization, major repair and dismantling of escalators and moving walks are similar to those elsewhere in the construction industry. The hazards and safeguards are covered by regulations and well-established practices. Only those practices that are particular to the escalator and moving walk industry are described in this annex.

Attention is drawn to the CDM Regulations 2010 [1].

This annex indicates areas for attention and might not be comprehensive in all circumstances.

B.1 Work platforms

B.1.1 All platforms should be provided with suitable guard rails, toe-boards and, if necessary, some form of overhead protection.

B.1.2 The safe working load of a platform should be prominently displayed. Care should be taken not to exceed the safe working load.

NOTE 1 Attention is drawn to The Provision and Use of Work Equipment Regulations 1998 [10].

NOTE 2 During installation and/or dismantling works, manually or electrically driven work platforms may be used, but these could present other hazards.

B.2 New buildings under construction

B.2.1 Where new buildings are under construction, the owner should ensure that temporary protection is erected at all areas presenting a hazard to the installation work, as determined by a risk assessment.

NOTE Most of the problems arise from the need to protect open areas in or at the edges of the floor slabs in order to prevent persons or objects falling through the open areas.

B.2.2 The type of protection provided should be to the standard that is used elsewhere on construction sites, i.e. guard rails, mid-rails and toe-boards, which should be in position at all times, except during the passage of materials and persons working on the escalator or moving walk.

B.3 Existing buildings

*COMMENTARY ON **B.3***

The recommendations given in this subclause are applicable when existing escalators or moving walks are being modernized or dismantled.

B.3.1 The escalator or moving walk contractor should agree with the owner a suitable means of temporarily protecting the work area as determined by a risk assessment.

B.3.2 The owner should make all necessary arrangements to strengthen temporarily any work areas required to bear unusual loads.

B.4 Temporary electrical supplies and lighting

Temporary electrical supplies and lighting for all workplaces should be provided in accordance with BS 7671.

B.5 Environment

B.5.1 Risk assessments for eliminating or adequately controlling the risk arising from the environment should be carried out.

B.5.2 The generation of excessive noise or toxic fumes during major works on escalator and moving walks should, wherever possible, be avoided.

B.6 Fire hazards

Care should be taken to avoid the accumulation of flammable materials or litter in work spaces, especially when "hot work" is in progress, e.g. flame cutting, grinding or welding. In these circumstances, fire extinguishers should be located in the vicinity. Work should be subject to a "hot work" permit.

B.7 Manual lowering

Items of equipment should be lowered in a controlled manner and should not be allowed to free-fall.

B.8 Work at height

Particular care should be taken when working at height, including the use of appropriate fall protection equipment (e.g. barriers, personal protective equipment and similar means of protection) and working platforms (arrangement and stability).

NOTE Attention is drawn to The Work at Height Regulations 2005 [11]

Annex C (informative) Guidance on risk assessments

C.1 Typical risk assessment procedure

A typical risk assessment is made and documented by the contractor before work is commenced for the first time, and addresses all significant risks. Any equipment, procedure or work environment shown by the assessment to be inadequately controlled is then subject to appropriate controls.

The intervals at which risk assessments are reviewed are determined by the contractor, typically taking into account such factors as the nature of the task, the likelihood of there being changes in personnel or in the equipment required, and the location of the work. These intervals are specified and recorded at the time of making the initial assessment. Any changes to the initial safety assessment or to the appropriate intervals for subsequent assessment are also recorded.

C.2 Factors to be taken into account

The following list, which is not exhaustive, gives an indication of some of the factors that are typically taken into account during a risk assessment.

- Whether there is safe means of access to, and egress from, each place of work.
- The extent and nature of the work to be carried out.
- The type of escalator or moving walk, control system, etc.
- Whether an inspection control facility, as specified in BS EN 115-1:2008+A1:2010 (**5.12.2.5**) is provided and, if not, the procedures for moving the escalator or moving walk for maintenance and inspection purposes.
- Whether it is possible to isolate and/or switch off the escalator or moving walk at the drive and return stations (and the incline).
- Whether it is possible to isolate and/or switch off the escalator or moving walk auxiliary equipment.
- Whether there are adequate safe working spaces/clearances in the drive and return stations.
- Whether a step/pallet locking device is available, i.e. if work needs to be undertaken within the space created by the step or pallet removal.
- The way in which work may be carried out and the number, trade and skill level of personnel needed to carry out the work.
- The anticipated equipment required to carry out the work and the arrangements made for it to be available at the appropriate time.
- The availability, location and suitability of safety barriers.
- The working conditions in the machine rooms/machinery spaces which are located remotely from the truss.
- The periods during which the escalator or moving walk is available for the work to be carried out.
- Whether it is anticipated that more than one person is going to be working on or near the same escalator or moving walk installation.
- Whether facilities and procedures (including first aid) are available for dealing with emergencies that might arise on site.

