



Department of
Building and Housing
Te Tari Kaupapa Whare

Amendment 8, effective 30 September 2010, to the Compliance Document for the Fire Safety (C) Clauses of the New Zealand Building Code. You should have this version of the amendments if you purchased your copy of C from Standards New Zealand before July 2001.

Section	Old C	September 2010 Amendments to C
Title pages	Remove title page and document history	Replace with new title page and document history
Code clause	Remove pages 9/10	Replace with new pages 9/10
References	Remove pages 21/22	Replace with new pages 21/22
C/AS1	Remove pages 143/144	Replace with new pages 143/144
Appendices	Remove pages 217/218	Replace with new pages 217/218

Compliance Document for New Zealand Building Code Clauses C1, C2, C3, C4 Fire Safety

Prepared by the Department of Building and Housing

This Compliance Document is prepared by the Department of Building and Housing. The Department of Building and Housing is a Government Department established under the State Sector Act 1988.

Enquiries about the content of this document should be directed to:



Department of Building and Housing
PO Box 10-729, Wellington.
Telephone 0800 242 243
Fax 04 494 0290
Email: info@dbh.govt.nz

Compliance Documents are available from www.dbh.govt.nz

New Zealand Government

© Department of Building and Housing 2010

This Compliance Document is protected by Crown copyright, unless indicated otherwise. The Department of Building and Housing administers the copyright in this document. You may use and reproduce this document for your personal use or for the purposes of your business provided you reproduce the document accurately and not in an inappropriate or misleading context. You may not distribute this document to others or reproduce it for sale or profit.

The Department of Building and Housing owns or has licences to use all images and trademarks in this document. You must not use or reproduce images and trademarks featured in this document for any purpose (except as part of an accurate reproduction of this document) unless you first obtain the written permission of the Department of Building and Housing.

Status of Compliance Documents

Compliance Documents are prepared by the Department of Building and Housing in accordance with section 22 of the Building Act 2004. A Compliance Document is for use in establishing compliance with the New Zealand Building Code.

A person who complies with a Compliance Document will be treated as having complied with the provisions of the Building Code to which the Compliance Document relates. However, a Compliance Document 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 Compliance Documents 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 Compliance Document.

C1, C2, C3 and C4: Document History				
	Date	Alterations		
First published December 2000	Effective from 1 June 2001	This document replaces all previous editions of the individual documents C1, C2, C3 and C4.		
Errata	1 July 2001	p. 2 Document History, Status p. 29 Definitions	p. 43 Table 2.1	
Amendment 1	6 January 2002	pp. 4-7 Code Clauses C2, C3		
Amendment 2	24 April 2003	p. 201 A1.3, A2.1.1 Type 1	p. 219 Index	
Amendment 3	25 February 2004	pp. 16-17 Contents pp. 19-22 References p. 27 Definitions p. 33 VM1	pp. 193-199 Part 9 pp. 213-214, 221-223, 226-228 Index	
Amendment 4 4 July 2005	Effective 1 October 2005	p. 2 Document History, Status p.13 Contents pp. 19-20 References pp. 23-29, 31-32 Definitions p. 43 Table 2.1 p. 58 3.5.4 p. 73 3.15.3 p. 89 3.18.1 p. 98 4.5.8 p. 99 4.5.19-4.5.22	pp. 101-106 Table 4.1 p. 108 5.3.1, 5.3.2 pp. 109-11 5.6.2-5.6.13 p. 116 5.9.4 p. 119 6.2.1 p. 120 6.5-6.6.2 p. 121 6.6.4, 6.6.7, 6.7.2 p. 122 6.7.5, 6.7.6, 6.7.9 p. 123 6.9.2 p. 125 6.10.2	p. 127 6.11.1 p. 131 6.14.3 pp. 133-5 6.16.2-6.16.7 p. 142 6.19.13 p. 145 6.20.16 p. 175 7.9.3 p. 176 7.9.8 pp. 179-180 7.10.2-7.10.8 pp. 210-212 Appendix D pp. 213-215, 217-221, 224, 225, 227, 228, Index
Reprinted incorporating Amendment 4	July 2005			
Amendment 5 1 October 2005	1 October 2005	p. 2 Document History p.19 References p. 37 1.3.6 pp. 40-41 2.2.2, 2.2.10 p. 43 Table 2.1 p. 96 4.3.2 p. 98 4.55, 4.5.7 p. 100 Comment	p. 101-4 Table 4.1 p. 107-113 5.1.1, 5.2.1, 5.3.2, 5.3.3, 5.6.1, 5.6.4, 5.6.5, 5.6.8, 5.6.11, 5.7.9 p. 119 6.1.1, 6.6.3 p. 122 6.7.5 p. 123 6.8.5 p. 126 6.10.2	p. 127 6.11.2 p. 143 6.19.14 p. 150 6.22.12 p. 152 6.23.4 p. 153-154 Table 6.1, 6.2 p. 179 7.10.2, 7.10.8 p. 181-182 Tables 7.1, 7.2 p. 188-190 Tables 7.3-7.5
Amendment 6	Effective 21 June 2007	pp. 2-2A Document History	p. 5 Code Clause C2	

