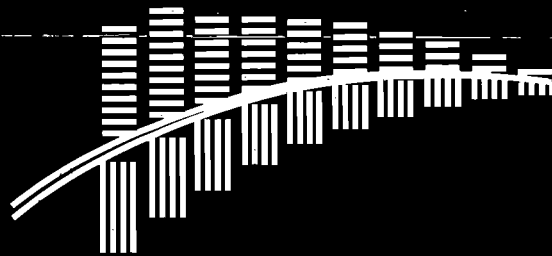


THE NEW ZEALAND BUILDING CODE HANDBOOK



BUILDING INDUSTRY AUTHORITY

The New Zealand Building Code Handbook and Approved Documents have been prepared and will be maintained by the Building Industry Authority which is a statutory body established by the Building Act 1991.

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STANDARDS NEW ZEALAND

The New Zealand Building Code Handbook and Approved Documents are published by Standards New Zealand on behalf of the Building Industry Authority. Copies of all the Code documents are available from the address below and from selected booksellers.

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**NEW ZEALAND BUILDING CODE
HANDBOOK**

CONTENTS

	Page		Page
PREFACE	5	PUBLICATIONS REFERENCED IN APPROVED DOCUMENTS	11
1.0 Introduction	5	DEFINITIONS	29
1.1 The Act	5	COMPLIANCE SCHEDULES	47
1.2 The New Zealand Building Code	5	LIST OF APPROVED DOCUMENTS	77
1.3 The Building Industry Authority	5	INDEX TO THE BUILDING CODE AND APPROVED DOCUMENTS	81
1.4 Territorial authorities	5	THE NEW ZEALAND BUILDING CODE	109
2.0 Special terms	6		
2.1 Building certifier	6		
2.2 Building certificate	6		
2.3 Project information memorandum	6		
2.4 Building consent	6		
2.5 Waivers and modifications	6		
2.6 Accreditation certificate	6		
2.7 Determination	6		
2.8 Notice to rectify	6		
2.9 Code compliance certificate	7		
2.10 Compliance schedule	7		
2.11 Building warrant of fitness	7		
3.0 Means of code compliance	7		
3.1 Owner's choice	7		
3.2 Approved documents	7		
3.3 Acceptable solutions	7		
3.4 Alternative solutions	7		
3.5 Verification methods	7		
3.6 Producer statements	8		
3.7 Status of other publications	8		
4.0 Interpretation	8		
4.1 Building code	8		
4.2 Approved documents	9		

PREFACE

1.0 INTRODUCTION

1.0.1 This preface is provided only as a convenient user reference. It gives simple answers to questions frequently asked about the building code and associated legislation. Legal interpretation must however, be based on the actual wording of the Act and Regulations themselves.

1.1 The Act

1.1.1 The Building Act 1991 establishes a national, uniform, building control system which covers:

Act s.5 * All buildings including Crown buildings, except for certain defence works.

Act s.3 * All components of each building including plumbing, electrical and mechanical installations.

1.1.2 The Act applies to:

- * Building construction, including alteration and demolition.
- * Maintenance of building systems or features such as lifts and fire protection installations.

1.1.3 The Act does not cover:

- * Planning and resource management, and other aspects of a building's relationship to the surrounding neighbourhood.
- * Occupational safety and health, and other aspects of managing people.

Act s.6 **1.1.4** The building control system regulates only those matters essential for ensuring that buildings perform in a way which:

- * Safeguards people from injury and illness.

- * Safeguards people, particularly those with disabilities, from loss of amenity.

- * Protects other property from damage.

- * Facilitates efficient use of energy.

1.1.5 The controls do not provide for regulatory intervention in the owner's choice on other matters such as aesthetics or non-essential building features provided solely for the comfort or convenience of users. Nor do they protect an owner's economic interests in terms of ensuring value for money, or through losses due to lack of care or competence.

1.1.6 No person shall be required to achieve performance criteria additional to or more restrictive than those specified in the building code, except as may be provided for in any other Act. Act s.7

1.2 The New Zealand Building Code

1.2.1 The New Zealand Building Code (NZBC) is a schedule to the Regulations authorised by the Act. It contains the mandatory provisions for meeting the purposes of the Act, and is performance-based. That means it says only what is to be done, not how to do it. Act s.48

1.3 The Building Industry Authority

1.3.1 The Building Industry Authority (BIA) is a Crown agency established under the Act as the sole regulatory authority for building controls in New Zealand. Act s.10

1.4 Territorial authorities

1.4.1 Territorial authorities are responsible within their districts for the day-to-day administration of the building control legislation. Act s.24

2.0 SPECIAL TERMS

2.1 Building certifier

Act Part VII **2.1.1** A building certifier is a person approved by the Building Industry Authority to issue building certificates with respect to specific provisions of the New Zealand Building Code. A building certifier may be employed by a building owner as an alternative to using the territorial authority for checking technical proposals and performing inspections.

2.2 Building certificate

Act s.50(1)(a) **2.1.1** A building certificate is a formal confirmation by a building certifier that specific aspects of a building comply with the New Zealand Building Code. A territorial authority is obliged to accept such a certificate.

2.3 Project information memorandum

Act s.30 **2.3.1** A territorial authority is required, either on request or when a building consent is issued, to provide the owner with a project information memorandum. The memorandum shall contain all information known to the territorial authority about physical site conditions, and requirements under any legislation, which could be of relevance to an owner initiating a building project.

2.3.2 This requirement is intended to avoid an owner being committed to expensive redesign costs on a project as a result of not being supplied with details of requirements in advance of doing the work.

2.4 Building consent

Act s.32 **2.4.1** The building consent is the formal authorisation by the territorial authority that a proposed building work may proceed. The consent may contain conditions, and will confirm inspection requirements necessary to ensure that the finished work complies with the New Zealand Building Code.

2.5 Waivers and modifications

Act s.34(4) **2.5.1** A territorial authority may grant waivers and modifications to provisions of the New Zealand Building Code.

2.5.2 In doing so, the territorial authority must have due regard to matters described in section 47 of the Act. These include the physical characteristics of the building, its location, use and intended life, and any special historical, cultural or traditional considerations. The Building Industry Authority must be notified of any waivers or modifications approved by a territorial authority. Act s.47

2.5.3 Waivers and modifications to New Zealand Building Code provisions, are not to be confused with site changes to a design or variations to an acceptable solution, which still comply with the New Zealand Building Code. In effect such changes are an alternative solution and may be authorised at any time by a building certifier or territorial authority.

2.6 Accreditation certificate

2.6.1 Building Industry Authority may issue an accreditation certificate for materials, components and construction methods used in building. Accreditations may be based on an assessment of appraisals given by recognised independent specialists, or on type endorsements confirming that a particular material, component or construction method conforms with one already acceptable under the New Zealand Building Code. Act Part VIII

2.6.2 Any materials or methods for which the Building Industry Authority has issued an accreditation certificate must be accepted by a territorial authority or building certifier as satisfying relevant New Zealand Building Code provisions. Act s.50 (1)(c)

2.7 Determination

2.7.1 A determination is a decision by the Building Industry Authority on whether a material, component or method complies with the New Zealand Building Code. Act s.17(2)

2.7.2 An application for a determination is made to resolve a disagreement between a building owner and a territorial authority or building certifier. A determination applies only to a particular building and is binding on all parties concerned.

2.7.3 The Building Industry Authority will publish those determinations of significance, as a guide to future decisions by territorial authorities and building certifiers.

2.8 Notice to rectify

2.8.1 A territorial authority may issue to the owner Act s.42

or owner's agent a notice to rectify, requiring any building work not complying with the Act or New Zealand Building Code to be rectified.

2.9 Code compliance certificate

Act s.43 **2.9.1** A territorial authority or building certifier will, on the satisfactory completion of building work, issue a code compliance certificate indicating that all necessary provisions of the New Zealand Building Code have been satisfied.

2.9.2 Separate code compliance certificates may be issued for different parts of a staged building construction.

2.10 Compliance schedule

Act s.44 **2.10.1** A compliance schedule specifies inspection, maintenance and reporting procedures for systems whose continued operation is essential for ongoing New Zealand Building Code compliance.

2.10.2 Such systems include automatic fire protection equipment, lifts, signs, emergency lighting and ventilation plant.

2.11 Building warrant of fitness

Act s.45 **2.11.1** An annual building warrant of fitness is a building owner's confirmation that essential features of the building, as listed in the compliance schedule, have been properly maintained.

3.0 MEANS OF CODE COMPLIANCE

3.1 Owner's choice

3.1.1 An owner is free to use any materials, components or construction methods which comply with relevant performance criteria of the New Zealand Building Code. The absence of prescriptive requirements is expected to encourage innovation and the use of new technology.

3.1.2 For those people who prefer specific guidance, Approved Documents issued by Building Industry Authority provide detailed methods for establishing New Zealand Building Code compliance.

