



Lyall Senior

Director
Lift Solutions





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ELEVATORS
YOUR LOCAL CUSTOMER SERVICE EXPERTS



Equitable

April, 2023



Presentation Outline

- A brief bio of who I am
- A brief outline of applicable lift Standards and Codes in NZ
- A brief overview of current European practices re: Evacuation Lift requirements – CIBSE D:2020 v1.2
- Examples of some concerns
- Key Message
- Questions



Who am I ?

Lyall Senior

- **1982 – 2003**
 - 21 years working for a lift company, undertaking installation/ commissioning/ servicing/ callout 24-7/ repairs/ field engineer support of various brands of lift and escalator equipment
- **2003** - Lift Solutions Ltd – Providing independent consultancy services exclusively to owners and property managers
- **2006** - Infrastructure Analysis Ltd was created
- **2020** - Joined ABC Mgt Team



Applicable Standards

- **In NZ**
 - Boilers, Lifts and Cranes Act 1950
 - Power Lift Rules 1955
 - NZS 4332P: 1994
 - NZS 4332: 1997 being an acceptable solution under NZBC D2/AS1
- **NZBC also allows alternative solutions with qualifications, E.g.**
 - EN81-1:1998/EN81-2:1988/EN115:1983
 - EN81-20:2014/EN81-50:2014/EN115-1:2010
 - CodeMark accreditation



Applicable Standards

Acceptable Solution D2/AS1

MECHANICAL INSTALLATIONS FOR ACCESS PASSENGER CARRYING LIFTS

Acceptable Solution D2/AS1

MECHANICAL INSTALLATIONS FOR ACCESS PASSENGER CARRYING LIFTS

Acceptable Solution D2/AS1

Acceptable Solution D2/ Passenger Carrying Lifts

1.0 Reference Document NZS 4332

1.0.1 NZS 4332 is an acceptable solution subject to the following modifications:

- a) Where this Standard has provisions that are in non-specific or unquantified terms (such as where provisions are required to be appropriate, adequate, suitable, equivalent, satisfactory, acceptable, applicable or the like), then these do not form part of the acceptable solution and must be treated as an alternative solution.
- b) Where this Standard requires approval, verification or the like, then this must be to the satisfaction of the *building consent authority*.
- c) The structural design of the *building*, its elements and the fixings supporting the lift installation, shall comply with Clause B1 "Structure" and is outside the scope of this Standard as an acceptable solution. Structural design of parts of the lift installation where described in this Standard shall be undertaken by a suitably qualified designer and shall be to the approval of the *building consent authority*.

2.0 Reference Document EN 81-20

2.1 EN 81-20

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COMMENT: EN 81-20 ma

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interaction. Touch screens need to be supplemented with tactile activation linked to audible notifications to ensure ease of use by people with visual impairments (see Codewords 71 article 'Compliant lifts are easy to use for everyone')."

Add a new Clause 1.7 to read:

1.7 Interpretation

Where this Standard has provisions that are in non-specific or unquantified terms (such as where provisions are required to be suitable, special, adequate, appropriate, equivalent, "within easy reach" or the like) then proposals to meet those provisions must be to the satisfaction of the *building consent authority*.

Where the Standard requires that manufacturer's advice be followed, the adequacy of that advice shall be to the satisfaction of the *building consent authority*.

Where this Standard requires approval, verification or the like, this shall be to the satisfaction of the *building consent authority*.

The word "shall" identifies a mandatory requirement for compliance with this Standard. The word "should" refers to practices which are advised or recommended.

The word "normative" identifies a mandatory requirement for compliance with this Standard.

The words "NOTE" and "informative" identify commentary material. Such material is given for the purposes of general information and explanation and does not form part of the mandatory requirements of this Standard."

Add the following to Clause 5.2.1.4.1

"d) at least 50 lux maintained vertical illumination at landing door headers."

NOTE: The required illumination may be provided by lighting mounted on the car roof.