C1, C2, C3 and C4: Document History (continued)

	Date	Alterations		
Amendment 7	Effective 1 November 2008	pp. 2-2A Document History p. 5 Code Clause C2 p.17 Contents pp. 19-21 References pp. 29-32 Definitions p. 41 2.3.7 p. 43 Table 2.1 p. 81 3.17.1, 3.17.3 p. 89 3.17.15, 3.17.16 p. 96 4.2.4 Comment, 4.2.5 p. 97 4.5.4 p. 98 4.5.10, 4.5.11 p. 101 Table 4.1	p. 102 Table 4.1/1 p. 103 Table 4.1/2 p. 104 Table 4.1/3 p. 105 Table 4.1/4 p. 106 Table 4.1/5 p. 110 5.6.6 p. 111 5.6.13 p. 121 6.6.4, 6.7.1 p. 122 6.8.1 Comment p. 127 6.11.4 p. 141 6.19.7 p. 145 6.20.16, 6.20.17 p. 147 6.21.6	p. 149 6.22.6 p. 154 Table 6.2 p. 159 7.2.2 p. 173 7.8.5, Comment p. 180 7.11.2 pp. 201-203 Appendix A p. 205 Appendix B pp. 207-209 Appendix C p. 210 Appendix D pp. 213, 214, 218-221, 227, 228 Index
Amendment 8	Published 30 June 2010 Effective from 30 September 2010	p. 2A, Document History, Status p. 10, Code Clause C3 p. 21, References	p. 144, C/AS1 6.18.10 p. 218, Appendices D 1.1.2	

Note: Page numbers relate to the document at the time of Amendment and may not match page numbers in current document.

Document Status

The most recent version of this document, as detailed in the Document History, is approved by the Chief Executive of the Department of Building and Housing. It is effective from 30 September 2010 and supersedes all previous versions of this document.

People using this Compliance Document should check for amendments on a regular basis. The Department of Building and Housing may amend any part of any Compliance Document at any time. Up-to-date versions of Compliance Documents are available from www.dbh.govt.nz

FIRST SCHEDULE—continued

Provisions

- (c) The *fire hazard*, and
 - (d) The active *fire safety systems* installed in the *building*.
- C3.3.2** *Fire separations* shall be provided within *buildings* to avoid the spread of *fire* and smoke to:
- (a) Other *firecells*,
 - (b) Spaces intended for sleeping, and
- (c) *Household units* within the same *building* or *adjacent buildings*.
 - (d) *Other property*.
- C3.3.3** *Fire separations* shall:
- (a) Where openings occur, be provided with *fire resisting closures* to maintain the *integrity* of the *fire separations* for an *adequate* time, and
 - (b) Where penetrations occur, maintain the *fire resistance rating* of the *fire separation*.
- C3.3.4** *Concealed spaces* and cavities within *buildings* shall be sealed and subdivided where necessary to inhibit the unseen spread of *fire* and smoke.
- C3.3.5** *External walls* and roofs shall have resistance to the spread of *fire*, appropriate to the *fire load* within the *building* and to the proximity of other *household units*, other residential units and *other property*.
- C3.3.6** Automatic *fire* suppression systems shall be installed where people would otherwise be:
- (a) Unlikely to reach a safe place in *adequate* time because of the number of storeys in the *building*,
 - (b) Required to remain within the *building* without proceeding directly to a *final exit*, or where the *evacuation time* is excessive,

Limits on application

Performance C3.3.2(b) does not apply to *Detached Dwellings* or within *household units* of *Multi-unit Dwellings*.