3.2 Approved Documents

3.2.1 Approved Documents authorised under the Act, contain acceptable solutions and verification methods. Act s.49

3.2.2 A territorial authority or building certifier must accept that compliance with an Approved Document, is a means of establishing compliance with those provisions of the New Zealand Building Code to which that document refers. Act s.50(1)(d)

3.3 Acceptable solutions

3.3.1 Acceptable solutions given in Approved Documents are examples of materials, components and construction methods which, if used, will result in compliance with the New Zealand Building Code. They serve also as guide-lines for alternative solutions.

3.4 Alternative solutions

3.4.1 There is no obligation to adopt any particular solution. Materials, components and construction methods which differ in whole or in part from those described in Approved Documents may be used, if they comply with the New Zealand Building Code. The owner may be required to demonstrate that any such method does in fact comply, when seeking a consent from the territorial authority under section 33 of the Act, or a determination from Building Industry Authority under section 17 of the Act. Act s.33 Act s.17

3.5 Verification methods

3.5.1 New Zealand Building Code compliance of an alternative solution may be verified by any of the following methods:

- a) Calculations - using recognised analytical methods and mathematical models.
- b) Laboratory tests - using tests (sometimes to destruction) on prototype components and systems.
- c) Tests in-situ - which may involve examination of plans and verification by inspection, where compliance with specified numbers (e.g. fittings), dimensions or locations is required. Non-destructive tests (e.g. pipe pressure tests), are also included.

3.5.2 Where specific test methods are known, and practicable, they are listed in Approved Documents.

3.6 Producer statements

Act s.33(5) **3.6.1** A territorial authority may, at its discretion, accept a producer statement establishing compliance with the New Zealand Building Code.

Act s.56(2) **3.6.2** A building certifier may also accept a producer statement if satisfied on reasonable grounds that the product or design complies with the New Zealand Building Code.

3.6.3 The acceptance of a producer statement does not absolve the territorial authority or building certifier from responsibility.

3.7 Status of other publications

Act s.49(5) **3.7.1** Publications issued by organisations other than the Building Industry Authority are referred to in Approved Documents. Those publications (subject to any stated deletions or modifications), are methods of compliance with the New Zealand Building Code, to the extent that they relate to provisions specifically stated in the purpose of each New Zealand Building Code clause.

3.7.2 It should be noted in using reference publications that:

- a) Provisions in the reference may exceed New Zealand Building Code provisions.
- b) For purposes of the New Zealand Building Code, reference content may be separated into two parts comprising either verification methods or acceptable solutions.

Act s.49(3)(a) c) Content on good practice, while being desirable is not essential for satisfying New Zealand Building Code performance.

Act s.49(3)(b) d) Approvals, waivers and modifications under the New Zealand Building Code may be granted only by the territorial authority, or the Building Industry Authority as the outcome of a referral. This does not preclude the site supervisor making (within the limits of his/her technical competence) minor practical construction changes to facilitate New Zealand Building Code compliance.

e) As it is the responsibility of building owners or their agents to demonstrate that alternative solutions comply with the New Zealand Building Code, phrases such as "to the approval of the engineer", used in referenced publications, are not applicable to the New Zealand Building Code.

3.7.3 Referenced publications are specific to the dated edition quoted, and include any amendments issued prior to the date shown at the foot of the page on which they are listed in each Approved Document.

4.0 INTERPRETATION

4.1 Building Code

4.1.1 This schedule to the Building Act 1991 is divided under eight main categories into a total of 37 clauses of which the first two are general provisions, and the remainder specifically applicable to different aspects of building construction.

4.1.2 Clause references are identified by letters and numerals, with the letter indicating the category.

4.1.3 First order numerals (either 1, 2 or 3) indicate primary subdivisions of each clause where:

- 1 is the **Objective**
- 2 is the **Functional Requirement**
- 3 is the **Performance**

4.1.4 Second order numerals identify a specific **Functional Requirement** or **Performance**.

For example in Clause F4.3.2:

- F indicates the main category, "**Safety of Users**".
- 4 indicates specific application to, "**Safety from falling**".
- 3 indicates a **Performance**.
- 2 indicates the second performance of the Clause.

4.1.5 Throughout the New Zealand Building Code and Approved Documents, except in headings, comments and tables, defined words and classified uses are indicated by italics.

4.1.6 Defined words of the New Zealand Building Code are listed in Clause A2. Approved Documents each contain a list of definitions relevant to the document. A full list of definitions is contained in this Handbook.

4.1.7 Where an **Objective, Functional Requirement** or **Performance** has limited application, the exceptions are identified immediately beside the Clause to which they refer.

4.2 Approved Documents

4.2.1 Approved Documents may contain acceptable solutions and verification methods. In cases where a verification method or acceptable solution has not been adopted, this is stated. Over time additional verification methods and acceptable solutions may be issued by the Building Industry Authority.

4.2.2 Each acceptable solution and verification method is identified according to topic and whether it is an acceptable solution or verification method at the top of each page.

For example:

C2/AS1 Indicates that the topic is C2, Means of Escape, and the document is acceptable solution number 1.

E1/VM1 Indicates that the topic is E1, Surface Water, and the document is verification method number 1.

4.2.3 Approved Documents each include copies of the appropriate New Zealand Building Code Clause and a list of references and definitions relevant to the document, but do not contain explanations of classified uses. These apply to all Approved Documents and are available separately in Clause A1 and the New Zealand Building Code, reproduced in this Handbook.

4.2.4 Advisory comment

Where Approved Documents contain information that is general advice, such comments are identified and in italicised smaller print immediately following the paragraph to which they refer.

PUBLICATIONS REFERENCED IN APPROVED DOCUMENTS

Referenced documents shall be deemed to include any amendments issued prior to the date displayed and the foot of the page on which they appear in this list.

Approved Documents in which the specific references are quoted are identified by the relevant New Zealand Building Code Clause and the number of the verification method or acceptable solution.

For example: **B1/VM1/AS3** indicates that the reference occurs in Verification Method 1, and Acceptable Solution 3 of the Approved Document for Clause B1 Structure.

Places where the reference documents are quoted, are more specifically identified by paragraph or table, in the reference list contained in each Approved Document.

CONTENTS

	Page		Page
Standards Association of New Zealand	11	Canadian Publications	22
British Standards Institution	17	International Publications	22
Standards Association of Australia	20	New Zealand Publications (other than Standards)	23
Australia/NZ Publications (other than Standards)	21	United States of America Publications	25
British Publications (other than Standards)	21		

STANDARDS ASSOCIATION OF NEW ZEALAND

		Where quoted
NZS/BS 21:1985	Specification for pipe threads for tubes and fittings where pressure-tight joints are made on the threads (metric dimensions).	G10/AS1, G14/VM1
NZS/BS 143 and 1256:1986	Specification for malleable cast iron and cast copper alloy threaded pipe fittings.	G10/AS1, G14/VM1
NZS 202:1966	Specification for steel pipes and joints for hydraulic purposes.	G14/VM1
NZS 380:1968	Specification for flameproof electric lighting fittings.	F6/AS1
NZS 899:1968	Specification for n-Butanol.	E1/AS1

		Where quoted
NZS/BS 970:- Part 1:1983	Specification for wrought steels for mechanical and allied engineering purposes. General inspection and testing procedures and specific requirements for carbon, carbon manganese, alloy and stainless steels.	E1/AS1
NZS/BS 1387:1985	Specification for screwed and socketed steel tubes and tubulars and for plain end steel tubes suitable for welding or for screwing to BS 21 pipe threads.	G10/AS1, G12/AS1, G14/VM1
NZS/BS 1560:- Part 2:1970	Circular flanges for pipes, valves and fittings (Class designated). Specification for steel pipe flanges, (nominal sizes 1/2 to 24 in). Metric dimensions.	E1/AS1, G10/AS1, G14/VM1
Part 3:- Section 3.1:1989	Steel, cast iron and copper alloy flanges. Specification for steel flanges.	E1/AS1
NZS/AS 1650:1989	Hot-dipped galvanised coatings on ferrous articles.	B1/AS2/AS3
NZS/AS 1657:1985	Fixed platforms, walkways, stairways and ladders - Design, construction and installation (known as the SAA Code for Fixed Platforms, Walkways, Stairways, and Ladders).	D1/AS1
NZS 1900 :- Ch 5:1988 Ch 11.2:1985	Model building bylaw. Fire resisting construction and means of egress. Special structures. Division 11.2 Farm buildings.	C3/AS1 B1/VM1
NZS/AS 2033:1980	Installation of polyethylene pipe systems.	E1/AS1, G14/VM1
NZS 2038:1966	Stainless steel urinals and flushing apparatus.	G1/AS1
NZS 2271:1969	Specification for copper and copper alloy traps.	G13/AS1
NZS 2295:1988	Building papers (breather type).	E2/AS1
NZS/BS 2494:1990	Specification for elastomeric seals for joints in pipework and pipelines.	E1/AS1, G13/AS2, G14/VM1
NZS/BS 2654:1989	Specification for manufacture of vertical steel welded non-refrigerated storage tanks with butt-welded shells for the petroleum industry.	G14/VM1
NZS/BS 2971:1977	Specification for Class II arc welding of carbon steel pipework for carrying fluids.	G10/AS1, G14/VM1
NZS 3101:- Part 1:1982 Part 2:1982	The design of concrete structures. Code of practice for the design of concrete structures. Commentary on the design of concrete structures.	B1/VM1 B1/VM1
NZS 3106:1986	Code of practice for concrete structures for the storage of liquids.	B1/VM1, G14/VM1
NZS 3107:1978	Specification for precast concrete drainage and pressure pipes.	B1/VM1, E1/AS1, G13/AS2, G14/VM1
NZS 3109:1987	Specification for concrete construction.	B1/AS1/AS3, D2/AS1