- Whether there is adequate working space for the activity to be undertaken.
- Whether adequate lighting is available and whether it is temporary or permanent.
- Whether adequate signage is displayed on all electrical equipment.
- Whether suitable certificated lifting equipment is available.
- Any special precautions to be taken due to the presence of people using adjacent escalators or moving walks, stairways, etc.
- The ease of access to and from the site for materials.
- Whether the facilities for, and means of control of, the storage of materials are suitable.
- Whether there is a need to work on unguarded moving machinery.
- Whether there is a need to operate the escalator or moving walk with steps or pallets removed.
- Whether there is a need to leave the escalator or moving walk unattended with steps or pallets removed.

C.3 Significant hazards

Table C.1 gives a list of the significant hazards identified from BS EN 1050:1997 [1)], Annex A, and BS EN ISO 14121-1 [2)] that have been used to develop this British Standard, and gives cross-references to the relevant subclauses in this British Standard for each hazard listed.

Table C.2 expands on the information given in Table C.1, giving cross-references to the relevant sub clauses for a number of specific work areas as defined in BS EN 13015.

The list of significant hazards in Table C.1 and Table C.2 refers to escalators and moving walks affixed to the building structure intended for the transportation of persons and is relevant to:

- the safety of persons when gaining access to and from the work areas of escalator and moving walks;
- the safety of persons while working on escalator and moving walks;
- the safety of others present in the vicinity, whether they be working or not, who could be endangered by the actions of those working on escalators and moving walks.

1) This standard has now been superseded.
2) This standard has now been superseded.

Table C.1 **Summary of significant hazards**

Significant hazards identified in BS EN 1050:1997 [A], Annex A	**Relevant subclauses in BS 7801:2011**
1 Mechanical	**4.2.3, 4.5.8, 5.2.3, 5.5.4, 5.5.6**
2 Electrical	**4.2.3, 4.2.4, 4.7.10, 5.2.3, 5.2.4, 5.6.4, 5.7.5**
3 Thermal	**4.2.3, 5.2.3**
4 Noise	**4.2.3, 5.2.3, 5.5.5, 5.6.11, 5.6.12, 5.7.4**
7 Materials and substances	**4.2.6, 5.2.6**
8 Ergonomic	**4.2.3, 4.2.5, 4.5.7, 4.6.4, 5.2.3, 5.2.5, 5.6.11, 5.6.13**
10 Unexpected start-up/overrun/overspeed	**4.2.5, 4.6.1, 4.6.2, 5.2.5, 5.5.4, 5.6.5, 5.6.6**
14 Failure of control circuit	**4.6.2, 5.6.6, 5.6.9**
16 Break-up during operation	**4.2.11, 5.2.11**
17 Falling/ejected objects	**4.2.3, 4.5.9, 4.7.1, 5.2.3, 5.7.3,** Annex C
18 Loss of stability	**4.2.11, 5.2.11**
19 Slip/trip/fall of persons	**4.2.6, 4.5.2, 4.5.8, 4.5.9, 4.7.14, 5.2.6, 5.5.2, 5.5.4, 5.5.7**
21.1 Access and entry to work position	**4.2.9, 4.2.12, 4.2.15, 4.7.1, 4.7.2, 5.2.9, 5.6.3, 5.7.1**
21.3 Fire	**4.2.6, 5.2.6**
21.6 Inadequate lighting	**4.5.6, 4.6.4, 5.6.13**
21.10 Insufficient means for evacuation	**4.2.1, 5.2.2**
22 Control system	**4.2.1, 4.6.2, 4.6.3, 5.6.6, 5.6.7, 5.6.8**
26 Insufficient instructions	**4.1, 4.7.2, 5.1**
27 to 29 Additional hazards due to lifting	Annex C

[A] This standard has now been superseded.