Performance C3.3.4 shall not apply to *Detached Dwellings*.

Amend 1
Jan 2002

Amend 1
Jan 2002

FIRST SCHEDULE—*continued*

Provisions

- (c) Unlikely to reach a *safe place* due to confinement under institutional care because of mental or physical disability, illness or legal detention, and the *evacuation time* is excessive, or
- (d) At high risk due to the *fire load* and *fire hazard* within the *building*.

C3.3.7 Air conditioning and mechanical ventilation systems shall be constructed to avoid circulation of smoke and *fire* between *firecells*.

C3.3.8 Where an automatic smoke control system is installed, it shall be constructed to:

- (a) Avoid the spread of *fire* and smoke between *firecells*, and
- (b) Protect *escape routes* from smoke until the occupants have reached a *safe place*.

C3.3.9 The *fire safety systems* installed shall facilitate the specific needs of fire service personnel to:

- (a) Carry out rescue operations, and
- (b) Control the spread of *fire*.

C3.3.10 Environmental protection systems shall ensure a low probability of *hazardous substances* being released to:

- (a) Soils, vegetation or natural waters,
- (b) The atmosphere, and
- (c) *Sewers* or public *drains*.

Limits on application

Performance C3.3.9 does not apply to *backcountry huts*.

Performance C3.3.10 applies only to *buildings* where significant quantities of *hazardous substances* are stored or processed.

Amended
31 Oct 2008

References

For the purposes of New Zealand Building Code compliance, the New Zealand and other Standards, and other documents referred to in this Compliance Document (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 Compliance Document was published.

