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RIS-7700-INS

Rail Industry Standard for Station Infrastructure

Issue Two: June 2013

Rail Industry Standard

Rail Industry Standard for Station Infrastructure

Issue record

Issue	Date	Comments
One	December 2007	Original document Replaces previously mandatory requirements from GE/RT8005, GI/RT7014, GM/RT1201 and GM/RT1251, and recommendations from GE/RC8505
Two	June 2013	Replaces issue one Part six of RIS-7700-INS issue one is replaced by RIS-7702-INS

Superseded or replaced documents

The following Railway Group document is superseded or replaced, either in whole or in part as indicated:

Superseded documents	Sections superseded	Date when sections are superseded
RIS-7700-INS, Issue One, Rail Industry Standard for Station Infrastructure	Part 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13 and Appendices A, B and C	01 June 2013

Part 6 of RIS-7700-INS, issue one, is superseded by RIS-7702-INS, issue one, Rail Industry Standard for Lighting at Stations.

RIS-7700-INS, issue one, ceases to be in force and is withdrawn as of 01 June 2013.

Supply

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Part 1 Introduction

1.1 Purpose of this document

- 1.1.1 This document has been published by Rail Safety and Standards Board to provide a voluntary standard on station infrastructure, for infrastructure managers responsible for managing and operating stations to use if they so choose.
- 1.1.2 This document is adapted from the previously mandatory requirements set out in GE/RT8005, GI/RT7014, GM/RT1201 and GM/RT1251, and recommendations contained in GE/RC8505.

1.2 Application of this document

- 1.2.1 Railway Industry Standards are not mandatory unless or until a duty holder specifies all or part of them in company procedures or contract conditions. Where this is the case the duty holder will specify the nature and extent of application.
- 1.2.2 Specific compliance requirements and dates have therefore not been specified since these will be the subject of the internal procedures or contract conditions of the companies which choose to adopt this standard.
- 1.2.3 Railway Group Standard GI/RT7016 sets out mandatory requirements for station infrastructure. The requirements set out in GI/RT7016 have not been duplicated in this document.

1.3 Health and safety responsibilities

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1.4 The structure of this document

- 1.4.1 This document is set out as a series of requirements, in some cases followed by relevant guidance. The guidance is indicated by prefixing the paragraph number with the letter 'G'.

1.5 Copyright

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1.6 Approval and authorisation of this document

- 1.6.1 The content of this document was approved by Infrastructure Standards Committee on 06 March 2013.
- 1.6.2 This document was authorised by RSSB on 24 April 2013.

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Part 2 Station platforms

2.1 Load carrying capacity of platforms

2.1.1 Platforms where no vehicular traffic is permitted or required (pedestrian loading)

2.1.1.1 Requirements for pedestrian loading are set out in GI/RT7016.

2.1.2 Platforms where vehicular traffic is permitted or required (vehicular loading)

2.1.2.1 If it is proposed to permit access for vehicles and/or if access for emergency vehicles is required to platforms, the platform shall be capable of carrying the maximum anticipated loading from such vehicles.

2.1.2.2 At stations where tractor-hauled station traffic exists, or is likely to be utilised, new platforms and alterations to platforms shall be designed to carry the maximum anticipated loading from such vehicles.

2.2 Provision for track maintenance

2.2.1 In the design of new platforms and alterations to platforms (including their foundations), allowance shall be made for the maintenance and renewal of adjacent track (for example, future reballasting operations).

2.3 Platform and copers surfaces

2.3.1 Platform cross fall

2.3.1.1 GI/RT7016 sets out mandatory requirements for platform cross fall.

2.3.2 Materials for platform surfaces

2.3.2.1 The design of surfacing shall take into account the expected rainfall.

2.3.2.2 Surfaces shall be formed from materials that allow the platform to be cleaned of dirt and debris.

2.3.2.3 The design of surfacing shall take into account the effects of any substances used for activities such as cleaning or de-icing.

2.3.3 Drainage

2.3.3.1 Adequate provision for and maintenance of drainage for the removal of storm water and spillage shall be made for platform surfaces, platform buildings and canopies to avoid discharge or overflow onto the platform surface or adjacent track.

