

Dear Customer

Please find enclosed Amendment 3, effective 14 February 2014, to the Acceptable Solution and Verification Method for Clause F6 Visibility in Escape Routes of the New Zealand Building Code. The previous amendment (Amendment 2) was in October 2011.

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

Acceptable Solutions and Verification Methods

For New Zealand Building Code Clause
F6 Visibility in Escape Routes

Third Edition



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.dbh.govt.nz**

New Zealand Government

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Document Status

The most recent version of this document (Amendment 3), as detailed in the Document History, is approved by the Chief Executive of the Ministry of Business, Innovation and Employment. It is effective from 14 February 2014 and supersedes all previous versions of this document.

The previous version of this document (Amendment 2) will cease to have effect on 14 August 2014.

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.dbh.govt.nz

F6: Document History			
	Date	Alterations	
First published	July 1992		
Amendment 1	1 December 1995	pp. i and ii, Document History p. iii, F6.3.1 p. v, Contents p. vi, References	p. 3, 1.2.1, 1.3 pp. 4 and 5, Table A1 p. 7, Index
Reprinted incorporating Amendment 1	July 1996		
Second edition	1 December 2000 Effective from 1 June 2001	Document revised – second edition issued	
Amendment 1	21 June 2007	Name of Compliance Document amended throughout pp. 3 and 4, new Building Code Clause F6	
Third Edition	18 October 2007	Document revised – Third edition issued	
Amendment 2	Effective from 10 October 2011 until 14 August 2014	p. 2, Document History, Status p.7, References	
Amendment 3	14 February 2014	p. 2A, Document History, Status p.7, References	p. 9 Definitions p. 13, F6/AS1 1.2
Note: Page numbers relate to the document at the time of Amendment and may not match page numbers in current document.			

References

For the purposes of New Zealand Building Code (NZBC) compliance, the Standards and documents referenced in this Verification Method and Acceptable Solution (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 this Verification Method and Acceptable Solution must be used.

Amend 2
Oct 2011

Amend 3
Feb 2014

Amend 3
Feb 2014

Standards New Zealand

- NZS 4332: 1997 Non-domestic passenger and goods lifts
- NZS 6104: 1981 Specification for emergency electricity supply in buildings

Standards Australia

Amend 3
Feb 2014
Amend 2
Oct 2011

- AS 2293: Emergency evacuation lighting for buildings
- Part 1: 2005 System design, installation and operation
Amend: 1

Amends
2 and 3

- Part 3: 2005 Emergency escape luminaires and exit signs
Amend: 1

Standards – Australia/New Zealand

Amend 2
Oct 2011
Amend 3
Feb 2014

- AS/NZS 1680.1: 2006 Interior and workplace lighting:
General principles and recommendations
- AS/NZS 2293:- Emergency evacuation lighting for buildings
- Part 2: 1995 Inspection and maintenance
Amends: 1, 2, 3

Where quoted

AS1 1.2 Comment

AS1 1.8.2

AS1 1.8.1, 1.8.2

AS1 1.8.1

AS1 1.4.1

AS1 1.8.3

Definitions

This is an abbreviated list of definitions for words or terms particularly relevant to this Verification Method and Acceptable Solution. The definitions for any other italicised words may be found in the New Zealand Building Code Handbook.

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Building has the meaning ascribed to it by sections 8 and 9 of the *Building Act 2004*.

Building consent means a consent to carry out *building work* granted by a *building consent authority* under section 49 of the *Building Act 2004*.

Building height means the vertical distance between the floor of the lowest *final exit* from the *building*, and the highest occupied floor level containing or supporting any *purpose group* other than IE, IA or ID, or penthouses used to enclose *stairways*, lift shafts or machinery rooms located on or within the roof.

Classified use means a *classified use* listed in clause A1 of the *Building Code*.

Exitway means all parts of an *escape route* protected by *fire* or *smoke separations*, or by distance when exposed to open air, and terminating at a *final exit*.

Final exit The point at which an *escape route* terminates by giving direct access to a *safe place*.

COMMENT:

Final exits are commonly the external doors from a ground floor, but this applies only if such doors open directly onto a *safe place*. If a *safe place* can be reached only by passing down an alley, or across a bridge, then the *final exit* is not reached until the end of such an alley or bridge. *Final exits*, therefore, should be seen strictly as a point of arrival, rather than as any particular element of a *building*. They are determined entirely by the definition of *safe place*.

Illuminance means the luminous flux falling on to a unit area of surface.

Reasonably visible, in relation to a *specified feature*, and for the purposes of Clause F6, means that the *specified feature* is visible to a person who—

- (a) is 10 metres from it, or the greatest distance from it that it is possible to go in the open space surrounding it, whichever is the lesser; and
- (b) has sight that is not defective, or is corrected (for example, by an optical appliance).

Risk group A, for the purposes of performance F6.3.4 and performance F6.3.5, means *buildings*—

- (a) whose occupants are required to remain in the *building* until the main lighting system is restored; or
- (b) whose *evacuation time* is longer than 90 minutes.

Risk group B, for the purposes of performance F6.3.4 and performance F6.3.5, means *buildings*—

- (a) whose *evacuation time* is 30 minutes or longer but not longer than 90 minutes; or
- (b) whose occupant load is more than 1,000.

Risk group C, for the purposes of performance F6.3.4, means *buildings* not in *risk group A* or *risk group B*.

Safe place A place of safety in the vicinity of a *building*, from which people may safely disperse after escaping the effects of a *fire*. It may be a place such as a street, *open space*, public space, or an *adjacent building*.