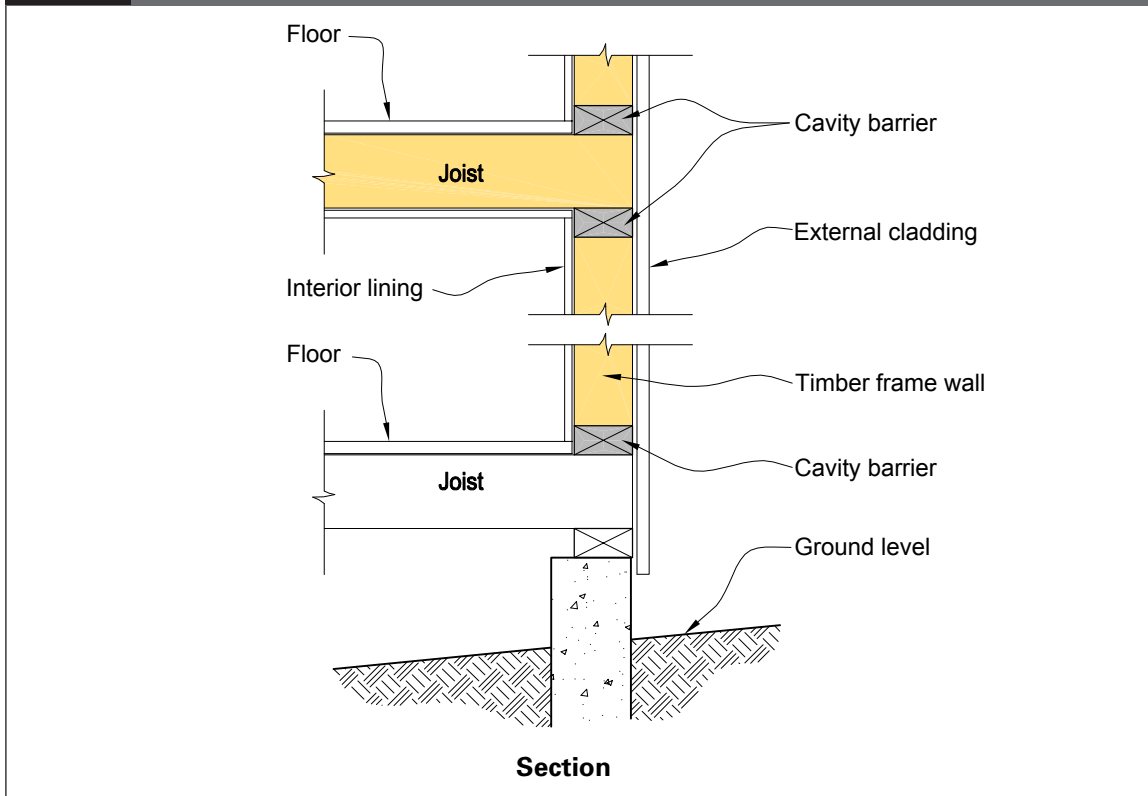
Standards New Zealand			Where quoted (Unless otherwise stated all references apply to C/AS1)
Amend 7 Nov 2008	NZS 4232:- Part 2: 1988	Performance criteria for fire resisting closures Fire resisting glazing systems	5.8.3 a), 5.8.4, Figure 5.1
Amend 7 Nov 2008	NZS 4503: 2005	Hand operated fire fighting equipment	A2.1 (Type 14)
Amend 8 Sep 2010	NZS 4510: 2008	Fire hydrant systems for buildings <i>Amend: 1</i>	A2.1 (Type 18)
Amend 4 Oct 2005	NZS 4512: 2003	Fire detection and alarm systems in buildings	6.22.14 b) i), A2.1 (Type 9), C7.1.6
	NZS 4515: 2003	Fire sprinkler systems for residential occupancies	6.16.7, 6.18.10, D3.1.1, Table 7.5
Amend 7 Nov 2008 Amend 8 Sep 2010	NZS 4541: 2007	Automatic fire sprinkler systems <i>Amend: 1</i>	6.16.7, 6.18.10, 6.19.9, 6.22.6, D2.1.1, Table 7.5
Amend 3 Feb 2004 Amend 7 Nov 2008	NZS 5261: 2003	Gas installation <i>Amend: 1, 2</i>	9.2.1, 9.2.2
Amend 3 Feb 2004	NZS 6104: 1981	Specification for emergency electricity supply in buildings	6.23.3
	NZS/BS 476:- Part 20: 1987	Fire tests on building materials and structures Method for determination of the fire resistance of elements of construction (general principles) <i>Amend: 6587</i>	C6.1.1
	Part 21: 1987	Methods for determination of the fire resistance of loadbearing elements of construction	C6.1.1
	Part 22: 1987	Methods for determination of the fire resistance of non-loadbearing elements of construction	C6.1.1
			Amend 7 Nov 2008
Standards Australia			
	AS 1366:- Part 1: 1992	Rigid cellular plastics sheets for thermal insulation Rigid cellular polyurethane (RC/PUR) <i>Amend: 1</i>	Table 6.3

	Part 2: 1992	Rigid cellular polyisocyanurate (RC/PIR)		
	Part 3: 1992	Rigid cellular polystyrene – Moulded (RC/PS-M) <i>Amend: 1</i>		
	Part 4: 1989	Rigid cellular polystyrene – Extruded (RC/PS-E)		
	AS 1530:-	Methods for fire tests on building materials, components and structures		Amend 7 Nov 2008
	Part 1: 1994	Combustibility test for materials	C5.1.1	
	Part 2: 1993	Test for flammability of materials	C3.1.1, C4.1.1	
	Part 4: 1997	Fire-resistance tests of elements of building construction	C6.1.1	Amend 7 Nov 2008
Amend 3 Feb 2004	AS 1691: 1985	Domestic oil-fired appliances – installation	9.3.1, 9.3.2	
	AS 2220:-	Emergency warning and intercommunication systems in buildings		
	Part 1: 1989	Equipment design and manufacture	A2.1 (Type 8)	
	Part 2: 1989	System design, installation and commissioning	A2.1 (Type 8)	
	AS 4072:-	Components for the protection of openings in fire-resistant separating elements		
	Part 1: 1992	Service penetrations and control joints	C6.1.2 b)	Amend 7 Nov 2008
Joint Australian/New Zealand Standards				
	AS/NZS 1170:-	Structural Design Actions		
	Part 0: 2002	General principles		
Amend 7 Nov 2008	AS/NZS 1221: 1997	Fire Hose Reels <i>Amend: 1</i>	A2.1 (Type 14)	
	AS/NZS 1530:-	Methods for fire tests on building materials, components and structures		
	Part 3: 1999	Simultaneous determination of ignitability, flame propagation, heat release and smoke release	C4.1.1	Amend 7 Nov 2008
	AS/NZS 1668:-	The use of ventilation and air conditioning in buildings		
	Part 1: 1998	Fire and smoke control in multi-compartment buildings	3.7.1 b), 6.9.6, 6.21.2, A2.1 (Type 9), A2.1 (Type 13)	
	AS/NZS 1905:-	Components for the protection of openings in fire-resistant walls		
	Part 1: 1997	Fire-resistant doorsets	5.8.10, 6.19.7, C7.1.1	Amend 7 Nov 2008
	AS/NZS 2918: 2001	Domestic solid fuel burning appliances – installation	9.1.1, 9.1.2, 9.3.3, 9.5.6, 9.5.11 Comment	
Amend 3 Feb 2004	AS/NZS 3837: 1998	Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter	C8.1.1, C8.1.2, Table 7.5	Amend 7 Nov 2008