2.3.4 Security of platform copers

2.3.4.1 Platform copers shall have a suitable restraint to prevent them from moving and thereby infringing clearances or endangering passengers.

2.4 Prevention of rubbish accumulation under platforms

2.4.1 For new platforms and alterations to platforms, a suitable removable barrier (for example, a mesh screen) shall be provided at the front and rear of voided platforms to prevent rubbish accumulation under the platform giving rise to a health and / or fire risk.

2.4.2 At existing voided platforms, the provision of a suitable removable barrier shall be considered, particularly where there is evidence of rubbish accumulation to the extent that it is likely to give rise to a health and / or fire risk.

2.4.3 GI/RT7016 requires provision of a recess beneath the platform edge. Any screens or other suitable barrier shall not encroach within this space.

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2.5 Materials used for cleaning and de-icing

- 2.5.1 The effect that cleaning and de-icing materials have on the durability of platform surfaces shall be considered and only those that do not cause premature deterioration of the surface and adjacent track shall be used.

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Part 3 Structures, buildings and platform furniture

3.1 Headroom on platforms

3.1.1 GI/RT7016 requires 2500 mm minimum headroom to new station roofs and platform canopies or alterations to station roofs and platform canopies, suspended equipment, signs and lighting for the following distances from the platform edge:

- a) 3000 mm where the permissible or enhanced permissible speed on the line adjacent to the platform exceeds 100 mph (165 km/h).
- b) 2500 mm at other platforms.

3.1.2 Beyond these distances from the platform edge, the minimum headroom to new station roofs and platform canopies or alterations to station roofs and platform canopies, suspended equipment, signs and lighting shall be 2300 mm.

G 3.1.2.1 Beyond the distances specified in GI/RT7016, the recommended minimum headroom is 2500 mm where this is reasonably practicable to achieve.

G 3.1.2.2 A headroom of 3500 mm is preferred. The additional headroom improves visibility of, for example, directional signage and customer information systems along platforms. The increased vertical clearance will also contribute to passenger comfort.

3.2 Provision for accidental loading from derailed trains

3.2.1 Where there is an alteration at a station, either to the track or to the station itself that would bring columns within 4.5 m of the nearest rail, the risk from derailed trains shall be assessed.

3.2.2 Where additional protective measures are required the following shall, as a minimum, be considered:

- a) The provision of a solid platform wall and platform construction to protect the columns.
- b) The provision of continuity within the structure supported by the columns to prevent progressive collapse (for example, by designing the structure to remain standing with any single column removed).

3.3 Particular requirements for station roofs and platform canopies

3.3.1 Loading for new station roofs and platform canopies, and station roofs and platform canopies subject to alteration

3.3.1.1 On platforms where vehicular access or tractor-hauled station traffic is permitted, new columns (or columns subject to alterations) supporting station roofs or platform canopies shall be designed to withstand the collision loading appropriate to the vehicle type and its velocity, or shall be protected by adequate and suitable barriers.

3.3.2 Access for station roofs and platform canopies

3.3.2.1 The design of new station roofs and platform canopies shall provide access for installation, cleaning, inspection and maintenance and future dismantling without jeopardising the safety of train operations and station users.

3.3.2.2 In order to achieve this, consideration shall be given to the provision of permanent walkways, inspection cradles and ladders.

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3.3.3 Selection of materials for station roofs and platform canopies (including glazing)

3.3.3.1 When selecting materials for roofs (including glazing), the following shall be considered:

- a) The effects of fire, including both damage to the materials and, where appropriate, the use of the roof or glazing as fire separation (see also Part 9 of this document).
- b) The effects of explosion.
- c) The effects of ultra-violet light.
- d) Thermal effects of expansion and differential temperature gradients.
- e) The effects of materials used for cleaning and removal of graffiti.

3.3.4 Resistance to accidental or wilful damage to station roofs, platform canopies (including glazing and cladding)

3.3.4.1 The design of new station roofs or platform canopies or alterations to existing station roofs or platform canopies shall take into account the risks to train operations and station users caused by accidental or wilful damage to any glazing, cladding or other roofing system and / or its supports.