Table C.2 **Significant hazards with reference to specific work areas as defined in BS EN 13015** *(1 of 2)*

Hazard	Relevant subclauses in BS 7801:2011					
	Machinery space	**Step/pallet band**	**Inside step/pallet**	**Landings**	**Control cabinet**	**Machine room**
1 Mechanical	**4.2.3, 4.5.8, 5.2.3, 5.5.4, 5.5.6**	**4.5.8, 5.5.4, 5.5.6**	**4.5.8, 5.5.4, 5.5.6**	**4.5.8, 5.5.4, 5.5.6**	—	**4.5.8, 5.5.4, 5.5.6**
2 Electrical	**4.2.3, 4.2.4, 5.2.3, 5.2.4, 5.6.4**	—	**5.2.4, 5.6.4**	**5.2.4, 5.6.4**	**4.2.4, 4.7.10, 5.2.4, 5.6.4, 5.7.5**	**4.2.4, 4.7.10, 5.2.4, 5.6.4, 5.7.5**
3 Thermal	**4.2.3, 5.2.3**	**4.2.3, 5.2.3**	**4.2.3, 5.2.3**	**4.2.3, 5.2.3**	**4.2.3, 5.2.3**	**4.2.3, 5.2.3**
4 Noise	**4.2.3, 5.2.3, 5.5.5, 5.6.12**	**5.5.5, 5.6.12**	**5.6.12**	**5.5.5, 5.6.12**	**5.5.5, 5.6.12**	**5.5.5, 5.7.4**
7 Materials and substances	**4.2.6, 5.2.6**	**4.2.6, 5.2.6**	**4.2.6, 5.2.6**	**4.2.6, 5.2.6**	**4.2.6, 5.2.6**	**4.2.6, 5.2.6**
8 Ergonomic	**4.2.3, 4.2.5, 4.5.7, 5.2.3, 5.2.5, 5.6.11, 5.6.13**	**4.2.3, 4.2.5, 4.5.7, 5.2.3, 5.2.5, 5.6.11, 5.6.13**	**4.2.3, 4.2.5, 4.6.4, 5.2.3, 5.2.5, 5.6.11, 5.6.13**	**4.2.3, 4.2.5, 4.5.7, 5.2.3, 5.2.5, 5.6.11, 5.6.13**	**4.2.3, 4.2.5, 5.2.3, 5.2.5, 5.6.11, 5.6.13**	**4.2.3, 4.2.5, 4.6.4, 5.2.3, 5.2.5, 5.6.13 5.6.11**
10 Unexpected start-up/ overrun/overspeed	**4.2.5, 4.6.1, 4.6.2, 5.2.5, 5.5.4, 5.6.5, 5.6.6**	**4.2.5, 4.6.1, 4.6.2, 5.2.5, 5.5.4, 5.6.5, 5.6.6**	**4.2.5, 4.6.1, 4.6.2, 5.2.5, 5.5.4, 5.6.5, 5.6.6**	**4.2.5, 4.6.1, 4.6.2, 5.2.5, 5.5.4, 5.6.5, 5.6.6**	**4.2.5, 4.6.1, 4.6.2, 5.2.5, 5.5.4, 5.6.5, 5.6.6**	**4.2.5, 4.6.1, 4.6.2, 5.2.5, 5.5.4, 5.6.5, 5.6.6**
14 Failure of control circuit	**5.6.6, 5.6.9**	**5.6.6, 5.6.9**	**5.6.9**	**5.6.6**	**5.6.9**	**5.6.6, 5.6.9**
16 Break-up	**4.2.11, 5.2.11**	**4.2.11, 5.2.11**	**4.2.11, 5.2.11**	**4.2.11, 5.2.11**	**4.2.11, 5.2.11**	**4.2.11, 5.2.11**
17 Falling/ejected objects	**4.2.3, 4.5.9, 4.7.1, 5.2.3,** Annex C	**4.2.3, 4.5.9, 5.2.3,** Annex C	**4.2.3, 5.2.3,** Annex C	**4.2.3, 4.5.8, 5.2.3,** Annex C	**4.2.3, 4.5.8, 5.2.3**	**4.2.3, 4.7.1, 5.2.3, 5.7.3,** Annex C
18 Loss of stability	**4.2.11, 5.2.11**	**4.2.11, 5.2.11**	**4.2.11, 5.2.11**	**4.2.11, 5.2.11**	**4.2.11, 5.2.11**	**4.2.11, 5.2.11**
19 Slip/trip/fall of persons	**4.2.6, 4.5.2, 4.5.8, 5.2.6, 5.5.2, 5.5.4**	**4.2.6, 4.5.2, 4.5.8, 4.5.9, 5.2.6, 5.5.2, 5.5.7**	**4.2.6, 4.5.2, 5.2.6**	**4.2.6, 4.5.2, 4.5.8, 4.5.9, 5.2.6, 5.5.2, 5.5.4, 5.5.7**	—	**4.2.6, 5.2.6, 4.7.14**
21.1 Access and entry to work position	**4.2.9, 4.2.12, 4.2.15, 4.7.1, 4.7.2, 5.2.9, 5.7.1**	**4.2.9, 4.2.12, 5.2.9, 5.6.3**	**4.2.9, 4.2.12, 5.2.9, 5.6.3**	**4.2.9, 4.2.12, 5.2.9, 5.6.3**	**4.2.9, 4.2.12, 5.2.9**	**4.2.12, 4.7.1, 4.7.2, 5.7.1**
21.3 Fire	**4.2.6, 5.2.6**	**4.2.6, 5.2.6**	**4.2.6, 5.2.6**	—	**4.2.6, 5.2.6**	**4.2.6, 5.2.6**
21.6 Inadequate lighting	**4.5.7, 4.6.4, 5.6.13**	**4.5.7**	**4.5.7, 4.6.4, 5.6.13**	**4.5.6**	**5.6.13**	**4.6.4**

