

Dear Customer

Please find enclosed Amendment 7, effective 1 January 2017, to the Acceptable Solutions and Verification Methods for Clause D2 Mechanical Installations for Access of the New Zealand Building Code. The previous amendment to D2 was Amendment 6, February 2014.

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**MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT**
HĪKINA WHAKATUTUKI

Acceptable Solutions and Verification Methods

For New Zealand Building Code Clause
**D2 Mechanical Installations
for Access**



Status of Verification Methods and Acceptable Solutions

Verification Methods and Acceptable Solutions are prepared by the Ministry of Business, Innovation and Employment in accordance with section 22 of the Building Act 2004. Verification Methods and Acceptable Solutions are for use in establishing compliance with the New Zealand Building Code.

A person who complies with a Verification Method or Acceptable Solution will be treated as having complied with the provisions of the Building Code to which the Verification Method or Acceptable Solution relates. However, using a Verification Method or Acceptable Solution is only one method of complying with the Building Code. There may be alternative ways to comply.

Users should make themselves familiar with the preface to the New Zealand Building Code Handbook, which describes the status of Verification Methods and Acceptable Solutions and explains alternative methods of achieving compliance.

Defined words (italicised in the text) and classified uses are explained in Clauses A1 and A2 of the Building Code and in the Definitions at the start of this document.

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**Verification Methods and Acceptable Solutions
are available from www.building.govt.nz**

New Zealand Government

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Document Status

The most recent version of this document (Amendment 7), as detailed in the Document History, is approved by the Chief Executive of the Ministry of Business, Innovation and Employment. It is effective from 1 January 2017 and supersedes all previous versions of this document.

The previous version of this document (Amendment 6) will cease to have effect on 06 August 2017.

People using this document should check for amendments on a regular basis. The Ministry of Business, Innovation and Employment may amend any part of any Verification Method or Acceptable Solution at any time. Up-to-date versions of Verification Methods and Acceptable Solutions are available from www.building.govt.nz

D2: Document History			
	Date	Alterations	
First published	July 1992		
Amendment 1	September 1993	p. vii, NZS 3109 p. 5, Rule 17.5	p. 7, Rules, 25.7.1, 28.3.4 26.1.21
Amendment 2	19 August 1994	pp. i and ii, Document History p. vii, Contents p. viii, References p. 3, 1.0.1, 1.0.3, Rule 2.2 p. 5, Rule 14.5 p. 6, 24.18	p. 7, Rules 25.5, 25.6.1, 25.6.2 b) c), 25.7 25.7.1, 25.7.2 a) b) c) d) g) p. 8, Rule 34.2.3.3 a) p. 8A, 3.0.1 Rule 71.5.4, Figure 1
Reprinted incorporating Amendments 1 and 2	October 1994		
Amendment 3	1 December 1995	p. ii, Document History p. vii, Contents	p. 3, 1.0.1, 1.0.2, 1.0.3 deleted, 2.0 completely revised pp. 4 to 8A deleted
Reprinted incorporating Amendments 1, 2 and 3	April 1996		
Amendment 4	28 February 1998	p. vii, References	p. 3, 1.0.1 revised, 1.0.2 and 2.0 deleted
Second Edition (Amendment 5)	Effective from 6 January 2002 until 14 August 2014		
Amendment 6	Effective from 14 February 2014 until 6 August 2017	p. 2A, Document History, Status p. 3, Code Clause D2 p. 7, Contents p. 9, References	p. 11, Definitions p. 21, D2/VM2 p. 23, D2/AS2 p. 27, D2/AS3
Amendment 7	Effective 1 January 2017	p. 7 Contents p. 9 References	pp. 15–20 D2/AS1 1.0, 2.0, 2.1
Note: Page numbers relate to the document at the time of Amendment and may not match page numbers in current document.			

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References

For the purposes of New Zealand Building Code (NZBC) compliance, the Standards and documents referenced in these Verification Methods and Acceptable Solutions (primary reference documents) must be the editions, along with their specific amendments, listed below. Where these primary reference documents refer to other Standards or documents (secondary reference documents), which in turn may also refer to other Standards or documents, and so on (lower-order reference documents), then the version in effect at the date of publication of these Verification Methods and Acceptable Solutions must be used.

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Feb 2014

Standards New Zealand

			Where quoted
Amends 6 and 7	NZS 4223:- Part 3: 2016	Glazing in buildings Human impact safety requirements	AS3 1.0.1 g)
	NZS 4332: 1997	Non-domestic passenger and goods lifts	AS1 1.0.1
Amend 6 Feb 2014	NZS 4334: 2012	Platform lifts and low-speed lifts	AS2 1.0

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The European Committee for Standardisation, Brussels

	EN 81-20: 2014	Safety rules for the construction and installation of lifts. Lifts for the transport of persons and goods. Passenger and goods passenger lifts	AS1 2.0
	EN 81-28: 2003	Safety rules for the construction and installation of lifts. Lifts for the transport of persons and goods. Remote alarm on passenger and goods passenger lifts	AS1 2.1
	EN 81-50: 2014	Safety rules for the construction and installation of lifts. Examinations and tests. Design rules, calculations, examinations and tests of lift components	AS1 2.1 Comment
Amend 7 Jan 2017	EN 81-77: 2013	Safety rules for the construction and installation of lifts. Particular applications for passenger and goods passenger lifts. Lifts subject to seismic conditions	AS1 2.1
Amend 6 Feb 2014	EN 115:- Part 1: 2008	Safety of escalators and moving walks Construction and installation <i>Amend: A1</i>	AS3 1.0.1

Acceptable Solution D2/AS1

Passenger Carrying Lifts

1.0 Reference Document NZS 4332

1.0.1 NZS 4332 is an acceptable solution subject to the 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*.

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2.0 Reference Document EN 81-20

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2.1 EN 81-20 is an acceptable solution for electric and hydraulic passenger lifts subject to the following modifications.