3.3.4.2 Accidental and wilful damage by vandals, falling objects, road and rail vehicles shall be considered.

3.4 Vertical glazing and cladding

3.4.1 Where vehicles, trolleys and other equipment have access adjacent to vertical cladding and glazing, barriers shall be provided to prevent collision.

3.5 Securing of platform furniture and lightweight structures

3.5.1 Platform furniture and other lightweight structures shall be fixed to the platform or otherwise secured to prevent accidental or malicious movement.

3.6 Provision for storage of self-help trolleys

3.6.1 Where passenger self-help trolleys are in use, appropriate measures shall be in place to reduce the risk of them falling onto the track (including the provision of safe storage areas and automatic braking devices).

3.7 Electrical clearances

3.7.1 For stations where 25 kV overhead electrification exists or is proposed, the electrical clearances between the overhead line equipment and platform canopies and station footbridges are set out in GE/RT8025. For electrical clearances to other overhead electrification systems, specialist advice shall be sought.

3.8 Maintaining signal visibility

3.8.1 GE/RT8034 sets out the requirements for ensuring that the visibility and alignment of signals and signs that perform the function of signals are not adversely affected during the lifetime of the equipment.

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Part 4 Access and egress

4.1 Design of entrances and exits

4.1.1 The design capacity of entrances and exits to station platforms, escalators, lifts, passenger conveyors, ramps and stairways, shall be based on the forecast maximum passenger flows throughout a 24 hour period over the intended design life of the facilities provided.

4.1.2 Access to and from platforms shall be direct, obvious and provide for access by people with reduced mobility. The term 'people with reduced mobility' (PRM) is defined in the PRM TSI.

G 4.1.2.1 Further guidance on the design of access for people with reduced mobility is given in 'Train and Station Services for Disabled Passengers: A Code of Practice' (February 2002), published by the Strategic Rail Authority, and BS8300:2001 'Design of buildings and their approaches to meet the needs of disabled people. Code of practice'.

4.1.3 New entrances and exits and alterations to entrances and exits to station platforms, escalators, lifts, passenger conveyors, ramps and stairways, shall be positioned to provide unobstructed access and to avoid local congestion.

4.1.4 The need for fixed stairways to be provided adjacent to escalators and passenger conveyors, to meet breakdown and emergency evacuation requirements, shall be established. Except where it is not reasonably practicable, sufficient alternative routes shall be provided for situations where an escalator or passenger conveyor is non-operational.

4.1.5 Where site circumstances permit, escalators, lifts, passenger conveyors, ramps and stairways shall be orientated so that access to and egress from them is parallel to the platform edge.

4.1.6 Where site circumstances prevent this, suitable barriers shall be provided to prevent persons or objects having direct access to the platform edge.

4.2 Emergency evacuation

4.2.1 At new stations, the design shall take account of the need for safe evacuation in the event of fire at the station or on a train stopped at a platform that forms part of the station.

4.2.2 At new stations, the provision of access and egress facilities shall be designed to cater for the forecast maximum number of people using the station and developed in co-ordination with the evacuation plan for the station.

4.2.3 At stations subject to alteration, the emergency evacuation plan for the station shall take into account the access and egress facilities provided.

4.2.4 The needs of persons with reduced mobility (see clause 4.1.2) shall be considered in the design of emergency evacuation arrangements.

4.2.5 The emergency escape route shall be clearly defined and its associated signs shall clearly indicate the direction to be taken for safety.

4.3 Vehicular access

4.3.1 Platforms where vehicular traffic is permitted or required

4.3.1.1 If access for vehicles is permitted and / or if access for emergency vehicles is required, adequate clearances for such vehicles shall be provided. Where vehicles are restricted to certain areas or routes, the limits of such areas or routes shall be clearly marked on the surface of the route on which they are permitted to travel.

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4.3.2 Prevention of unauthorised vehicular access

- 4.3.2.1 If the platform is not designed to permit vehicular access, barriers shall be provided to prevent such access where necessary, without causing undue obstruction to passenger movement.

