MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Dear Customer

Please find enclosed Amendment 8, effective 1 January 2017, to the Acceptable Solution and Verification Method for Clause G10 Piped Services of the New Zealand Building Code. The previous amendment to G10 (Amendment 7) was in February 2014.

Section	**Old G10**	**January 2017 Amendment 8**
Title pages	Remove title page and document history page 1–2B	Replace with new title page and document history pages 1–2B
References	Remove page 7/8	Replace with new page 7/8
G10/AS1	Remove page 19/20	Replace with new page 19/20

MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

Acceptable Solutions and Verification Methods

For New Zealand Building Code Clauses
G10 Piped Services

G10
BUILDING CODE

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

Document Status

The most recent version of this document (Amendment 8), 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 7) 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

G10: Document History			
	Date	**Alterations**	
First published	July 1992		
Amendment 1	September 1993	pp. vi–vii, References p. 3, 1.0.1 p. 4, Table 1	p. 7, 2.0.1 b) p. 10, Index
Amendment 2	1 December 1995	pp. i and ii, Document History	p. vi–viii, References
Reprinted incorporating Amendments 1 & 2	April 1996		
Amendment 3	28 February 1998	p. ii, Document History p. vii, References	p. 8, 5.0.1
Amendment 4	23 June 2007	p. 2, Document History, Status p. 8, References p. 11, Definitions	p. 13, VM1 1.0.1 p. 20, AS1 5.0, 5.0.1 p. 21, Index
Amendment 5	Published 30 June 2010 Effective from 30 September 2010	p. 2, Document History, Status p. 5, Contents pp. 7–8, References	p. 15, G10/AS1 1.0.1 p. 16, G10/AS1 Table 1 p. 17, G10/AS1 1.3.1
Reprinted incorporating Amendments 3–5	30 September 2010		
Amendment 6	Effective from 10 October 2011 until 14 August 2014	p. 2, Document History, Status pp. 7–10, References	p. 16, G10/AS1 Table 1
Amendment 7	14 February 2014 until 30 May 2017	p. 2A, Document History, Status pp. 7–8, References p. 11 Definitions p. 13 G10/VM1 1.0.1	p. 15 G10/AS1 1.0.1 p. 16 G10/AS1 Table 1 p. 20 G10/AS1 5.0.1
Amendment 8	Effective 1 January 2017	pp. 7,8 References p. 20 G10/AS1 5.0.1	
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 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 7 Feb 2014

Amend 6 Oct 2011

Amend 7 Feb 2014

		Where quoted
Standards New Zealand		
NZS/BS 21: 1985	Specification for pipe threads for tubes and fittings where pressure-tight joints are made on the threads (metric dimensions) *Amend: 1*	AS1 Table 1
NZS/BS 1387: 1985	Specification for screwed and socketed steel tubes and tubulars and for plain end steel tubes suitable for welding or screwing to BS 21 pipe threads. *Amend: 1*	AS1 Table 1
NZS 3501: 1976	Specification for copper tubes for water, gas, and sanitation *Amends: 1, 2, 3*	AS1 Table 1
NZS/BS 3601: 1987 (1993)	Specification for carbon steel pipes and tubes with specified room temperature properties for pressure purposes	AS1 Table 1

Amend 5 Sep 2010

Amends 6 and 7

Amend 8 Jan 2017

Amend 2 Dec 1995

Amend 5 Sep 2010

Amend 6 Oct 2011

Amend 7 Feb 2014

Amend 2 Dec 1995

			Where quoted	
Amends 5 and 7	NZS 4219: 2009	Seismic performance of engineering systems in buildings	AS1 1.0.1 a)	
Amend 5 Sep 2010	AS/NZS 4331 Part 1: 1995 Part 2: 1995	Metallic flanges Steel flanges Cast iron flanges	AS1 Table 1	
Amends 4, 5, 7, 8	AS/NZS 5601: 2013	Gas installations	VM1 1.0.1, AS1 5.0.1	Amend 2 Dec 1995 Amends 1 and 3
	Part 1:	General installations *Amends: 1, 2*		
	NZS 5807:-	Code of practice for industrial identification by colour, wording or other coding		
Amend 6 Oct 2011	Part 2: 1980	Identification of contents of piping, conduit and ducts *Amend: 1, 2*	AS1 1.0.1	Amend 1 Sep 1993
	NZS 7646: 1978	Specification for polyethylene pipes and fittings for gas reticulation	AS1 Table 1	
	British Standards Institution			
Amend 6 Oct 2011	BS 10: 2009	Specification for flanges and bolting for pipe, valves and fittings	AS1 Table 1	
	BS 143 and 1256: 2000	Specification for malleable cast iron and cast copper alloy threaded pipe fittings *Amend: 1, 2, 3, 4*	AS1 Table 1	
Amend 5 Sep 2010	BS EN 1044:1999	Brazing. Filler metals	AS1 Table 1	
	BS EN 10253-3: 2007	Butt-welding pipe fittings – non-alloy and ferric alloy steels with specific inspection requirements.	AS1 Table 1	
Amend 6 Oct 2011	BS EN 10253-3: 2008	Butt-welding pipe fittings – wrought austenitic and austenitic-ferritic (duplex) stainless steels without specific inspection requirements.	AS1 Table 1	Amend 1 Sep 1993
Amend 5 Sep 2010	BS 2971: 1991	Specification for Class II arc welding of carbon steel pipework for carrying fluids	AS1 1.3.1 a), Table 1	
	BS 3799: 1974 (1994)	Specification for steel pipe fittings, screwed and socket-welding for the petroleum industry	AS1 Table 1	Amend 2 Dec 1995
	BS EN 10241: 2000	Steel threaded pipe fittings	AS1 Table 1	
Amend 5 Sep 2010	BS EN 14324:2004	Brazing. Guidance on the application of brazed joints	AS1 Table 1	

