MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Acceptable Solutions and Verification Methods

For New Zealand Building Code Clause
G8 Artificial Light

G8
BUILDING CODE

Status of Verification Methods and Acceptable Solutions

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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.dbh.govt.nz

New Zealand Government

Document Status

The most recent version of this document (Amendment 2), 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 1) 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

G8: **Document History**			
	Date	**Alterations**	
First published	July 1992		
Amendment 1	Effective from 1 July 2001 until 14 August 2014	p. 2, Document History, Status p. 9, Definitions	
Amendment 2	14 February 2014	p. 2A, Document History, Status p. 3, Code Clause G8	p. 7, References p. 9, Definitions
Note: Page numbers relate to the document at the time of Amendment and may not match page numbers in current document.			

2B

New Zealand Building Code Clause G8 Artificial Light

This Clause has been extracted from the New Zealand Building Code contained in the First Schedule of the Building Regulations 1992.

CLAUSE G8—ARTIFICIAL LIGHT

Provisions	Limits on application	
OBJECTIVE		
G8.1 The objective of this provision is to safeguard people from injury due to lack of *adequate* lighting.		
FUNCTIONAL REQUIREMENT		
G8.2 Spaces within *building*s used by people, shall be provided with *adequate* artificial lighting which, when activated in the absence of sufficient natural light, will enable safe movement.	Requirement G8.2 shall apply to: (a) All *exitway*s in *Multi-unit Dwellings*, *Group Dwellings* and *Communal Residential* [(except *backcountry huts*)], *Communal Non-residential, Commercial* and *Industrial buildings*, (b) All *access routes* except those in *Outbuildings* [, *backcountry huts*,] and Ancillary building*s*, and (c) All common spaces within *Multi-unit Dwellings, Group Dwellings,* and *Communal Residential* [(except *backcountry huts*)] and *Communal Non-residential building*s.	Updated 31 Oct 2008 Updated 31 Oct 2008 Updated 31 Oct 2008
PERFORMANCE		
G8.3 *Illuminance* at floor level shall be no less than 20 lux.	[Performance G8.3 does not apply during a failure of the main lighting, when the requirements in Clause F6 "Visibility in escape routes" apply.]	Updated 21 Jun 2007

Contents

References

For the purposes of New Zealand Building Code compliance, the acceptable New Zealand and other Standards, and other documents referred to in this Verification Method and Acceptable Solution (primary reference documents) shall be the editions, along with their specific amendments, listed below. Where the primary reference documents refer to other Standards or other documents (secondary reference documents), which in turn may also refer to other Standards or other documents, and so on (lower order reference documents), then the applicable version of these secondary and lower order reference documents shall be the version in effect at the date this Verification Method and Acceptable Solution were published.

Amend 2 Feb 2014

		Where quoted
Standards Association of New Zealand		
NZS 6703: 1984	Code of practice for interior lighting design *Amend C1: 1985*	VM1 1.0.1

Amend 2 Feb 2014

Definitions

Amend 2 Feb 2014

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.

Amend 1 Jul 2001

Amend 2 Feb 2014

Illuminance The luminous flux falling onto a unit area of surface (lumen/m^2).

Amend 1 Jul 2001

Reflectance The ratio of the flux reflected from a surface to the flux incident on it.

Verification Method G8/VM1

1.0 Illuminance

1.0.1 An acceptable verification method for the measurement of *illuminance* is contained in NZS 6703 Section 11.

1.0.2 Measurements shall be made on the horizontal plane at floor level. The measurements shall be made in areas unobstructed by objects likely to affect the reading. Obstructions, such as furniture shall be removed.

1.0.3 Measurements shall not be made within 500 mm of vertical surfaces. Minimum *illuminances* will generally occur furthest from the luminaire(s) and at least four measurements shall be made around each luminaire on two horizontal axes at right angles. If the layout of luminaires is symmetrical or the room is small and it is physically impossible to take the above measurements, the number of measurements may be reduced.

COMMENT:
The measurement of the minimum *illuminance* is necessary to check New Zealand Building Code compliance, or to reveal the need for maintenance or replacement in an existing installation.

1.0.4 Daylight or spill light from adjacent rooms shall be excluded, and lamps switched on and allowed to stabilize. In the case of fluorescent or discharge lighting this will be not less than 20 minutes.

1.0.5 Because accurate measurement is difficult, an installation shall be deemed to comply with the New Zealand Building Code, if the measured *illuminance* is no less than 18 lux.

Acceptable Solution G8/AS1

1.0 Illuminance

1.0.1 To provide a minimum *illuminance* of 20 lux, the total wattage required per m^2 of floor area is shown in Table 1.

1.0.2 As there can be wide variations in room dimensions, *reflectances* resulting from interior decoration, and floor coverings, rooms differing substantially from the examples given below, may require specific calculations.

COMMENT

Downlights and other luminaires with concentrated or narrow beam distribution, require particular care with spacing, if minimum *illuminance* criteria are to be met.

1.0.3 Refer to NZBC D1 "Access Routes", for stair tread visibility and minimum *illuminance* requirements.

Table 1: **Lighting in Common Spaces Wattage Requirement (W/m^2)**
Paragraph 1.0.1

Luminaire type	Space category		
	Corridors (note 3)	**Stair and lift lobbies** (note 4)	**Places of assembly** (note 5)
Incandescent (plastic shade)	12	10	6
Incandescent (general diffusing enclosure)	15	12	8
Fluorescent 36 W cool white (enclosed diffusing fitting)	7	4	2
Fluorescent compact single-ended 11-16 W (enclosed diffusing fitting)	8	5	–
Discharge 50 W high pressure sodium (enclosed diffusing fitting)	5	5	–
Incandescent reflector type downlights (120 W PAR 38 flood)	–	–	6
Mercury vapour downlight (80 W coated lamp)	–	–	2

Note:

1. The figures given are measurements from site tests and the wattages include the power required for control gear where it is part of the installation. Gaps in the table indicate the unavailability of a specific installation for testing.
2. The figures (W/m^2) are not suitable for situations where narrow beam downlights, or small numbers of high power luminaires are used.
3. Data is based on a corridor 3.0 m wide and longer than 15 m, with ceiling mounted luminaires 3.0 m above floor level.
   Reflectances:
   - Ceiling 0.7
   - Walls 0.5
   - Floors 0.1
4. Data is based on a lobby area 7.0 m by 4.0 m with ceiling mounted luminaires 3.0 m above floor level.
   Reflectances:
   - Ceilings 0.7
   - Walls 0.5
   - Floors 0.2
5. Data is based on an auditorium 16 m by 21 m with a ceiling height on 5.0 m.
   Reflectances:
   - Ceiling 0.7
   - Walls 0.5
   - Floor 0.2

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All references to Verification Methods and Acceptable Solutions are preceded by **VM** or **AS** respectively.