4.3.3 Segregation of vehicular and pedestrian traffic

- 4.3.3.1 Consideration shall be given to the segregation of vehicle and pedestrian movements at stations (for example, on platforms and bridges) where these movements pose a risk to safety.

4.4 Sub-surface stations

4.4.1 Minimum usable width of a platform at a sub-surface station

- 4.4.1.1 The minimum usable width of a platform at a sub-surface station shall be sufficient to permit the emergency evacuation of passengers within the time period established by the person responsible for fire safety in accordance with the requirements of the Regulatory Reform (Fire Safety) Order 2005, and the Fire (Scotland) Act 2005.
- 4.4.1.2 Additional requirements relating to emergency evacuation are set out in section 4.2.

4.4.2 Number, width and location of exits from platforms

- 4.4.2.1 For all sub-surface stations, the number, width and location of exits from the platform shall be such that the maximum design passenger capacity of a fully occupied train, and any passengers occupying the platform when the train arrives, can be evacuated from the platform in an emergency within the time period established by the person responsible for fire safety in accordance with the requirements of the Regulatory Reform (Fire Safety) Order 2005, and the Fire (Scotland) Act 2005.
- 4.4.2.2 For all sub-surface stations, each platform shall have a minimum of two exits for use in an emergency.

4.4.3 Calculation of emergency exit capacity

- 4.4.3.1 In calculating the time period to evacuate a platform in an emergency, one exit shall be assumed to be closed.
- 4.4.3.2 At all sub-surface stations, escalators providing access to, or egress from, platforms shall be considered as fixed stairways for calculation of emergency exit capacity, with one escalator not available.
- 4.4.3.3 At all sub-surface stations, passenger conveyors providing access to, or egress from, platforms shall be considered as fixed walkways for calculation of emergency exit capacity, with one passenger conveyor not available.

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Part 5 Escalators and passenger conveyors

5.1 General design requirements

- 5.1.1 At the design stage, the number, capacity and speed of operation of the escalators and passenger conveyors, shall be determined on the basis of forecast maximum passenger flows, in each direction. In addition, the layout and method of control, shall take into account the requirements for evacuation in an emergency situation.
- 5.1.2 The forecast maximum passenger flow is also necessary to enable the overall installation to be designed such that congestion is prevented on the escalators and passenger conveyors.
- 5.1.3 Whenever an escalator or passenger conveyor is non-operational, it shall be capable of being used as a fixed walkway for an indefinite time period when stopped and awaiting repair. The braking and step band locking system shall be designed to allow for these conditions of service.
- 5.1.4 The layout and control of escalators and passenger conveyors shall be designed to prevent passengers being transported into an area already blocked by other passengers. Particular care is needed where failure of ticket barriers could cause congestion, or where failure of an onward escalator or passenger conveyor could cause congestion of an intermediate landing.
- 5.1.5 In cases where escalators and passenger conveyors give access to or from platforms, special attention shall be given to passenger flows onto and from the escalator and passenger conveyor.
- 5.1.6 In the design of the approaches and exits from escalators and passenger conveyors, sufficient barriers shall be installed to control the flow of passengers and to prevent congestion in areas where cross flow of passengers can take place.

5.2 Technical requirements

- 5.2.1 All escalators and passenger conveyors at railway stations shall comply with BS EN 115:1995 and where they are in the passenger flow, they shall be of the 'Public Service' type.
- 5.2.2 For the 'Public Service' type of escalator and passenger conveyor, as well as implementing the additional recommendations detailed in Annex D of BS EN 115, the following specific options in BS EN 115 shall be applied as far as reasonably practicable:
 - a) The angle of inclination shall not exceed 30° for escalators and 5° for passenger conveyors.
 - b) The minimum width of treadway for escalators and passenger conveyors shall be 1000 mm. Passenger conveyors which are to be used by passengers with self help trolleys shall be at least 1400 mm wide.
 - c) Where an escalator is installed in a shaft with a curved roof the overhead clearance shall be a minimum of 2300 mm at the centre of the nose of the steps and 2200 mm at the end of the nose of the steps.
 - d) The clearance between the outer edge of the handrail and the adjacent wall shall not be less than 150 mm, with this clearance continuing up to a height of at least 1700 mm above step level. Whilst emergency stop buttons may be situated between the handrail and the wall, they shall not be within 80 mm of the handrail.
- 5.2.3 All escalators, including their associated architectural features, shall comply with Health and Safety Executive Guidance Note PM 34.