		Where quoted
NZS 3112:- Part 2:1986 Part 4:1986	Methods of test for concrete. Tests relating to the determination of strength of concrete. Tests relating to grout.	B1/VM1/AS3 B1/VM1
NZS 3114:1987	Specification for concrete surface finishes.	G15/AS1
NZS 3124:1987	Specification for concrete construction for minor works.	B1/AS1, E1/AS1
NZS 3302:1983	Specification for ceramic pipes, fittings and joints.	E1/AS1, G13/AS2, G14/VM1 G1/AS1
NZS 3331:1972	Specification for quality of vitreous china sanitary appliances.	G1/AS1
NZS 3402:1989	Steel bars for the reinforcement of concrete.	B1/AS3
NZS 3403:1978	Specification for hot-dip galvanized corrugated steel sheet for building purposes.	E1/AS1, E2/AS1
NZS 3404:- Part 1:1989 Part 2:1989	The steel structures code. New Zealand amendments to AS 1250 : 1981 (with commentary). Sections 12, 13, 14, Means of compliance (with commentary).	B1/VM1 B1/VM1
DZ 3404:- Part 1:1991	Limit state steel structures code.	C4/AS1
NZS 3421:1975	Specification for hard drawn mild steel wire for concrete reinforcement.	B1/AS3
NZS 3422:1975	Specification for welded fabric of drawn steel wire for concrete reinforcement.	B1/AS3
NZS 3441:1978	Specification for hot-dipped zinc-coated steel coil and cut lengths.	B1/AS2/AS3, E2/AS1
NZS 3501:1976	Specification for copper tubes for water, gas, and sanitation.	G10/AS1, G12/AS1, G10/AS1
NZS 3502:1976	Specification for copper and copper alloy tubes for general engineering purposes.	G10/AS1
NZS 3601:1973	Metric dimensions for timber.	B1/AS2
NZS/BS 3601:1987	Specification for carbon steel pipes and tubes with specified room temperature properties for pressure purposes.	G10/AS1, G14/VM1
NZS 3603:1990	Code of practice for timber design.	B1/VM1/VM4
NZS 3604:1990	Code of practice for light timber frame buildings not requiring specific design.	B1/AS1/AS3/AS4, E1/AS1,
NZS 3605:1977	Specification for load bearing round timber piles and poles.	B1/VM1/VM4
NZS 3614:1971	Specification for the manufacture of construction plywood.	E2/AS1
NZS 3615:1981	Specification for strength properties and design methods for construction plywood.	B1/VM1
NZS 3617:1979	Specification for profiles of weatherboards, fascia boards, and flooring.	E2/AS1
NZS 3631:1988	New Zealand national timber grading rules.	B1/AS2/AS5

		Where quoted
NZMP 3640:1992	Specification of the minimum requirements of the NZ Timber Preservation Council Inc.	B1/AS2/VM1/VM4, E2/AS1
NZS/AS 3725:1989	Loads on buried concrete pipes.	B1/VM1
NZS 4121:1985	Code of practice for design for access and use of buildings and facilities by disabled persons.	D1/AS1, G1/AS1, G5/AS1
NZS 4203:1992	Code of practice for general structural design and design loadings for buildings.	B1/VM1/VM4, C3/AS1 G10/AS1 E2/AS1
NZS 4206:1992	Specification for concrete interlocking roofing tiles.	B1/AS1/AS3, E2/AS1
NZS 4210:1989	Code of practice for masonry construction: materials and workmanship.	B1/AS1/AS3, E2/AS1
NZS 4211:1985	Specification for performance of windows.	B1/VM1, E2/AS1
NZS 4214:1977	Methods of determining the total thermal resistance of parts of buildings.	E3/AS1, G5/AS1, H1/VM1
NZS 4217:- Part 1:1980 Part 2:1980	Pressed metal tile roofs. Specification for roofing tiles and their accessories. Code of practice for preparation of the structure and the laying and fixing of metal roofing tiles.	E2/AS1 E2/AS1
NZS 4218P:1977	Minimum thermal insulation requirements for residential buildings.	E3/AS1, H1/VM1/AS1
NZS 4219:1983	Specification for seismic resistance of engineering systems in buildings.	B1/VM1, G10/AS1, G14/VM1 H1/VM1
NZS 4220:1982	Code of practice for energy conservation in non-residential buildings.	H1/VM1
NZS 4223:- Part 1:1985 Part 2:1985	Code of practice for glazing in buildings. The selection and installation of glass in buildings. The selection and installation of manufactured sealed insulating glass units.	B1/AS1, F2/AS1 B1/AS1
NZS 4229:1986	Code of practice for concrete masonry buildings not requiring specific design.	B1/AS1/AS3/ AS4, E1/AS1, G13/AS2
NZS 4230:- Part 1:1990 Part 2:1990	Code of practice for the design of masonry structures. Structures. Commentary.	B1/VM1 B1/VM1
NZS 4231:1985	Specification for self-luminous exit signs.	F8/AS1
NZS 4232:- Part 1:1988 Part 2:1988	Performance criteria for fire resisting enclosures Internal and external fire doorsets. Fire resisting glazing systems.	C2/AS1, F3/AS1 C2/AS1, F3/AS1 E2/AS1
NZS 4234:1988	Cellulose cement products - corrugated sheets for roofing and cladding.	E2/AS1
NZS 4251:1974	Code of practice for solid plastering.	E2/AS1
NZS 4302:1987	Code of practice for the control of hygiene in air and water systems in buildings.	G4/AS1

		Where quoted
NZS 4303:1990	Ventilation for acceptable indoor air quality.	G4/AS1
NZS 4304:1990	Health care waste management.	G15/AS1
NZS 4402:-	Methods of testing soils for civil engineering purposes.	
Part 2:-	Soil classification tests.	
Test 2.4 : 1986	Determination of the plasticity index.	B1/VM1
Section 2.8	Determination of particle-size distribution.	
Test 2.8.1 : 1986	Standard method by wet sieving.	B1/VM1
Test 2.8.2 : 1986	Subsidiary method by dry sieving.	B1/VM1
Test 2.8.3 : 1986	Standard method for fine soils (pipette method).	B1/VM1
Test 2.8.4 : 1986	Subsidiary method for fine soils (hydrometer method).	B1/VM1
Part 4:-	Soil compaction tests.	
Section 4.1	Determination of the dry density/water content relationship.	B1/VM1
Test 4.1.1 : 1986	New Zealand standard compaction test.	B1/VM1
Section 4.2	Determination of minimum and maximum dry density and relative density of cohesionless soil.	
Test 4.2.1:1988	Minimum dry density.	B1/VM1
Test 4.2.2:1988	Maximum dry density.	B1/VM1
Test 4.2.3:1988	Relative density.	B1/VM1
Part 5:-	Soil density tests.	
Section 5.1	Determination of the density of soil.	
Test 5.1.1:1986	Sand replacement method for the determination of in situ density.	B1/VM1
Part 6:-	Soil strength tests.	
Section 6.3:	Determination of the unconfined compressive strength of cohesive soil.	
Test 6.3.1	Standard method using laboratory apparatus.	B1/VM4
Test 6.3.2	Alternative method using autographic apparatus.	B1/VM4
Section 6.5	Determination of the penetration resistance of a soil.	
Test 6.5.1:1988	Standard penetration test (SPT).	B1/VM4
NZS 4431:1989	Code of practice for earth fill for residential development.	B1/AS4/VM1/VM4
NZS 4442:1988	Welded steel pipes and fittings for water, sewage and medium pressure gas.	E1/AS1, G13/AS2, G14/VM1
NZS 4452:1986	Code of practice for the construction of underground pipe sewers and drains.	B1/AS1, E1/AS1 G13/AS2, G14/VM1
NZS 4503:1974	Code of practice for the distribution, installation and maintenance of hand operated fire fighting equipment for use in buildings.	C3/AS1
NZS 4504:1981	Specification for fire hose reels.	C3/AS1
NZS/BS 4504:-	Circular flanges for pipes, valves and fittings (PN designated).	
Part 3:-	Steel, cast iron and copper alloy flanges.	
Section 3.2:1989	Specification for cast iron flanges.	G10/AS1, G14/VM1
NZS 4505:1977	Specification for fire-fighting waterway equipment.	C3/AS1
NZS 4510:1978	Code of practice for riser mains for fire service use.	C3/AS1
NZS 4512:1981	Automatic fire alarm systems in buildings.	C3/AS1, F7/AS1
NZS 4515:1990	Residential fire sprinkler systems.	C3/AS1
NZS 4541:1987	Automatic fire sprinkler systems.	C3/AS1
NZS 4561:1973	Specification for manual fire alarm systems for use in buildings.	F7/AS1