Where quoted

(Unless otherwise stated all references apply to **C/AS1**)

Figure 6.12: Hollow Construction
Paragraphs 6.18.4 and 7.1.1 a)



Exceptions

6.18.5 *Cavity barriers* are not required in the following circumstances:

- a) Below a floor next to the ground if the *concealed space* is:
 - i) less than 1.0 m in height, or
 - ii) not normally accessed and has no openings through which litter can accumulate, or
- b) Where the *concealed space* results from the over-cladding of an existing *external wall* or roof, provided that the existing cladding is *non-combustible*, or
- c) In a wall or roof panel system encapsulated with a *flame barrier* complying with Appendix C, Paragraph C10.1.

COMMENT:

Care must be taken to ensure that the *integrity of flame barriers* around *penetrations* and openings is maintained.

Cavity barrier construction

6.18.6 *Cavity barriers* shall:

- a) Not reduce the *FRR* required for the element within which it is installed,
- b) Where practical be tightly fitted and mechanically fixed to rigid *construction*, but where this is not possible, gaps shall be *fire stopped*,
- c) Be fixed in a way which avoids impairment of their *fire separation* function as a result of:
 - i) *building* movement due to subsidence, shrinkage or thermal change, or

- ii) collapse or failure of their components or fixings, or of abutting materials and any penetrations during a fire.

Restriction of roof and ceiling space areas in unsprinklered firecells

6.18.7 Within unsprinklered *firecells* in *purpose groups* SA and SR, roof space and ceiling space areas shall be subdivided by *fire separations* to prevent the hidden spread of fire. Any space between ceilings and roofs or floors above shall not exceed 400 m² in area, measured at ceiling level, and 30 m in length or width. This provision does not apply where the space is a separate *firecell*.

6.18.8 The *fire separations* used for subdivision shall have a *FRR* of no less than -/30/30 and extend from the ceiling to the underside of the external roof cladding or floor above. Any gaps shall be *fire stopped* (see Paragraph 6.12.7 and Figure 6.4).

6.18.9 Where openings in the *fire separations* are required for service access or any other reason, they shall be fitted with *fire resisting closures*. Gaps around service penetrations shall be *fire stopped*.

Sprinklered firecells

6.18.10 For sprinklered *firecells* in all *purpose groups*, the provision of *fire separations* and sprinklers in *concealed spaces* between ceilings and roofs or floors above, shall comply with NZS 4541 or NZS 4515 as amended by Appendix D.

COMMENT:

NZS 4541 Clause 207 permits exceptions to sprinkler installation in concealed ceiling and floor spaces in specific circumstances. One requirement is for smaller subdivision than permitted by Paragraph 6.18.7 for unsprinklered *firecells*.

6.19 Closures in Fire and Smoke Separations

Introduction

6.19.1 Where activities within a *building* require openings in *fire* or *smoke separations* (e.g. for the passage of people, goods or for light), closures to those openings shall have the *fire* resistance and smoke control performance appropriate to their location as required by Table 6.1.

