

Dear Customer

Please find enclosed Amendment 4, effective 1 January 2017, to the Acceptable Solution and Verification Method for Clause F6 Visibility in Escape Routes of the New Zealand Building Code. The previous amendment (Amendment 3) was in February 2014.

Section	Old F6	January 2017 Amendment 4
Title pages	Remove title page and document history pages 1-2B	Replace with new title page and document history pages 1-2B
F6/AS1 and Appendix A	Remove pages 13-18	Replace with new pages 13-18
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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



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.

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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 4), 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 3) will cease to have effect on 30 May 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

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 until 030 May 2017	p. 2A, Document History, Status p.7, References	p. 9 Definitions p. 13, F6/AS1 1.2
Amendment 4	Effective 1 January 2017	p. 13 F6/AS1 1.2 pp. 16-17 F6/AS1 Appendix A p. 23 Index	
Note: Page numbers relate to the document at the time of Amendment and may not match page numbers in current document.			

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* of a floor refer to section 1.4 of C/AS1 through to C/AS6 as appropriate.
2. Paragraph 1.2 (b) applies to stairs, steps, ramps etc. A slope with a gradient steeper than 1 in 20 is considered a ramp for the purposes of this paragraph.
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.

Amend 4
Jan 2017

Amend 3
Feb 2014

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*.

1.7 Documentation

1.7.1 Where Paragraph 1.3.2 is used, the specific *escape routes* must be identified on the *building consent* drawings.

1.7.2 As part of the *building consent* application, the owner of the proposed emergency lighting system must submit documentation that provides:

- (a) full technical justification of the design,
- (b) the method of checking the *illuminance* of the completed design, and
- (c) the method of checking ongoing compliance for the life of the *building*.

COMMENT:

Acceptable methods of checking the illumination of the completed installation include:

- (a) *illuminance* measurements conforming with the method provided in Paragraph 1.4.1.
- (b) site verification that the luminaire type and spacing comply with the computer-based design or the manufacturer's spacing tables submitted as part of the *building consent* application.

1.8.2 Notwithstanding the requirements of Paragraph 1.8.1 (a) a generator installed and maintained in accordance with NZS 6104, as amended by Appendix C, is an acceptable emergency power supply to meet Section 3 of AS 2293: Part 1 providing the emergency lighting has priority as the initial load.

1.8.3 Inspection, maintenance and reporting procedures for central battery and single point systems shall be performed in accordance with AS/NZS 2293: Part 2.

COMMENT:

For Paragraph 1.8.2 the starting characteristics of generators make them unsuitable as initial power sources in situations where NZBC Performance Requirements F6.3.2(a) and (b) must be satisfied.

1.8 Installation, Maintenance and Equipment

1.8.1 An emergency lighting system must be installed in accordance with:

- (a) AS 2293: Parts 1 and 3 as amended by Appendix B (F6/AS1), and
- (b) NZBC Clause G9, Electricity.

Emergency lighting installations must be commissioned after the successful completion of tests to confirm automatic operation upon tripping or failure of the power supply to the normal lighting circuits and must include testing of any phase failure devices. Such tests must be repeated on the completion of any addition to, or alteration of, the installed system.

Appendix A – Occupant Densities

**Appendix A deleted by
Amendment 4, 1 January 2017**

Appendix B – Modifications to AS 2293.1: 2005 and AS 2293.3: 2005

PART 1

Section 2 – System Performance, Arrangement and Control

2.3.1 General

Add Note after paragraph –

Note – Where generators are used as a means of electrical supply for the emergency lighting system the generator installation must comply with NZS 6104 as amended by Appendix C of F6/AS1.

2.3.3.1 Centrally supplied systems

Add after first paragraph –

“Where a generator is used as the means of providing emergency power it must start if any of the final sub-circuit sensors detect the loss of power to a final sub-circuit.”

Section 3 – Emergency Lighting Power Sources

3.2.2 Fire Resistance – Delete

3.2.4.3 Maintenance of Fire Resistance
– Delete

Section 5 – Design of Emergency Escape Luminaire Installations

5.2 Provision of Emergency Luminaires

Amend the first paragraph to read “Emergency luminaires must be installed throughout the designated area in accordance with New Zealand Building Code Clause F6”. Delete last sentence of the first paragraph.

5.4.2.1 General

Delete (a)

5.4.2.3 Illuminance Calculations

Delete “...is not less than 0.2 lux” and add “...is as required by the New Zealand Building Code Clause F6”.

Tables 5.1 to 5.5 inclusive – Delete tables.

Note – Spacing tables specifically designed to comply with the requirements of the New Zealand Building Code Clause F6 may be used to position emergency lighting luminaires in New Zealand.

5.6.1 General

Delete (a)

5.6.2 Direct Lighting (Spacing Rules)

– Delete clause

Note – Spacing tables specifically designed to comply with the requirements of the New Zealand Building Code Clause F6 may be used to position emergency lighting luminaires in New Zealand.

5.6.3 Direct Lighting (Illuminance Calculations)

Delete “not less than 1 lx.” Replace with “as required by F6/AS1 Paragraph 1.3.”

5.6.4 Indirect Lighting (Illuminance Calculations)

Delete “not less than 1 lx.” Replace with “as required by F6/AS1 1.3.”

Section 6 – Design of Exit Signs, Installation

6.2 Required Locations

Delete “...Building Code of Australia” and add “New Zealand Building Code Clause F6”.

6.3 Use of Externally Illuminated Signs

Delete clause and add “Installation of external illuminated exit signs must comply with the requirements of New Zealand Building Code Clause F8”. Retain the Note.

6.4 Sign Colours

Delete Clause 6.4.1, Areas of normal illumination and 6.4.2, Area of low illumination and refer to New Zealand Building Code Clause F8.

Index F6/MM1 & AS1

References are to Paragraphs.

Visibility in Escape Routes

Duration	AS1	1.6
Documentation	AS1	1.7
Equipment	AS1	1.8
Illuminance	AS1	1.3
Installation	AS1	1.8
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Maintenance	AS1	1.8
Method of Measurement	AS1	1.4
Light Output	AS1	1.5
Scope	AS1	1.1
Start-up	AS1	1.5

Amend 4 |
Jan 2017

Modifications to AS 2293.1: 2005

and AS 2293.3: 2005 Appendix B

Modifications to NZS 6104 Appendix C

Measurement of escape route travel distance Appendix D