		Where quoted
NZS 4602:1988	Low pressure copper thermal storage electric water heaters.	G12/AS1
NZS 4603:1985	Installation of low pressure thermal storage electric water heaters with copper cylinders (open vented systems).	G12/AS1
NZS 4606:-	Storage water heaters.	
Part 1:1989	General requirements.	G12/AS1
Part 2:1989	Specific requirements for water heaters with single shells.	G12/AS1
Part 3:1989	Specific requirements for water heaters with composite shells.	G12/AS1
NZS 4607:1989	Installation of thermal storage electric water heaters: valve vented systems.	G12/AS1
NZS 4610:1982	Specification for household septic tank systems.	G13/AS2
NZS 4616:1990	Washbasins.	G1/AS1
NZS 4617:1989	Tempering (3-port mixing) valves.	G12/AS1
NZS 5261:1990	Code of practice for the installation of gas burning appliances and equipment.	C1/AS1, G4/AS1, G10/VM1, G11/AS1 F3/AS1
NZS 5433:1988	Code of practice for transportation of hazardous substances on land.	
NZS/BS 5500:1991	Specification for unfired fusion welded pressure vessels.	G14/VM1
NZS/BS 5556:1978	Specification for general requirements for dimensions and pressure ratings for pipe of thermoplastics materials (metric series).	G14/VM1
NZS 5807:-	Code of practice for industrial identification by colour, wording or other coding.	
Part 1:1980	Identification of signs, safety colours and fire extinguishers.	C3/AS1
Part 2:1980	Identification of contents of piping, conduit and ducts.	G10/AS1, G12/AS1
NZS 5841:-	Code of practice for the reduction of slip hazards.	
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NZS 6104:1981	Specification for emergency electrical supply in buildings.	C3/AS1
NZS 6214:1988	Thermostats and thermal cutouts for domestic thermal storage electric water heaters (alternating current only).	G12/AS1
NZS 6315/AS 3313:1989	Approval and test specification - Particular requirements for appliances for heating liquids.	G12/AS1
NZS 6335:1990	Safety of household and similar electrical appliances. Particular requirements for instantaneous water heaters.	G12/AS1
NZS 6401:1973	Specification for PVC-insulated cables for electric power and lighting.	G12/AS1
NZS 6703:1984	Code of practice for interior lighting design.	F6/VM1, G7/AS1/VM1, G8/VM1
NZS 6742:1971	Code of practice for emergency lighting in buildings.	F6/AS1, F8/AS1
NZS 7401:1985	Specification for solid fuel burning domestic appliances.	B1/AS3, C1/VM1/AS1

		Where quoted
NZS 7421:1990	Specification for installation of solid fuel burning domestic appliances.	B1/AS3, C1/VM1/AS1
NZS 7601:1978	Specification for polyethylene pipe (Type 3) for cold water services.	G12/AS1, G14/VM1
NZS 7602:1977	Specification for polyethylene pipe (Type 5) for cold water services.	G12/AS1, G14/VM1
NZS 7604:1981	Specification for high density polyethylene drain and sewer pipe and fittings.	E1/AS1, G13/AS2, G14/VM1
NZS 7609:-	Acrylonitrile butadiene styrene (ABS) pipes and fittings for pressure applications.	
Part 1:1990	Pipes.	E1/AS1, G13/AS2 G14/VM1
Part 2:1990	Solvent cement fittings.	E1/AS1, G13/AS2 G14/VM1
NZS 7610:1991	Blue polyethylene pipes up to nominal size 63 for below ground use for potable water.	G12/AS1, G14/VM1
NZS 7641:1978	Specification for unplasticized PVC waste and ventilating pipe, fittings and accessories. 32 mm, 40 mm and 50 mm.	G13/AS1, G14/VM1
NZS 7642:1971	Specification for unplasticized PVC soil and ventilating pipe, fittings and accessories.	G13/AS1, G14/VM1
NZS 7643:1979	Code of practice for the installation of unplasticized PVC pipe systems.	B1/AS1, E1/AS1, G12/AS1, G13/AS1/AS2, G14/VM1
NZS 7646:1978	Specification for polyethylene pipes and fittings for gas reticulation.	G10/AS1
NZS 7648:1987	Unplasticized PVC pipe and fittings for pressure applications.	G12/AS1, G14/VM1
NZS 7649:1988	Unplasticized PVC sewer and drain pipe and fittings.	E1/AS1, G13/AS2, G14/VM1
NZS 7652:1976	Specification for plastics waste traps.	G13/AS1, G14/VM1
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BSCP 143:-	Code of practice for sheet roof and wall coverings.	
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Part 12:1970	Copper. Metric units.	E2/AS1
Part 15:1973	Aluminium. Metric units.	E2/AS1
BSDD 175:1988	Code of practice for the identification of potentially contaminated land and its investigation.	F1/VM1
BS 437:1978	Specification for cast iron spigot and socket drain pipes and fittings.	G13/AS2
BS 476:-	Fire tests on building materials and structures.	
Part 4:1970	Non-combustibility test for materials.	C1/AS1, C3/AS1, F3/AS1
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		Where quoted
Part 21:1987	Methods for determination of the fire resistance of loadbearing elements of construction.	C3/AS1
Part 22:1987	Methods for determination of the fire resistance of non-loadbearing elements of construction.	C3/AS1
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BS 1521:1972	Specification for waterproof building papers.	E2/AS1
BS 1600:- Part 2:1983	Specification for dimensions of steel pipe for the petroleum industry. Metric units.	G14/VM1
BS 1640:- Part 3:1968	Specification for steel butt-welding pipe fittings for the petroleum industry. Wrought carbon and ferritic alloy steel fittings. Metric units.	G10/AS1, G14/VM1
Part 4:1968	Wrought and cast austenitic chromium-nickel steel fittings. Metric units.	G10/AS1, G14/VM1
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BS 1740:- Part 1:1971	Specification for wrought steel pipe fittings (screwed BS 21 R-series thread). Metric units.	G10/AS1, G14/VM1
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BS 2594:1975	Specification for carbon steel welded horizontal cylindrical storage tanks.	G14/VM1
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Part 4:1980	Specification for glass plant components.	G14/VM1
BS 2640:1982	Specification for Class II oxy-acetylene welding of carbon steel pipework for carrying fluids.	G10/AS1, G14/VM1
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BS 4991:1974	Specification for propylene copolymer pressure pipe.	G14/VM1

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BS 5378:- Part 1:1980	Safety signs and colours Specification for colour and design.	F8/AS1
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Part 2:1978	Installations of 44 kW and above output capacity for space heating, hot water and steam supply purposes.	C1/AS1
Part 3:1976	Installations for furnaces, kilns, ovens and other industrial purposes.	C1/AS1
BS 5572:1978	Code of practice for sanitary pipework.	G13/VM1
BS 5839:- Part 1:1988	Code of practice for system design, installation and servicing. Fire detection and alarm systems for buildings.	C3/AS1
BS 6283:- Part 1:1982	Safety devices for use with hot water systems. Specification for expansion valves for pressures up to and including 10 bar.	G12/AS1
Part 2:1982	Specification for temperature relief valves for pressures up to and including 10 bar.	G12/AS1
Part 3:1982	Specification for combined temperature and pressure relief valves for pressures up to and including 10 bar.	G12/AS1
Part 4:1982	Specification for drop-tight pressure reducing valves of nominal size up to and including DN 54 for supply for pressures up to and including 12 bar.	G12/AS1
BS 6374:- Part 1:1985	Lining of equipment with polymeric materials for the process industries. Specification for lining with sheet thermoplastics.	G14/VM1
Part 2:1984	Specification for lining with non-sheet applied thermoplastics.	G14/VM1
Part 3:1984	Specification for lining with stoved thermosetting resins.	G14/VM1
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Part 5:1985	Specification for lining with rubbers.	G14/VM1
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BS 6561:1985	Specification for zinc alloy sheet and strip for building.	E1/AS1
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BS 7159:1989	Code of practice for design and construction of glass-reinforced plastics (GRP) piping systems for individual plants or sites.	G14/VM1

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AS 1530:- Part 1:1984 Part 2:1973 Part 3:1989 Part 4:1990	Methods for fire tests on building materials, components and structures. Combustibility test for materials. Test for flammability of materials. Simultaneous determination of ignitability, flame propagation, heat release and smoke release. Fire-resistance test of elements of building construction.	C1/AS1, C3/AS1, C3/AS1 C3/AS1 C3/AS1
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AS 2023:1989	Baths for ablutionary purposes.	G1/AS1
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AS 2220:- Part 1:1989 Part 2:1989	Emergency warning and intercommunication systems in buildings. Equipment design and manufacture. System design, installation and commissioning.	C3/AS1 C3/AS1
AS 2280:1991	Ductile iron pressure pipes and fittings.	E1/AS1, G13/AS2
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DEFINITIONS

DEFINITIONS

Unless the context otherwise requires, words used in the New Zealand Building Code and Approved Documents shall have the meaning given under this section of the Handbook.