e) A minimum free ventilation opening of 1/150 of the cross-sectional area of the duct or 50,000 mm^2 whichever is the greater, is provided, and

f) Pipes within horizontal ducts are located near the bottom of the duct.

1.5.4 Unventilated ducts

The installation of pipes in unventilated ducts should be avoided, but when it is necessary for a pipe to pass through an unventilated duct or void, either:

a) The pipes shall be continuously sleeved with the sleeve ventilated at one or both ends into a ventilated space, or

b) The duct void shall be filled with dry, washed sand.

COMMENT:
Dry, washed sand is acceptable because it is inert, non-combustible and non-corrosive.

2.0 Isolating Valves

2.0.1 Gas piping isolating valves shall:

a) For emergency shut-down of commercial and industrial installations, have their location clearly identified on a drawing permanently and prominently displayed near the primary meter set.

Amend 1 Sep 1993

b) For appliances, be of the 1/4 turn type with the handle marked to indicate the direction of gas flow.

c) For domestic and light commercial installations, be provided in an accessible location outside the *building*.

2.0.2 To satisfy Paragraph 2.0.1 b), the meter inlet-valve may be used as an isolating valve in accordance with the requirements of the gas supply authority.

3.0 Corrosion Control

3.0.1 Acceptable solutions for the control of pipework corrosion shall provide for:

a) The installation of a joint which is electrically non-conducting, where a pipe rises above ground,

b) The separation of electrochemically incompatible materials in underground locations, by joining with insulated components, and

c) The painting of black steel pipe as soon as practicable after installation unless it is protected with anti-corrosive wrapping.

4.0 Vent Lines

4.0.1 *Vent lines* shall:

a) Be fitted to all vented *safety shut-off systems*, gas pressure relief devices, and breather vents, installed within a *building*,

b) Have the vent pipe discharge point located no closer than:

   i) 1.0 m in any direction from an opening into a *building*, and

   ii) 2.0 m from any source of ignition, and

c) Have *vent line* diameters complying with:

   i) Table 4 for ventilators, or

   ii) Table 5 for a vented *safety shut-off system*, and

d) Have no *vent lines* of different types interconnected,

e) Have no breather vent connected to a safety system shut-off vent,

f) Have *vent lines* from the same appliance interconnected for:

   i) safety shut-off *vent lines*, and

   ii) breather *vent lines*, and

g) Have common *vent lines* with a cross-sectional area equal to or greater than the sum of the cross-sectional areas of the two largest *vent lines* being interconnected, and

h) Have the *vent line* extended to the outside of the *building* and terminating in a breather vent.

Table 4: Diameters of Vent Lines for Ventilators
Paragraph 4.0.1 c) i)

Length of vent line	Minimum diameter
Less than 10 m	No less than the diameter of the vent connection.
10-30 m	One standard pipe diameter above that of the vent connection.
More than 30 m	Sufficient to prevent excessive back pressure taking into account the effect of *regulator*, inlet pressure, *vent line* flow resistance and the capacity of the *regulator* air relief device.

4.0.2 Breather vents may be vented within a room or enclosure if the diameter of the vent outlet does not exceed the value 'd' given by the formula:

$$d = [(0.6 \times V)/P^{0.5}]^{0.5}$$

or if the volume of the room exceeds the value of 'V' given by the formula:

$$V = 7.72\ d^2\ P^{0.5}$$

where:

d = breather vent orifice diameter (mm).

P = inlet pressure to the vented device (kPa).

V = volume of the room or enclosure housing the *regulator* (m^3).

5.0 Another Acceptable Solution

5.0.1 AS/NZS 5601.1 Sections 1, 3, 4, 5 and 6 and Appendices A - M and O – R is another Acceptable Solution.

Amend 4 Jun 2007
Amend 8 Jan 2017
Amends 3, and 7

Table 5: Vent Line Diameters and Lengths for Vented Safety Shut-off Systems
Paragraph 4.0.1 c) ii)

Minimum nominal diameter of vent valve	Vent pipe length in metres							
	Nominal diameter of vent line (mm)							
(mm)	15	20	25	32	40	50	65	80
6	60	160	400					
8	30	80	200					
10	15	40	100					
15	8	20	50					
20		10	25	64				
25			13	32	80			
32				16	40	100		
40					20	50	130	
50						25	65	160