COMMENT:

EN 81-20 makes extensive reference to EN 81-50.

Add a new Clause 1.5 to read:

"1.5 The Standard does not cover the following:

1.5.1 Structural Design (NZBC Clause B1)

The structural design of the lift installation including its various components and the building housing the installation are outside of the scope of this Standard. Designs need to be undertaken by a suitably qualified designer, using Verification Method B1/VM1 and EN 81-77 as considered appropriate, with proposals approved by the *building consent authority* as part of the *building consent process*.

NOTE: Although this Standard provides some design criteria and information on the loads resulting from the operation and use of the lift installation, it does not fully account for all loadings that must be taken into consideration, e.g. earthquake. The overall structural design of the lift installation and of its components is therefore outside of the scope of this Standard.

1.5.2 Durability (NZBC Clause B2)

The design of the lift installation with respect to durability is outside of the scope of this Standard.

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NOTE This Standard does not specifically address the durability of all components of the lift installation. As part of the *building consent* process the *building consent authority* may require evidence that the various components of the lift installation will meet the *building code's* durability provisions.

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1.5.3 Protection from Fire (NZBC Clauses C1-C6)

The design of the lift installation with respect to protection from *fire* is outside of the scope of this Standard. Designs need to be undertaken by a suitably qualified designer with proposals approved by the *building consent authority* as part of the *building consent* process. The appropriateness of any information in this Standard that relates to *fire* safety needs to be considered as part of that design.

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NOTE 1 The Standard provides some limited information however any *fire* design cannot look at the lift installation in isolation and needs to consider the building as a whole before determining requirements.

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NOTE 2 This acceptable solution, by reference to Clause 25.6 of NZS 4332, aims to ensure lifts are not used during a firecall in the *building*. Lifts specifically designed to be used during a *fire* require special engineering consideration and are outside of the scope of this acceptable solution and NZS 4332.

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Add a new Clause 1.6 to read:

"1.6 Requirements from NZS 4332

The lift installation shall meet the requirements of the following clauses from NZS 4332. If there is conflict between these clauses and provisions in EN 81-20, these clauses shall take precedence:

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Clause 2.5 Maintenance and inspection

Clause 7.9 Hatches in machine rooms

Clause 7.15 Protection of machine rooms against weather

Clause 7.17 Ventilation of machine rooms

Clause 7.18 Machine room lifting beams

Clause 11.3 Pit maintenance

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Clause 11.5.3 Access from bottom landing doors

Clause 11.9 Dryness of pits

Clause 22.20.2 Internal lighting.

The Clause shall be modified by adding the words "Where batteries provide the emergency lighting source, the batteries shall be secured in such a manner that they cannot be displaced or the contents spilled by the operation of the safety gear or by earthquake."

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Clause 24.10 Lift circuit drawing in machine room

Clause 25.6 Operation of lifts under fire or other emergency conditions (excluding earthquakes)

Clause 25.7 Detection of fire in machine rooms (including sheave rooms and governor rooms containing electronic equipment) and liftwells

Clause 25.8 Operation of lifts under earthquake conditions

The Clause shall be modified by adding the words "The requirements of Clause 25.8 may be replaced with an earthquake detection system complying with Clauses 5.10.3 and 5.10.4 of EN 81-77".

Clause 28.2 Emergency communication and alarm

The Clause shall be modified by adding the words "The requirements of Clause 28.2 may be replaced with a telephone alarm system that complies with EN 81-28 provided it complies also with the requirements of Clause 70.4 of NZS 4332."

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Clause 70 Requirements for lifts on access routes for people with disabilities

NOTE NZS 4332 does not provide for the use of touch screens for calling or controlling lifts. Further, touch screens by themselves do not comply with *Building Code* Clause D2.3.5 as, among other things, they do not provide tactile

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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*.

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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*.

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

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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."

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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."

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Amend Clause 5.4.10.4 to read:

“**5.4.10.4** There shall be an automatically rechargeable emergency supply, which is capable of ensuring at least a lighting intensity of 10 lux for 2 hours at the alarm initiation device and in the centre of the car one metre above the floor. This lighting shall come on automatically upon failure of the normal lighting supply. At least two lamps of approximately equal wattage shall be used. The recovery rate of the emergency supply after 2 hours continuous use shall be such that a further 2 hours illumination can be maintained after not more than 16 hours recharging. ”

Amend Clause 5.9.3.2.5.1 to read:

“**5.9.3.2.5.1** Any hole bored in the ground to house a hydraulic jack shall be lined with a waterproof caisson. The inner diameter of the caisson shall be at least 100 mm greater than the outer diameter of the hydraulic jack. There shall be a minimum of 100 mm clearance between the caisson bottom and the bottom of the jack. The caisson shall extend at least 150 mm above the floor of the pit. The lift shall not impose any load on the caisson.

If the jack itself is weatherproof then subject to demonstration of adequate performance the caisson can be open-ended so as to act as a drain with its upper end finishing flush with the pit floor.

NOTE: The caisson performs the two functions of preventing collapse of the bored hole and protecting the jack from damage and deterioration caused by contact with water. An example of a jack that may be weatherproof could be a water hydraulic jack.

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