Access chamber A chamber with working space at *drain* level through which the *drain* passes either as an open channel or as a pipe incorporating an *inspection point*.

Accessible Having features to permit use by *people with disabilities*.

Access point A place where access may be made to a *drain* for inspection, cleaning or maintenance; and may include an *inspection point*, *rodding point*, *inspection chamber*, or *access chamber*.

Access route A continuous route that permits people and goods to move between the apron or *construction edge* of the *building* to spaces within a *building*, and between spaces within a *building*.

Accessible route An *access route* usable by *people with disabilities*. It shall be a continuous route that can be negotiated unaided by a wheelchair user. The route shall extend from street boundary or carparking area to those spaces within the *building* required to be *accessible* to enable *people with disabilities* to carry out normal activities and processes within the *building*.

Accreditation certificate means an *accreditation certificate* issued under Part VIII of the Act.

Active conductor Any electrical conductor in which the electrical potential differs from that of a neutral conductor or earth.

Adequate *Adequate* to achieve the objectives of the *building code*.

Adjacent building A nearby *building*, including an adjoining *building*, whether or not erected on *other property*.

Air gap The vertical distance through air between the lowest point of the water supply outlet and

the *flood level rim* of the equipment or the *fixture* into which the outlet discharges.

Alter in relation to a building, includes to rebuild, re-erect, repair, enlarge and extend; and **alteration** has a corresponding meaning.

Amenity An attribute of a *building* which contributes to the health, physical independence, and well being of the *building's* users but which is not associated with disease or a specific illness.

Appliance hearth A layer of *non-combustible* material under or near an appliance. It may be either part of the *building* structure or an overlay on a *combustible* floor.

Asbestos as defined by the Asbestos Regulations 1983 means:

- a) Actinolite, amosite, chrysotile, crocidolite, fibrous anthophyllite, or tremolite; or
- b) A mixture containing a mineral specified in paragraph (a) of this definition; or
- c) A material that is composed wholly or partly of any such mineral; or
- d) A material or article that is contaminated by any such material.

Atmospheric burner A burner system where all the air for combustion is induced by the inspirating effect of a gas injector and/or by natural draught in the combustion chamber without mechanical assistance.

Authority means the Building Industry Authority established under Part III of the Act.

Backflow A flowing back or reversal of the normal direction of the flow caused by *back pressure* and includes *back-siphonage*.

Backflow prevention device A device that prevents *backflow*.

Back pressure A condition where the downstream pressure is greater than the supply pressure.

Back-siphonage *Backflow* caused by the supply pressure being less than atmospheric pressure.

Baluster A post providing the support for the top and bottom rails of a barrier.

Balustrade The infill parts of a barrier (typically between floor and top rail).

Basement Any *firecell* or part of a *firecell* below the level of the lowest *final exit*.

Boundary joist A joist running along the outer ends of the floor joists.

Branch discharge pipe A *discharge pipe* which serves one or more *fixture discharge pipes* from any one floor and discharges to a *discharge stack*.

Branch vent pipe A *vent pipe* which serves two or more *fixture vent pipes* and is connected at its upper end to a *discharge vent stack*.

Building has the meaning ascribed to it by section 3 of the Act as follows: meaning of *building* -

(1) In this Act, unless the context otherwise requires, the term "*building*" means any temporary or permanent movable or immovable structure (including any structure intended for occupation by people, animals, machinery, or chattels); and includes any mechanical, electrical, or other systems, and any utility systems, attached to and forming part of the structure whose proper operation is necessary for compliance with the *building code*; but does not include:

(a) Systems owned or operated by a *network utility operator* for the purpose of reticulation of *other property*; or

(b) Cranes, including any cranes as defined in section 2 (1) of the Boilers, Lifts, and Cranes Act 1950, whether or not attached to any other structure; or

(c) Cablecars, cableways, ski tows, and other similar stand alone machinery systems,

whether or not incorporated within any other structure; or

(d) Ships as defined in section 2 (1) of the Shipping and Seaman Act 1952, other than permanently moored houseboats; or

(e) Vehicles and motor vehicles (including vehicles and motor vehicles as defined in section 2 (1) of the Transport Act 1962 and section 2 (1) of the Transport (Vehicle and Driver Registration and Licensing) Act 1986), but not including vehicles and motor vehicles, whether movable or immovable, which are used exclusively for permanent or long-term residential purposes; or

(f) Containers as defined in section 2 of the Dangerous Goods Act 1974; or

(g) Magazines as defined in section 2 of the Explosives Act 1957; or

(h) *Scaffolding* used in the course of the *construction process*; or

(i) *Falsework* used in the course of the *construction process*.

(2) For the purposes of a *building consent*, a *code compliance certificate*, and a *compliance schedule* the term *building* also includes -

(a) Any part of a *building*; and

(b) Any 2 or more *buildings* which, on completion of any *building work*, are intended to be managed as 1 *building* with a common use and a common set of ownership arrangements.

(3) For the purposes of subsection (2) of this section, where any utility system or any part of any utility system -

(a) Is external to the *building*; and

(b) Is also connected to or is intended to be connected to -

(i) A network under the control of a *network utility operator*; or

(ii) Some other facility which is able to provide for the successful functioning of the utility system in accordance with its intended design - that utility system or that part of the utility system shall be deemed to be part of a *building*.

(4) Notwithstanding the provisions of subsection (3) of this section, where a septic tank is connected to a *building* utility system the septic tank shall be deemed to form part of that *building* utility system.

Building certifier means a person approved as a *building certifier* by the Authority under Part VII of the Act.

Building code means the *building code* made under Part VI of the Act.

Building consent means a consent to carry out *building work* granted by a *territorial authority* under Part V of the Act; and includes all conditions to which the consent is subject.

Building element Any structural and non-structural component or assembly incorporated into or associated with a *building*. Included are *fixtures*, *services*, *drains*, permanent mechanical installations for access, glazing, partitions, ceilings and temporary supports.

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

Building performance index The energy from a depletable resource needed to maintain a *building* at a constant internal temperature, measured per m² of floor area and per *degree-day*, for the period 1st of May to 31st of August under standard conditions. The standard conditions are:

- a) A uniform continuous indoor temperature of 20 °C throughout the *building*.
- b) An air change rate of 1 change per hour or the actual air leakage rate, whichever is the greater.

c) A heat emission contribution arising from internal heat sources for the period being considered of 1000 kWh for the first 50 m² of floor area and 10 kWh per m² of floor area thereafter.

d) No allowance for curtains, blinds, or drapes on windows.

e) Windows to have a shading coefficient of 0.6 (made up of 0.8 for windows and recesses and 0.75 for site shading).

Building statement of fitness means a statement issued by a *territorial authority* under section 44(4) (c) of the Act.

Building work means work for or in connection with the *construction*, *alteration*, demolition, or removal of a *building*; and includes *sitework*.

Cavity barrier A *construction* provided to close openings within a *concealed space* against the passage of *fire*, or to restrict the spread of *fire* within such spaces.

Check valve (or non-return valve) A valve that permits flow in one direction but prevents a return flow.

Chimney A *non-combustible* structure which encloses one or more *flues*, *fireplaces* or other heating *appliances*.

Chimney back The *non-combustible* wall forming the back of a *fireplace*.

Chimney base That part of a *chimney* which houses the *fireplace*.

Chimney jambs The side walls of a *fireplace*.

Cladding The exterior weather-resistant surface of a *building*.

Classified use means a *classified use* listed in clause A1 of the *building code*.

Code compliance certificate means a certificate to that effect issued by a *territorial authority* or a *building certifier* pursuant to section 43 of the Act.

Combined waste pipe A *discharge pipe* which serves two or more *waste pipes*.

Combustible See *non-combustible*.

Common ramp A ramp which is used, or intended to be used by the public whether as of right or not, and is not a *service ramp* or *accessible ramp*.

Common stairway A *stairway* which is used, or intended to be used, by the public whether as of right or not, and is not a *private stairway*, *service stairway* or *accessible stairway*.

Compliance schedule means a *compliance schedule* issued under section 44 of the Act.

Compound In relation to the storage of liquid dangerous goods, a basin, pit, excavation, hollow or enclosure constructed of concrete, brick, clay, earth, or similar incombustible material which will effectively retain the liquid dangerous goods if they leak from their container(s).

Concealed space Any part of the space within a *building* that cannot be seen from an *occupied space*.

Comment:

This term includes any ceiling space, roof space, space under a raised floor (such as computer rooms, floors, or stages) plenums, spaces under a tiered floor, "left-over spaces" created when some structural element or the like has been covered in; small service or duct spaces within the volume of a firecell and the like, but not a protected shaft.