Maintained illumination is the minimum illumination during the life of the installation taking into account the drop in light output as the light sources age and the effect of dirt accumulating on optical surfaces etc.

Amend Clause 5.2.2.5 to read:

"5.2.2.5 A safe access for persons to machinery spaces and pulley rooms shall be provided. Where level access from the nearest lift landing is not available access between levels shall be provided by stairs.

Delete 5.2.5.2.2.1c)

Add new clause 5.2.5.8.3 to read:

5.2.5.8.3 Devices to hold car above the lowest floor

For direct-acting electrohydraulic lifts, suitable devices shall be provided to hold the car above the lowest floor. Such devices shall support the car as necessary during all testing and maintenance without impinging on the clearances required by this Standard.

If the device is not permanently fixed in place it shall remain on the site in an area exclusively for the use of the lift installation. If stored in the pit it shall not interfere with the lift installation nor with any clearance required by this Standard.

Proposals for the device, demonstrating compliance with the requirements of this Clause, shall be to the satisfaction of the *building consent authority*."

Amend Clause 5.4.3.3 to read:

"5.4.3.3 Car walls with glass placed lower than 1.10 m from the floor shall have a support rail at a height between 0.95 m and 1.05 m. This support rail shall be fastened independently from the glass."

Amend Clause 5.4.10.2 to read:

"5.4.10.2 Lift cars shall have a minimum of two lights, one to be connected to the lift supply and one to be connected to some other part of the electrical installation of the building in which the lift is located or to some other source of supply."

Machine room lifting beams

3 Pit maintenance

3 Access from bottom

rs

9 Dryness of pits

20.2 Internal lighting.

shall be modified by adding "Where batteries provide the lighting source, the batteries shall be provided in such a manner that they are displaced or the contents spilled in a manner that they do not pose a safety hazard or by ..."

10 Lift circuit drawing in om

6 Operation of lifts under fire emergency conditions (excluding s)

7 Detection of fire in machine room using sheave rooms and rooms containing electronic and liftwells

8 Operation of lifts under conditions shall be modified by adding "The requirements of Clause 5.10.4 of EN 81-77".

! Emergency communication and

shall be modified by adding "The requirements of Clause 5.10.4 of EN 81-77".

Requirements for lifts on es for people with disabilities 4332 does not provide for touch screens for calling or lifts. Further, touch screens ves do not comply with ide Clause D2.3.5 as, among s, they do not provide tactile

ance of EN81-20, lowed



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Example of a current conflict

- Currently, NZS 4332 clause 25.6 (d) states

(d) Warning notice: A non-illuminated engraved notice shall be provided adjacent to or on each landing call button plate reading 'DO NOT USE LIFT IN EVENT OF FIRE' in clearly legible letters not less than 8 mm high.

- Whereas, NZBC F8 Amendment 4 states

5.3 Lifts

A sign shall be provided on, or adjacent to, each landing call button plate with letters at least 8 mm high reading 'In the event of fire use the stairs'. Signs shall be *safety red* on a white background.

Example of a potential conflict

continued

- Current

- NZBC states Protected



Clause D2

MECHANICAL INSTALLATIONS FOR ACCESS

New Zealand Building Code Clause D2 Mechanical Installations for Access

The mandatory provisions for building work are contained in the New Zealand Building Code (NZBC), which comprises the First Schedule to the Building Regulations 1992. The relevant NZBC clause for Mechanical Installations for Access is D2.