Table C.2 **Significant hazards with reference to specific work areas as defined in BS EN 13015** *(2 of 2)*

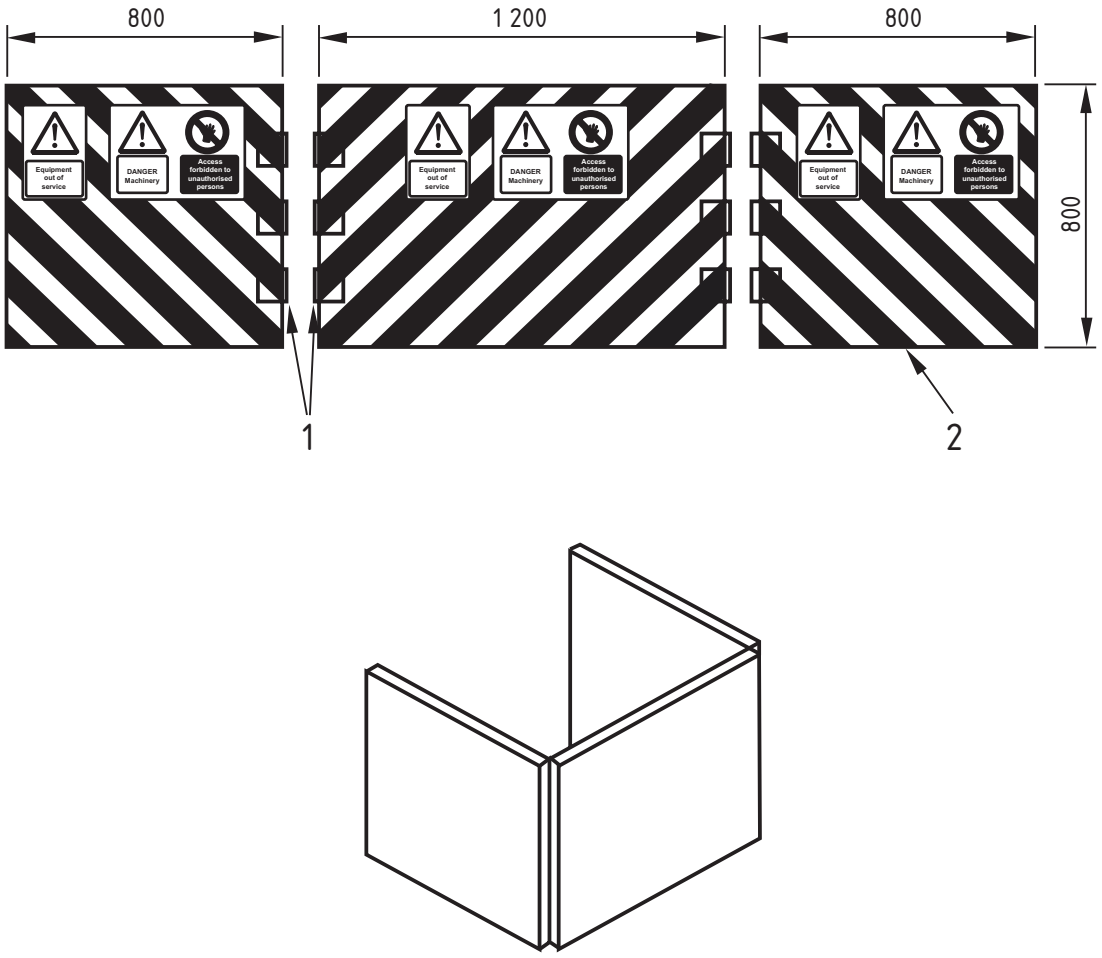
Hazard	Relevant subclauses in BS 7801:2011					
	Machinery space	Step/pallet band	Inside step/pallet	Landings	Control cabinet	Machine room
21.10 Insufficient means for evacuation	**4.2.1, 5.2.2**	**4.2.1, 5.2.2**	**4.2.1, 5.2.2**	**4.2.1, 5.2.2**	**4.2.1, 5.2.2**	**4.2.1, 5.2.2**
22 Control system	**4.6.2, 4.6.3, 5.6.6, 5.6.7, 5.6.8**	**5.6.6, 5.6.7**	**5.6.6, 5.6.7**	**4.2.1, 5.6.6, 5.6.7**	**5.6.6, 5.6.7**	**5.6.6, 5.6.7**
26 Insufficient instructions	**4.1, 4.7.2, 5.1**	**4.1, 5.1**	**4.1, 5.1**	**4.1, 5.1**	**4.1, 5.1**	**4.1, 4.7.2, 5.1**
27 to 29 Additional hazards due to lifting	Annex C	Annex C	Annex C	Annex C	Annex C	Annex C