Construct in relation to a *building*, includes to build, erect, prefabricate, and relocate; and **construction** has a corresponding meaning.

Contaminant has the meaning ascribed to it by the Resource Management Act 1991.

Controlled area That area where the use of radioactive material or an irradiating apparatus may, in the opinion of the *licensee*, present a hazard to persons within that area.

Cross connection Any actual or potential connection between a *potable* water supply and a source of contamination or pollution.

Damp-proof course (DPC) A layer of *durable vapour barrier* placed between *building elements* to prevent the passage of moisture from one element to another.

Dangerous goods Any materials included in the UN classification, classes 2-5.

Dangerous goods workroom A room reserved primarily for the use of *dangerous goods* of Class 3(a) or Class 3(b) (i.e. flammable liquids).

Dead end That part of an *open path* where escape is possible in only one direction.

Comment:

A dead end ceases to exist when the escape route reaches a point in the open path which offers alternative directions of travel, or at a final exit or an exitway.

Degree-day The number of °C by which a given base temperature exceeds the mean outdoor temperature measured daily. The degree-day total for a season is derived by summing these values for the period. For the purposes of the New Zealand Building Code the base temperature shall be 15 °C.

Comment:

Results are ignored for days where the mean outdoor temperature exceeds the base temperature. Tables produced by the NZ Meteorological Service give total degree-days for stated periods in different locations, and for different bases.

Depot In relation to *dangerous goods*, a *building*, place, or vessel as may be prescribed, or as may be approved by an Inspector (of *dangerous goods*), as a *depot* for the storage of *dangerous goods*.

Developed length The total length along the centre line of a pipe including fittings and bends.

Diameter (or bore) The nominal internal *diameter*.

Discharge pipe Any pipe which is intended to convey discharge from *sanitary fixtures* or *sanitary appliances* and includes a *waste pipe*, *combined waste pipe*, *branch discharge pipe* and *discharge stack*.

Discharge stack A main vertical *discharge pipe* having two or more *branch discharge pipe* connections, and which is vented to the atmosphere at one end via a *discharge stack vent*.

Discharge stack vent A vertical *vent pipe* connected to the top of the *discharge stack* at

one end and open to the atmosphere at the other.

Discharge unit The unit of measure for the discharge (hydraulic load) in the *plumbing system*, and is based on the rate, duration and frequency of discharge from a *sanitary fixture* or *sanitary appliance*.

Doorset A complete assembly comprising a door leaf or leaves including any glazed or solid panels adjacent to or over the leaves within the door frame including hardware or other inbuilt features; and a door frame, if any, with its fixings to the wall and, for a sliding or tilting door, all guides and their respective fixings to the lintel, wall or sill.

Drain A pipe normally laid below ground level including fittings and equipment and intended to convey *foul water* or *surface water* to an *outfall*.

Drainage access area means a space within a *building* containing an inspection chamber or access chamber, and which is isolated from other enclosed spaces within the *building*.

Drain vent pipe Any pipe which is intended to permit the movement of air into and out of the *drain* and *sewer*.

Draught diverter A device, without moving parts, fitted in the *flue* of an appliance for isolating the combustion system from the effects of pressure changes in the secondary *flue*.

Durable Resistant to wear and decay.

Electrical installation Any *electrical fixed appliances*, and components used in the reticulation of electricity, which are intended to remain permanently attached to and form part of the *building*.

Electrical supply system The source of electricity external to the *electrical installation*.

Escape route A continuous unobstructed route from any *occupied space* in a *building* to a *final exit* to enable occupants to reach a *safe place*, and shall comprise one or more of the following: *open paths*, *protected paths* and *safe paths*.

Comment:

Doors are not obstructions in an escape route provided they comply with C2/AS1, C3/AS1 and D1/AS1.

Essential service In the context of an *electrical installation* means emergency lighting, firemen's lifts, alarms, water pumps, sprinklers, detectors, ventilation systems and public address systems necessary for the safety of people in *buildings*.

Estimated value The value of *building work* shall be the aggregate of the values, determined in accordance with section 10 of the Goods and Services Tax Act 1985, of all goods and services to be supplied for that *building work*.

Evacuation time The time taken by the occupants of the *building* to evacuate the *building* to a *final exit*.

Exitway 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*.

External wall Any exterior face of a *building* within 30° of vertical, consisting of *primary* and/or *secondary elements* intended to provide protection against the outdoor environment, but which may also contain *unprotected areas*.

Comment:

A roof is an external wall if within 30° of the vertical.

External wall rating (E) The time in minutes for which it is intended that a *fire* in a *building* should not spread due to failure of any *primary* or *secondary element* in an *external wall*:

- a) Across a *relevant boundary* to other *property*, or
- b) To an *adjacent building* containing *purpose groups* SC, SD, SA, SR or CM, or
- c) Vertically outside the wall to higher *firecells* in the same *building* containing *purpose groups* SC, SD, SA, SR or CM.

Factor of safety in relation to any *building* means the ratio of resisting forces to applied forces for a given loading condition. It is generally expressed to two significant figures.

Falsework used in the course of the construction process means any temporary structure or framework used in *construction* work to support materials, equipment, or any assembly; and includes the use of steel tubes, adjustable steel props, proprietary frames, or any other means to support a permanent structure during its *construction* until it becomes self-supporting; but does not include *scaffolding* or cranes for support.

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 only applies if such doors open directly onto a safe place. If a safe place can only be reached 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.

Fire The state of combustion during which flammable materials burn producing heat, toxic gases, or smoke or flame or any combination of these.

Firecell Any space including a group of contiguous spaces on the same or different levels within a *building*, which is enclosed by any combination of *fire separations*, *external walls*, *roofs*, and *floors*.

Comment:

Floors, in this context includes ground floors, and those in which the underside is exposed to the external environment (e.g. when cantilevered). Note also that internal floors between firecells are fire separations.

Firecell rating (F) the time in minutes for which it is intended to prevent *fire* spreading to another *firecell* within a *building*, or causing structural collapse within the *firecell* due to failure of any *primary* or *secondary element*.

Comment:

1. The purpose of the firecell rating is to prevent premature collapse of elements of structure in order to protect:

a) The occupants, some of whom may have to remain in the building for some time while evacuation proceeds, particularly if the building is a large one.

b) Adjacent household units and sleeping areas in the building of fire origin.

c) Fire fighters engaged on rescue and fire fighting operations (although this is limited because property protection in the building of origin is not a matter covered by the New Zealand Building Code except as required by (b) above).

2. The use of the F rating to determine the FRR of a primary or secondary element is discussed in C3/AS1.

Fire damper A device with a specified *FRR* complete with fixings and operating mechanism for automatically closing off an airway where it passes through a *fire separation*.

Comment:

An airway may be a duct, plenum, ceiling space, roof space or similar construction used for the passage of ventilating air.

Fire door A *doorset*, single or multi-leaf, having a specific *fire resistance rating*, and in certain situations a smoke control capability, and forming part of a *fire separation*.

Comment:

Requirements for fire doors are given in C3/AS1 Paragraph 5.0 and Appendix E.

Fire hazard means the danger in terms of potential harm and degree of exposure arising from the start and spread of *fire* and the smoke and gases that are thereby generated.

Fire hazard category The number (graded 1 to 4 in order of increasing severity), used to classify *purpose groups* or activities having a similar *fire hazard*, and where fully developed *fires* are likely to have similar impact on the structural stability of the *building*.

Comment:

Fire hazard categories are identified in C3/AS1, Appendix A Table A1.

Fire intensity The rate release of calorific energy in watts, determined either theoretically or empirically, as applicable.

Fire load The sum of the net calorific values of the *combustible* contents which can reasonably be expected to burn within a *firecell*, including furnishings, built-in and removable materials, and *building elements*. The calorific values shall be determined at the ambient moisture content or humidity. (The unit of measurement is MJ).

Fireplace A space formed by the *chimney back*, the *chimney jambs*, and the *chimney breast* in which fuel is burned for the purpose of heating the room into which it opens.

Fire resistance rating (FRR) The term used to classify fire resistance of *primary* and *secondary elements* as determined in the *standard test for fire resistance*, or in accordance with a specific calculation method verified by experimental data from standard fire resistance tests. It comprises three numbers giving the time in minutes for which each of the criteria *stability*, *integrity* and *insulation* are satisfied, and is presented always in that order.

Comment:

1. Examples of FRRs are:

- a) 30/30/15 indicating stability 30 minutes, integrity 30 minutes, insulation 15 minutes.
- b) 30/-/- indicating stability 30 minutes, but no time requirement for integrity or insulation.
- c) -/15/15 indicating no time requirement for stability, but 15 minutes for integrity and insulation.
- d) 60/30/x indicating stability of 60 minutes, integrity of 30 minutes, and a requirement for insulation from C3/AS1 Paragraph 3.5.