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- 5.2.4 The normal practice shall be to install compact type escalators, but the remote type shall be installed when the following conditions exist:
- a) The escalator is on an escape route and insufficient alternative routes are available to meet all conditions of escalator breakdown.
 - b) Where the location of the escalator makes the use of the compact type impracticable.
 - c) When lifting floor panels to gain access for cleaning rubbish trays will cause an obstruction at times when passenger flows will make this unacceptable.
- 5.2.5 To reduce the possibility of trapping between the skirting and the steps, pallets or belt, a suitable deflector device shall be fitted eg a continuous bristled brush.
- 5.2.6 The balustrades, skirting, steps, pallets and belts shall be manufactured from non-combustible material as defined in BS 476-4:1970.
- 5.2.7 Lubricants and methods of lubrication shall be selected to minimise the risk from smoke and fumes, where over-heating or fire occurs.
- 5.2.8 All escalators, passenger conveyors and their surrounds shall be illuminated to appropriate standards, which shall not be less than the requirements of BS EN 115:1995.
- 5.2.9 For maintenance/inspection purposes, a portable control device shall be provided which enables the escalator or passenger conveyor to be run at a manually controlled slower speed, which shall not be greater than 10% of the rated speed.
- 5.2.10 All electrical wiring and cables shall be installed in accordance with the requirements of BS 7671:2001 supplemented where relevant by GI/RT7007.
- 5.2.11 When escalators and passenger conveyors are installed at stations where the railway tracks are provided with 25kV a.c. electrification equipment, the requirements of GL/RT1254 shall be complied with.
- 5.2.12 When escalators and passenger conveyors are installed at stations where the railway tracks are provided with 750V d.c. electrification equipment, precautions shall be taken against stray d.c. currents.
- 5.2.13 Operation and maintenance information for the escalator or passenger conveyor shall be obtained from the manufacturer of the equipment. Station staff shall be provided with sufficient easily understood information to permit duties concerned with the operation of the equipment, including emergency procedures, to be undertaken.
- 5.2.14 Records of registration and periodic examination shall be kept in accordance with sections 5.6 to 5.9.
- 5.2.15 A telephone shall be provided in the machine rooms of all remote type escalators.

5.3 Fire requirements

5.3.1 Sub-surface stations

- 5.3.1.1 All escalators and passenger conveyors installed at stations where the platforms are underground or enclosed, shall be fitted with fire detection and extinguishing systems as follows:
- a) A linear heat detector on each side of the truss for the whole length of the escalator or passenger conveyor.
 - b) A smoke detection system in the top and bottom machine rooms and compartments.
 - c) A water sprinkler system in accordance with BS 5306-2:1990 shall be fitted to provide coverage to the whole length of the escalator or passenger conveyor truss and also the rubbish trays.

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5.3.1.2 Detection of a fire by the above equipment shall automatically result in actuation of a remote fire alarm and operation of the sprinkler system. Initiation of the above shall cause the escalator(s) or passenger conveyor(s) to stop safely.

5.3.1.3 The functioning of the smoke and heat detection equipment shall be interfaced with the sub-surface station fire alarm, detection and monitoring system.

5.3.2 Other stations

5.3.2.1 Above ground stations shall be provided with similar protection to that set out in sub-section 5.3.1 where the need has been established by the person responsible for fire safety in accordance with the requirements of the Regulatory Reform (Fire Safety) Order 2005 and the Fire (Scotland) Act 2005.

5.3.3 General

5.3.3.1 Portable fire extinguishers shall be provided in the machine rooms of remote type escalators and in the machinery compartments of compact escalators.

5.4 Emergency arrangements

5.4.1 The provision and operation of emergency stop devices shall take account of the particular installation, including the possible use of passenger self help trolleys, and it shall be clear to which escalator or passenger conveyor each stop device refers.