Specified features, for the purposes of Clause F6, means the following:

- (a) **building elements** that may act as obstructions:
- (b) safety features required under clauses of the *Building Code* other than Clause F6 (for example, *handrails* required under Clause D1):
- (c) changes in direction:
- (d) stairs and ramps:
- (e) escape doors:
- (f) entries to a *safe place*.

Travel Distance The length of the *escape route* as a whole or the individual lengths of its parts, namely:

- (a) *Open paths*;
- (b) *Protected paths*; and
- (c) *Safe paths*.

Acceptable Solution F6/AS1

Emergency Lighting Location, Illuminance and Installation

1.1 Scope

This Acceptable Solution applies to situations where emergency lighting is used as the sole means of meeting the performance requirements of Clause F6.

This Acceptable Solution does not apply to lighting that is essential to maintain safe working conditions.

COMMENT:

1. This Acceptable Solution is for illuminance-based emergency lighting systems only.
2. Examples of situations where lighting is essential to maintain safe working conditions include rotating machinery, operating theatres, and handling hazardous substances and organisms.
3. It should be noted that, irrespective of whether or not emergency lighting is required, the provision of signs must comply with Clause F8.

1.2 Location

Emergency lighting must be provided in all of the following:

- (a) in all *exitways*,
- (b) at every change of level in an *escape route*,
- (c) in an *escape route* from the point where the initial *open path* travel distance exceeds 20 metres,
- (d) in any *occupied space* designed for an *occupant load* of more than 250 people including all *escape routes* serving that space,
- (e) in any part of an *escape route* designed to serve more than 250 people,
- (f) in the *escape routes* of the *classified use* Community Care.

COMMENT:

1. To determine the *occupant load* refer to Definitions and Table 2.2 Occupant Densities of C/AS1 reproduced in Appendix A of F6/AS1.
2. Paragraph 1.2 (b) applies to stairs, steps, ramps etc.
3. Paragraph 1.2 (c) recognises that people can find their way in darkness over relatively short distances to areas provided with acceptable visual conditions. Acceptable visual conditions can be provided either by an illuminated floor surface complying with Paragraphs 1.3.1 and 1.3.2 (a) or by directly visible illuminated areas complying with Paragraph 1.3.2 (b).
4. Examples of 20 metre travel distance measurement are given in Appendix D.
5. To reach a *safe place* the *escape route* may include an external portion. The requirements of this Acceptable Solution also apply to this external portion.
6. Lighting for emergency in lifts is contained in Acceptable Solution D2/AS1, which references NZS 4332.

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1.3 Illuminance

1.3.1 Where required by Paragraph 1.2, emergency lighting must provide a direct *illuminance* of no less than:

- (a) 1 lux in *exitways*, and
- (b) 1 lux at every change in level in an *escape route*, and
- (c) 0.2 lux everywhere else.

1.3.2 As an alternative to Paragraph 1.3.1, specific *escape routes* must be identified and provided with a direct *illuminance* of no less than:

- (a) 1 lux in *exitways* and 1 lux throughout the route, or
- (b) 10 lux across the width of the route with a uniformity ratio along the route of not greater than 100:1 (maximum to minimum) and 10 lux at changes of direction, changes of level and where the route enters an *exitway* or *final exit*.

1.3.3 For certain *buildings* or portions of *buildings* the *illuminance* specified in Paragraphs 1.3.1 and 1.3.2 may be insufficient. For locations such as noted in (a) to (d) below, Paragraphs 1.3.1 and 1.3.2 are therefore not applicable and the *illuminance* levels are to be determined by specific design:

- (a) areas with dangerous machinery,
- (b) areas containing hazardous processes,
- (c) clinical areas of hospitals, and
- (d) prisons and other places of detention.

1.4 Method of Measurement

1.4.1 *Illuminance* must be measured in accordance with Appendix B of AS/NZS 1680.1

1.4.2 Measurements must be made at floor level.

1.4.3 Measurements must not be made within 500 mm of vertical surfaces. Minimum *illuminance* will generally occur furthest from the luminaire(s) and at least four measurements shall be made around each luminaire on both axes. If the layout of luminaires is symmetrical, the number of measurements may be reduced.

1.4.4 Daylight or spill light from adjacent rooms must be excluded and the lamps switched on and allowed to stabilise prior to measurements being taken.

1.5 Start-up and Light Output

1.5.1 The emergency lighting system must initiate within the following times and provide:

- (a) 80% of design *illuminance* level in 0.5 seconds in locations where there is a high risk of injury due to delay in operation of the emergency lighting, such as:
 - (i) areas with dangerous machinery,
 - (ii) areas containing hazardous processes,
 - (iii) clinical areas of hospitals,
 - (iv) prisons and other places of detention, and
 - (v) any part of an *escape route* designed for more than 250 people.
- (b) 10% of design *illuminance* level in 0.5 seconds and 80% design *illuminance* level in 30 seconds in stairs or locations where the majority of the occupants/users are not familiar with the space, and
- (c) 10 % of the design *illuminance* level in 20 seconds and 80% of the design *illuminance* level in 60 seconds in all other locations.

1.6 Duration

1.6.1 Emergency lighting must be maintained for the following durations:

- (a) Continuously in *buildings* or parts of *buildings* where the occupants are required to remain in the *building* until the main lighting system is restored, or *buildings* that have an evacuation time of over 90 minutes,
- (b) 90 minutes for *buildings* with an:
 - (i) *Escape height* over 150 metres, or
 - (ii) Evacuation time between 30 and 90 minutes, or
 - (iii) Occupant load over 1000
- (c) 30 minutes for all other *buildings*.