2. C3/AS1 Paragraph 3.0 gives more information on FRRs.

Fire resisting closure A fire rated device or assembly for closing an opening through a *fire separation*. It shall have a *FRR* of no less than that required for the *fire separation*.

Comment:

A fire resisting closure is intended to include fire doors, fire windows, access panels, or fixed glazing. In this context the opening may be used to permit passage of people or goods, or to transmit light, but does not include an opening to permit the passage of building services.

Fire resisting glazing Fixed glazing, complete with frame and fixings, mullions, transoms and glazing beads, with a specified *FRR*.

Comment:

The requirement for fire resisting glazing will not be met by ordinary window glass, or safety glasses, but rather by wired glass, or by special fire resisting glass shown by test to perform adequately. The nature and design of the frames also have an effect on the performance of fire resistant glazing. Note that heat radiation is not measured, but is empirically taken to be 50 % of that through an opening of the same size and shape.

Fire safety system The combination of all methods used in a *building* to warn people of an emergency, provide for safe evacuation, and restrict the spread of fire, and includes both active and passive protection.

Fire separation Any *building element* which separates *firecells* or *firecells* and *safe paths*, and provides a specific *fire resistance rating*.

Fire shutter A fire rated device, complete with fixings and operating mechanism, for automatically closing off an opening in a *fire separation* or *protected shaft*.

Fire stop A material or method of *construction* used to restrict the spread of *fire* within or through *fire separations*, and having a *FRR* no less than that of the *fire separation*.

Comment:

Fire stops are mainly used to seal around penetrations, but can also be used to seal narrow gaps between building elements.

Fixture An article intended to remain permanently attached to and form part of a *building*.

Fixture discharge pipe A *discharge pipe* which is used to convey waste from a single *sanitary fixture* or *sanitary appliance* to a *branch discharge pipe*, a *discharge stack*, or directly to a *drain*. It does not include any pipes forming part of a *sanitary appliance*.

Fixture vent pipe A *vent pipe* which is connected to a *fixture discharge pipe* or the *sanitary fixture* itself.

Flame barrier A protective cover which is either *non-combustible* and arranged and fixed to prevent ready access of air or flame to the material it is protecting; or is able to limit the temperature rise to no more than 140K on the unexposed face of the *flame barrier* after 10 minutes exposure in the *standard test for fire resistance*.

Comment:

1. The principal use of flame barriers is to delay ignition of combustible foam plastics, but the definition covers situations such as protection applied to the underside of timber floors, and the protection provided by lining materials to building papers and combustible insulation located in cavities in building elements.

2. The fire resistance test specimen should include an assembly comprising both the flame barrier and the material it is protecting.

Flame safeguard system A system consisting of a flame detector(s) plus associated circuitry, integral components, valves and interlocks the function of which is to shut off the fuel supply to the burner(s) in the event of ignition failure or flame failure.

Flammability index (FI) That index number for flammability, which is determined according to the *standard test* method for flammability of thin flexible materials.

Flood level rim The top edge at which water can overflow from equipment or a *fixture*.

Floor waste A *discharge pipe* with a graded inlet located at the lowest point within a graded floor, and which conveys accidental overflows of waste water to either the outside of the *building* or to the *foul water drainage* or the *plumbing system*.

Flue The passage through which the products of combustion are conveyed to the outside.

Flue liner Pipes or linings of *fire clay*, metal or *fire brick*, surrounding *flues*.

Forced or induced draught appliance An appliance where all or part of the air for combustion is provided by a fan or other mechanical device which is an integral part of the combustion system.

Foul water The discharge from any *sanitary fixture* or *sanitary appliance*.

Foul water drainage system *Drains*, joints and fittings normally laid underground and used specifically for the conveyance of water from the *plumbing system* to an *outfall*.

Free outlet (push through) In the context of *storage water heaters* means a *water heater* with a tap on the cold water inlet so designed that the hot water is discharged through an open outlet.

Functional requirements in relation to a *building*, means those functions which a *building* is to perform for the purposes of the Act.

Gantry A structure covering a public way providing protection from both the side and overhead.

Gather That part of a *chimney* where the transition from *fireplace* to stack occurs.

Good ground means any soil or rock capable of permanently withstanding an ultimate bearing pressure of 300 kPa (i.e. an allowable bearing pressure of 100 kPa using a factor of safety of 3.0), but excludes:

- a) Potentially compressible ground such as topsoil, soft soils such as clay which can be moulded easily in the fingers, and uncompacted loose gravel which contains obvious voids,
- b) Expansive soils being those that have a liquid limit of more than 50 % when tested in accordance with NZS 4403 Test 2.2, and a linear shrinkage of more than 15 % when tested in accordance with NZS 4402 Test 2.6, and
- c) Any ground which could foreseeably experience movement of 25 mm or greater for any reason including one or a combination of:

land instability, ground creep, subsidence, seasonal swelling and shrinking, frost heave, changing ground water level, erosion, dissolution of soil in water, and effects of tree roots.

Comment:

Soils (excepting those described in (a), (b) and (c) above) tested with a dynamic cone penetrometer in accordance with NZS 4402 Test 6.5.2, shall be acceptable as good ground for building foundations if penetration resistance is no less than:

- a) 3 blows per 75 mm at depths no greater than the footing width.
- b) 2 blows per 75 mm at depths greater than the footing width.

Depths shall be measured from the underside of the proposed footing.

Grease trap A device designed to intercept grease in a *foul water discharge*.

Gully trap A fitting designed to prevent foul air escaping from the drainage system and used to receive the discharge from *waste pipes*.

Habitable space A space used for activities normally associated with domestic living, but excludes any bathroom, laundry, water-closet, pantry, walk-in wardrobe, corridor, hallway, lobby, clothes-drying room, or other space of a specialised nature occupied neither frequently nor for extended periods.

Habitable work Any *building* where people live, work or may assemble, but does not include *buildings* associated with the storage or use of *dangerous goods* on the same site.

Comment:

The terms 'Habitable Work' and 'Title Boundary' in this document replace the definition 'Protected Work' used in the Dangerous Goods Regulations 1980/46, 1985/188, 1985/170.

Handrail A rail to provide both support to, or assist with the movement of a person.

Hazardous Creating an unreasonable risk to people of bodily injury or deterioration of health.

Hazardous substance Has the meaning ascribed to it by the Fire Service Act 1975.

Hearth The insulating floor under the *fire* and in front and at the sides of the *fireplace*.

Hoarding A structure alongside a public way providing side protection but no overhead protection.

Hold open device A device which holds a *fire door* open during normal use, but is released by deactivating the device by an alarm sensing element, allowing the door to close automatically under the action of a self-closing device.

Household unit means any *building* or group of *buildings*, or part of any *building* or group of *buildings*, used or intended to be used solely or principally for residential purposes and occupied or intended to be occupied exclusively as the home or residence of not more than one household; but does not include a hostel or boardinghouse or other specialised accommodation.

HVAC an abbreviation for heating, ventilating and air conditioning.

Ignitability index (Ig) That index number for ignitability which is determined according to the *standard test* method for measuring the properties of lining materials.

Illuminance The luminous flux falling onto a unit area of surface.

Impact insulation class, (IIC) A single number rating derived from measured values of

normalized impact sound pressure levels in accordance with Method of ASTM E492, Annex A1. Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine. It provides an estimate of the impact sound insulating performance of a floor-ceiling assembly.

Impervious That which does not allow the passage of moisture.

In bulk In relation to liquid or gaseous *dangerous goods*, product contained in receptacles of a liquid capacity greater than 250 litres. Conversely, **non-bulk** means contained in receptacles of 250 litres capacity or less.

Inspection chamber A chamber with working space at ground level through which the *drain* passes either as an open channel or as a pipe incorporating an *inspection point*.

Inspection point A removable cap at *drain* level through which access may be made for cleaning and inspecting the drainage system.

Insulating material A material that has a thermal conductivity of less than 0.07 W/mK.

Insulation In the context of *fire* protection, the time in minutes for which a prototype specimen of a *fire separation* when subjected to the *standard test* for *fire* resistance, has limited the transmission of heat through the specimen.

Integrity In the context of *fire* protection, the time in minutes for which a prototype specimen of a *fire separation* when subjected to the *standard test* for *fire* resistance, has prevented the passage of flame or hot gases.

Intended use of a *building* includes:

- a) Any reasonably foreseeable occasional other use that is not incompatible with the *intended use*; and
- b) Normal maintenance; and
- c) Activities taken in response to *fire* or any other reasonably foreseeable emergency, but does not include any other maintenance and repairs or rebuilding.

Interceptor trap A device which will separate and retain desired liquids and solids from a

liquid stream and which will provide a water barrier to prevent foul air or gas from entering any downstream system.

Intermediate floor Any upper floor within a *firecell* which because of its configuration provides an opening allowing smoke to spread from a lower to an upper level within the *firecell*.

Comment:

An intermediate floor may be open, partly open or closed off (from the opening through which smoke can spread) with non-rated partitions including smoke separations. If closed-off with fire separations the space becomes a firecell, and the floor is no longer an intermediate floor.