FIRST SCHEDULE—continued	
Clause D2—MECHANICAL INSTALLATIONS FOR ACCESS	
Provisions	
<p>OBJECTIVE D2.1 The objective of this provision is to:</p> <ul style="list-style-type: none"> (a) Safeguard people from injury and loss of amenity while using mechanical installations for movement into, within and out of buildings, (b) Safeguard maintenance personnel from injury while servicing mechanical installations for access, and (c) Ensure that <i>people with disabilities</i> are able to carry out normal activities and processes within buildings. <p>FUNCTIONAL REQUIREMENT D2.2 Mechanical installations for access into, within and out of buildings shall provide for the safe and easy movement of people, and for the safety of maintenance personnel.</p> <p>PERFORMANCE D2.3.1 Mechanical installations for access shall:</p> <ul style="list-style-type: none"> (a) Move people safely, and stop and hold as required for the normal use of the installation, for all loads up to and including 25% in excess of the rated load, (b) Not produce excessive acceleration or deceleration, (c) Be constructed to avoid the likelihood of people falling, tripping, becoming caught, being able to touch or be struck by moving parts, sharp edges or projections, under both normal and reasonably foreseeable abnormal conditions of use, 	<p>Limits on application</p> <p>Objective D2.1(c) shall apply only to those buildings to which section 47A of the Act applies.</p> <p style="text-align: right; font-size: small;">See Note</p>

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CIBSE D:2020 v1.2

- CIBSE D:2020 v1.2 has updated the content within Chapter 6, inclusive of evacuation lifts, and now includes information on:
 - building requirements
 - need for firefighters lift (c6.2)
 - design considerations for fire fighters lifts (c6.3)
 - evacuation lifts (c6.5)
 - design considerations for evacuation lifts (6.6)
 - use of non-evacuation lifts for the evacuation of disabled people (c6.7)
 - using lifts for general evacuation (c6.8)



CIBSE D:2020 v1.2


6.6.5 Modernisation of lifts for evacuation

BS 8899:2016: *Improvement of firefighting and evacuation provisions in existing lifts. Code of practice* was drafted to address the issues for the improvement and maintenance of evacuation lifts. As stated above, the evacuation provisions in BS 5588-8 in accordance with evacuation lift.

6.5.2 Access/egress for persons with limited mobility

It is a requirement of UK legislation that access provision should be linked to egress since lifts were already being used to provide access for persons with limited mobility expressed over the possible use of such lifts for escape. In response to this BS 5588-

6.6.4 Routine inspection, maintenance and thorough examination of evacuation lifts

 **CAUTION:** This area is one where changes to regulations and standards might be anticipated. Readers are advised to check the latest documents and be guided accordingly.

Chapter 15 discusses general issues to do with routine inspection, maintenance and thorough examination of lifts. This section looks specifically at further guidance in relation to evacuation lifts

The background of The Regulatory Reform (Fire Safety) Order 2005 (RRO), The Fire Safety (Scotland) Regulations 2006 and The Fire Safety Regulations (Northern Ireland) 2010 were discussed in section 6.4.2 and are not repeated here. The regulations place responsibilities on the responsible person or duty holder; requiring that any facilities, equipment and devices provided in respect of the premises are subject to a suitable system of maintenance and maintained in an efficient state, working order and good repair. This is understood to apply to evacuation lifts.

These articles not only require the maintenance of such lifts as part of the facilities and equipment of the building but also imply that their level of safety must not be reduced.

The evacuation procedures should not include the isolation of electrical circuits that provide its lighting, communication or ventilation. Evacuation plans should consider the early evacuation of disabled persons i.e. at the first sign of an emergency. At this first stage of evacuation the need to evacuate able bodied persons might not yet have been identified. This is a short period when valuable time can be used to evacuate people not able to use the stairs in an organised manner.

BS 8899:2016: *Improvement of firefighting and evacuation provisions in existing lifts. Code of practice* includes recommendations for routine inspection, maintenance and thorough examination at clause 8 and the reader is specifically recommended to read the standard.

BS 8899 recommends that a suitable programme of maintenance for the lift is agreed between the responsible person and the lift maintenance contractor. The responsible person should ensure that equipment not part of the lift (such as secondary supplies, supply changeover equipment, any pit drainage pumps, firefighting or evacuation communications systems, automatic recall devices, external indicators and any labelling) is subject to a suitable programme of maintenance.