Annex D (informative)

Example of a typical safety barrier

Figure D.1 shows a black-and-white illustration of the coloured safety barrier that is recommended for use at the entry and exit points of an escalator or moving walk whenever the unit is removed from service and work is being carried out.

Figure D.1 **Safety barrier for use when a work area is to be protected**



Key
1 Hinges
2 Black and yellow stripes

NOTE 1 The colours and layout of the safety signs attached to the barrier are given in Annex A, Figure A.1
NOTE 2 The barrier itself carries diagonal, alternate black and yellow stripes.

Bibliography

Standards publications

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

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BS 5656-2:2004, *Escalator and moving walks – Safety rules for the construction and installation of escalators and moving walks – Part 2: Code of practice for the selection, installation and location of new escalators and moving walks*

BS EN 115-1:2008+A1:2010, *Safety of escalators and moving walks – Part 1: Construction and installation*

BS EN 115-2:2010, *Safety of escalators and moving walks – Part 2: Rules for the improvement of safety of existing escalators and moving walks*

BS EN 1050:1997, *Safety of machinery – Principles for risk assessment*

BS EN 13015, *Maintenance for lifts and escalators – Rules for maintenance instructions*

BS EN ISO 14121-1, *Safety of machinery – Risk assessment – Part 1: Principles*

Other publications

[1] GREAT BRITAIN. The Construction (Design and Management) Regulations 2010. London: The Stationery Office.

[2] GREAT BRITAIN. The Workplace (Health, Safety and Welfare Regulations) 1992. London: HMSO.

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[4] GREAT BRITAIN. The Management of Health and Safety at Work Regulations 1999. London: The Stationery Office.

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Escalator industry training

NVQ EOR/204, Basic escalator safety [3)]

NVQ Level 3 Pathway ENM3/1, Escalator repair and service [3)]

[3)] Engineering and Marine Training Authority, EMTA House, 14 Upton Road, Watford, Hertfordshire WD1 7EP. Website: http://www.emta.org.uk

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