5.4.2 The emergency stop devices shall be installed at the top and bottom landings of escalators and at each end of passenger conveyors. Where the vertical rise of an escalator exceeds 6 m, additional emergency stop devices shall be provided.

5.4.3 Where passenger self help trolleys are to be used on escalators or passenger conveyors, additional emergency stop devices shall be positioned 2 m into the step band from the comb plate at each end of the escalator or passenger conveyor, irrespective of the vertical rise height.

5.4.4 To assist the person authorised to start the escalator or passenger conveyor after the operation of an emergency stop device, an illuminated display shall be provided adjacent to the start switch. An audible alarm shall be provided to indicate the operation of an emergency stop device. If the station is unstaffed or there is no permanently staffed control room at the station, then arrangements shall be made to respond to the operation of an emergency stop device within a prescribed time.

5.4.5 To assist in the release of trapped persons, animals or articles, an inching device shall be provided adjacent to each comb plate. In addition, where it is considered advisable, there may be a need to provide hand winding facilities.

5.4.6 All equipment necessary to release trapped persons, animals or articles shall be provided and positioned in a place easily accessible to station staff near to each individual or group of escalators or passenger conveyors.

5.4.7 Effective barriers shall be available to prevent public access to escalators or passenger conveyors, but may require an emergency push-through feature to meet fire regulations. Whenever an escalator or passenger conveyor is made unfit for use as a stairway or walkway, barriers preventing access shall be used.

5.4.8 All escape and emergency lighting shall be in accordance with the requirements set out in RIS-7702-INS.

5.5 Signing

5.5.1 A notice shall be displayed on or adjacent to each emergency stop device indicating the appropriate penalty for improper use.

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- 5.5.2 The signs in the immediate vicinity of the landing areas shall be limited to those which give instruction to passengers in the use of the escalator or passenger conveyor. It shall not be permissible to display advertisements or other features which could distract the passenger's attention when stepping onto or off an escalator or passenger conveyor.
- 5.5.3 When specially designed passenger luggage trolleys are used on escalators and passenger conveyors, notices in a clear and concise form to instruct passengers how to use the trolleys on the escalator or passenger conveyor shall be provided. These notices shall be at the approaches to the escalator or passenger conveyor, but not at the immediate entrances to them, where congestion could develop.

G 5.5.3.1 The Health and Safety (Safety Signs and Signals) Regulations 1996 set out requirements for signs. BS 5499-10:2006 gives further guidance on the use of safety signs including fire safety signs.

5.6 Registration of escalators and passenger conveyors

- 5.6.1 For each escalator and passenger conveyor, a record shall be made which contains the information detailed in Appendix B (although not necessarily in that form) and, at the same time, it shall be uniquely identified.
- 5.6.2 This identification shall be clearly indicated on the escalator and passenger conveyor and shall be used on all documentation and correspondence associated with it.
- 5.6.3 When major components are removed and replaced, this information shall be endorsed on the record documentation.
- 5.6.4 The record documentation, together with any plans quoted therein, copies of test certificates and reports of the last four periodic thorough examinations shall be indexed and retained in a comprehensive register as set out in clause 5.7.1.

5.7 Register of escalators and passenger conveyors

- 5.7.1 A comprehensive register shall be established and kept up to date for each escalator and passenger conveyor. This register shall comprise:
- a) Technical data summary sheet (see Appendix B).
 - b) Layout drawing.
 - c) Main electric circuit diagram.
 - d) Site plan.
 - e) Means of escape (alternative route) plan.
 - f) Records of periodic thorough examinations.
 - g) Copy of last audit of system and consequential actions arising from periodic thorough examinations.
- 5.7.2 A copy of the report from each periodic thorough examination shall be supplied to the operators of escalators and passenger conveyors to allow them to discharge their responsibilities under the Health and Safety at Work, etc. Act 1974.
- ### 5.8 Periodic thorough examination of escalators and passenger conveyors
- 5.8.1 Whilst there is no specific legal requirement to carry out periodic thorough examinations, sections 2, 3 and 4 of the Health and Safety at Work, etc. Act 1974 cover the general requirements of safety.