BS 8899 refers to recommendations in BS 9999 for routine inspection and maintenance and includes the following advice:

- Weekly test of the operation of the evacuation lift switch and that the lift recalls to the fire and rescue service access level and goes into firefighters control. If found to be defective, it should be repaired or replaced.
- Monthly simulation of a failure of the primary electricity supply. If a generator provides the standby supply it needs to energise the lift(s) for at least one hour.
- Arrangements should be made for an annual test of various items including evacuation lifts and a certificate of test is to be obtained and retained by the owner. As many such lifts will be connected to a building management system (BMS) the testing needs to be co-ordinated with those conducting the testing of any BMS.

BS 8899 makes recommendations for thorough examination of lifts in service including:

- The responsible person should ensure that all evacuation features and functions of the lift are thoroughly examined periodically. The responsible person should ensure that equipment not part of the lift (such as secondary supplies, supply changeover equipment, any pit drainage pumps, firefighting or evacuation communications systems, automatic recall devices, external indicators and any labelling) is examined and tested where necessary on a similar schedule.
- The competent person undertaking thorough examination may call for equipment not part of the lift to have supplementary testing carried out.
- The responsible person should ensure that such supplementary testing is carried out and the results communicated to the competent person.



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Other European Standards

- EN81-72:2020
- BS8899:2016
- BS9999:2017
- Evacuation lifts are currently described in BS 9999, for the assisted evacuation of disabled persons. The draft EN 81-76: *Evacuation of persons with disabilities using lifts*, contains requirements for assisted evacuation using a lift car driver and also new modes – automatic evacuation and remote control – so represents significant potential changes that could be adopted.



CIBSE Lift Group: 2022 Annual Seminar

- Broad definition:
 - **Evacuation lift**
 - ‘An evacuation lift is a lift that may be used for the evacuation of people in a fire’

What's a "Fire Evacuation Lift"



ABCTECH

prEN81-76:2022

- Evacuation requirements – just a few :

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5.6.4 Evacuation lift sign

The evacuation lift sign shall be according to Figure 1. The evacuation lift sign can be amended with route indications as shown in F.2.3 and Figure F.1.



Figure 1 — Safety sign "Evacuation lift for persons with disabilities", ISO 7010-E070

Illustration in the safety sign shall be in white with green background.

The evacuation lift shall be indicated with the safety sign on every landing intended to be served during the evacuation operation. The location and the height of the sign shall be according to EN 81-70:2003, 5.4.3.3 c).

Current Concerns

- As there are no formal requirements to meet any particular Code or Standard in NZ, owners/building designers/engineers/lift companies may implement solutions that work for them, which may result in differing standards of operation between BCA's/regions;
 - Is this the right way to progress equitable egress in an emergency? **Probably not**
- Obviously, we should incorporate inclusive requirements for equitable egress, defined within a nationally applicable Standard/Code of Practice – but how long will this take to implement?



Current Concerns

continued

- What are some mitigation strategies to ensure a lift/s will be operational when needed, and how will this be checked?
 - How does one ensure that a lift/s providing evacuation egress for mobility impaired persons will always be operational:
 - By having more than one lift in a building, even if this means additional cost to the project, as well as reducing available floor area for lease/sale
 - Permanent remote monitoring of a lift/s with immediate technical support dispatch, to ensure evacuation egress for mobility impaired persons is maintained and always available when needed
 - Maintaining guaranteed availability of critically-identified components for a lift/s
 - Having an agreed evacuation procedure where a lift/s is operated under the direct control of authorised persons



Current Concerns

continued

- Unsupervised use of a lift/s by mobility-impaired persons?
 - Can this be made a safe and acceptable practice – automation/AI?
- Having mobility-impaired persons residing on different floors within a building;
 - Or can one or two floors be utilised to allow centralised egress in an emergency evacuation?
– But is this fair?
- Do lift companies have the sufficient resources to support evacuation lift operation on a 24/7 basis?
 - Can owners afford this? **Can they afford not to?**



Current Concerns

continued

- What are the reasons for failure or for not working?
- Mobility-impaired people
- Someone may be injured



not implemented



ABC COMPLIANCE

ABC TECH

Key Message



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