6.19.2 *Doorsets* which are required to be:

- a) *Fire doors*, shall comply with Paragraph C8.1 of Appendix C.
- b) *Smoke control doors* shall, except as required by Paragraph 6.19.4, comply with Paragraph C8.1 of Appendix C. Smoke seals shall be fitted at the head and all vertical edges in the gaps between the door leaf or leaves and the frame, and between leaves in multi-leaf *doorsets*.

COMMENT:

Smoke seals may be of the brush type and need not incorporate intumescent material. However, intumescent seals may be required if the door is also a *fire* door.

- c) *Fire doors* with smoke control capability shall comply with both a) and b).

6.19.3 Table 6.1 summarises the requirements for closures.

6.19.4 *Doorsets* installed in *fire separations* between *firecells* and vertical *safe paths* or *protected shafts* shall have smoke seals on all edges, except that smoke seals may be omitted:

- a) At the sill of *doorsets* on the ground floor in a *building* of any height,
- b) At the sill of *doorsets* at each level in two or three floor *buildings*, and

Amend 7
Nov 2008 | **C8.1.4** Claddings incorporating a metal facing with a melting point of less than 750°C covering a *combustible* core or insulant shall be tested as described in Paragraph C8.1.2 without the metal facing present.

COMMENT:
Aluminium has a melting point less than 750°C.

C9.1 Flame Barriers

Amend 7
Nov 2008 | **C9.1.1** An assembly incorporating the *flame barrier*, and any proposed jointing methods in that barrier, shall be subjected to the *standard test* for *fire* resistance (Paragraph C6.1.1) for a period of at least 10 minutes. The size of the test specimen shall be in accordance with the *standard test* for *fire* resistance. At the completion of the test, the exposed face of the *flame barrier* shall be inspected.

Amend 7
Nov 2008 | **C9.1.2** The *flame barrier* shall pass the test if no cracks, openings or other fissures have developed which would permit vision through the *flame barrier* or joint. This inspection may, at the discretion of the test laboratory, be made during the process of the *standard test* for *fire* resistance if an *adequate* assessment can be made of the heated face of the specimen after 10 minutes duration.

COMMENT:
This test differs from the *standard test* for *fire* resistance. In the *standard test*, criteria for *integrity* and temperature rise across the test specimen, are applied to the complete *building element* assembly. For a *flame barrier*, the criteria are applied only to the barrier material protecting the other components of the assembly.

Amend 7
Nov 2008 | **C9.1.3** A *flame barrier* achieving a thermal barrier index of no less than 10, when tested to Uniform Building Code Standard 26-2, need not comply with Paragraphs C9.1.1 and C9.1.2.

Appendix D: Fire Sprinkler Systems

D1.1 Introduction

D1.1.1 Wherever sprinklers are required by this acceptable solution, they shall comply with the relevant New Zealand Standard, amended as shown in Paragraphs D2.1 and D3.1.

D1.1.2 When referring to NZS 4541 it should be noted that a single Class C1 Water Supply is the only supply required for compliance with the New Zealand Building Code.

Amend 8
Sep 2010

Clause 1203 ROUTINE SURVEYS

Clause 1203.1 It is important that a sprinkler system at all times complies with this Standard as amended by Paragraph D2.1 of Appendix D to C/AS1 in all respects. To ensure that *building alterations*, changes in process or storage patterns or progressive deterioration of system components do not prejudice system compliance, a comprehensive survey shall be carried out biennially at intervals not exceeding 28 months. Such surveys shall be carried out by an independent qualified *person*.

D2.1 Automatic Fire Sprinkler Systems

D2.1.1 NZS 4541: 2007 is amended as follows:

Amend 4
Oct 2005

Clause 103 DEFINITIONS

Sprinkler system A system including:

- (a) to (i) No change.
- (j) Delete.
- (k) Delete.
- (l) No change.

Amend 4
Oct 2005

Amend 7
Nov 2008

Amend 4
Oct 2005

Amend 7
Nov 2008

Amend 4
Oct 2005

Clause 205 Delete entire clause.

Clause 208 Delete entire clause.

Amend 7
Nov 2008

Amend 4
Oct 2005

Amend 4
Oct 2005