Isolation distance The minimum physical distance by which an installation, or specified part of an installation, containing *dangerous goods* must be separated from any other specified place, or *building*.

Kerb ramp means a short ramp either cutting through a kerb or built up to the kerb.

Land held under the same title includes a piece of land, or a *building* or part of a *building*, or both, that is:

- a) A unit under the Unit Titles Act 1972, or
- b) Leased under a crosslease registered under the Land Transfer Act 1952, or
- c) Leased under a company lease registered under the Land Transfer Act 1952.

Lock-out The safety shut down condition of the control system such that re-start cannot be accomplished without manual resetting.

Lower flammable limit (LFL) (also referred to as Lower Explosive Limit (LEL)). The lowest percentage of hydrocarbon or flammable vapour in the air which will readily ignite on introduction of an ignition source.

Means of escape from fire in relation to a *building* which has a floor area, means continuous unobstructed routes of travel from any part of a floor area of that *building* to a place of safety; and includes all active and passive protection features required to assist in protecting people from the effects of the *fire* in the course of their escape.

Minister means the Minister of Internal Affairs.

Multi-unit dwelling Applies to a *building* or use which contains more than one separate household or family.

Comment:

For fire-safety purposes each household unit is a separate firecell.

Natural draught The flow produced by the tendency of warmed gases to rise.

Network utility operator means a person who:

- a) Undertakes the distribution or transmission by pipeline of natural or manufactured gas, petroleum, or geothermal energy; or
- b) Is an electricity operator or electrical supply authority as defined by the Electricity Act 1968 for the purpose of an electric line as defined by that Act; or
- c) Undertakes the piped distribution of *potable* water for supply; or
- d) Is the operator of a sewerage system or a stormwater drainage system.

Nominal pile width The least width of a pile in side view and is equal to the diameter in round piles.

Non-bulk See *in bulk*.

Non-combustible Materials shall be classified as *non-combustible* or *combustible* when tested to: AS 1530 Methods for Fire Tests on Building Materials and Structures - Part 1: Combustibility Test for Materials, or BS 476 Fire Tests on Building Materials and Structures - Part 4 Non-combustibility test for materials.

Nosing The rounded projecting edge of a stair tread.

Notional boundary The boundary which for *fire* safety purposes, is assumed to exist between two *buildings* on the same property under a single land title.

Comment:

A notional boundary may be located anywhere between the two buildings, and once chosen determines the

unprotected area permitted in each building. Locating it closer to one building than the other, may be an advantage where it is planned for a rear wall without windows to face the front wall of the other building requiring windows.

Occupant load The greatest number of people likely to occupy a particular space within a *building*. It is determined by:

- a) Multiplying the number of people per m² of net floor area (occupant density) for the activity being undertaken, by the total floor area, or
- b) For sleeping areas, counting the number of beds, or
- c) For fixed seating areas, counting the number of seats.

Occupied space Any space within a *building* in which a person will be present from time to time during the *intended use* of the *building*

Open path That part of an *escape route* (including *dead ends*) not protected by *fire* or *smoke separations*, and which terminates at a *final exit* or *exitway*.

Open vented storage water heater A *water heater* incorporating a *vent pipe* which is permanently open to the atmosphere.

Other property means any land or *buildings* or part thereof which are:

- a) Not held under the same *allotment*, or
- b) Not held under the same ownership - and includes any road.

Outdoor air Air as typically comprising by volume:

- i) oxygen 20.94 %
- ii) carbon dioxide 0.03 %
- iii) nitrogen and other inert gases 79.03 %.

Outfall That part of the disposal system receiving *surface water* or *foul water* from the drainage system. For *foul water*, the *outfall* may include a *sewer* or a *septic tank*. For *surface water*, the *outfall* may include a natural water course, kerb and channel, or soakage system.

Over-pressure protection Devices preventing the pressure in piping or appliances from exceeding a predetermined value.

Owner in relation to any land, including any *buildings* on that land, means the *person* who is for the time being entitled to the rack rent thereof or who would be so entitled if the land were let to a tenant at a rack rent; and, for the purposes of sections 30, 33, and 43 of the Act, includes the:

- a) Owner of the fee simple of the land; and
- b) Any *person* who has agreed in writing, whether conditionally or unconditionally, to purchase the land or any leasehold estate or interest in the land, or to take a lease of the land, while the agreement remains in force, and **ownership** has a corresponding meaning.

Penetration A pipe, cable or duct passing through an opening in a *fire separation*.

People with disabilities People whose ability to use *buildings* is affected by mental, physical, hearing or sight impairment.

Performance criteria in relation to a *building*, means those qualitative or quantitative criteria which the *building* is to satisfy in performing its *functional requirement*.

Person includes the Crown, a corporation sole, and also a body of persons, whether corporate or unincorporated.

Piping system An assembly of pipes, pipe fittings, gaskets, bolting and pipe supports.

Pitch line The line joining the leading edge or *nosings* (if any) of successive stair treads within a single flight of a *stairway*.

Plans and specifications means the drawings, specifications, and other documents according to which a *building* is proposed to be constructed, altered, demolished, or removed, including proposed procedures for inspection during *construction*, *alteration*, demolition, or removal, and also including (in respect of *construction* or *alteration*):

- a) The *intended use* of the *building*; and
- b) The design features or systems which the applicant considers will be required to be

included in any *compliance schedule* issued in terms of section 44 of the Act; and

- c) The proposed procedures for inspection and routine maintenance for the purposes of that *compliance schedule* in respect of those design features or systems.

Plumbing system Pipes, joints and fittings laid above ground and used for the conveyance of *foul water* to the *foul water drain*, and includes *vent pipes*.

Pressure control valve A pressure limiting valve or pressure reducing valve.

Primary element A *building element* providing the basic load bearing capacity to the structure, and which if affected by *fire* may initiate instability or premature structural collapse.

Privacy The situation of being withdrawn from view.

Private stairway A *stairway* used, or intended to be used, by the occupants of a single *household unit*.

Privy A private room containing a receptacle (other than a WC) or an excavation for excreted liquid or solid human waste, and with a means of disposal or containment of the waste.

Producer statement means any statement supplied by or on behalf of an applicant for a *building consent* or by or on behalf of a *person* who has been granted a *building consent* that certain work will be or has been carried out in accordance with certain technical specifications.

Property includes land, *buildings*, and goods; but does not include incorporeal forms of *property*.

Protected path That portion of an *exitway* within a *firecell* which is protected from the effects of smoke by *smoke separations*.

Protected shaft A space, other than a *safe path*, enclosed by *fire separations* or *external walls* used to house *building services*, lifts, or conveyors which pass from one *firecell* to another.

Public place Any place which is freely open to and frequented by the public, but excludes

private property where the access of the public to *dangerous goods* can be controlled by the licensee.

Purpose group The classification of spaces within a *building* according to the activity for which the spaces are used.

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

Regulations means *regulations* in force under Part VI of the Act.

Regulator A device which automatically regulates the pressure or volume of gas passing through it to a predetermined level.

Relevant boundary A line from which space separation requirements are measured. It may be:

- a) The boundary between 2 property titles,
- b) The property boundary on the far side of an abutting street, right of way, railway or public place, or
- c) A *notional boundary*.

Comment:

Separation requirements are related to the potential threat from the effects of a fire emanating from the exterior wall of a building. A boundary is not a relevant boundary, if lines drawn parallel to the face of the building and to the boundary, intersect at an angle of more than 80°.

Relief vent A *vent pipe* which is connected to a discharge stack below the lowest branch connection.

Rodding point A removable cap at ground level through which access may be made for cleaning and inspecting the *foul water drainage system*.

Room-sealed appliance An appliance designed so that air for combustion neither enters from, nor combustion products enter into, the room in which the appliance is located.

R-value The common abbreviation for describing the values of both *thermal resistance* and *total thermal resistance*.

Safe path That part of an *exitway* which is protected from the effects of *fire* by *fire*

separations, external walls, or by distance when exposed to open air.

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*.

Safety colour (green, red or yellow) A colour of specified properties to which a safety meaning is attributed.

Safety glass means a glass so treated or combined with other materials as to reduce the likelihood of injury to persons when it is cracked or broken.

Safety shut-off system An arrangement of valves and associated control systems which shuts off the supply of gas when required by a device which senses an unsafe condition.

Safety sign A particular type of sign which comprises a geometric form and a *safety colour*, together with a *safety symbol* or text (that is, words, letters numbers or a combination of these) and gives a particular safety message.

Safety symbol means a graphic symbol used in a *safety sign*.

Sanitary appliance An appliance which is intended to be used for *sanitation* and which is not a *sanitary fixture*. Included are machines for washing dishes and clothes.

Sanitary fixture Any *fixture* which is intended to be used for *sanitation*.

Sanitation The term used to describe the activities of washing and/or excretion carried out in a manner or condition such that the effect on health is minimised, with regard to dirt and infection.

Scaffolding used in the course of the *construction* process means any structure, framework, swinging stage, suspended *scaffolding*, or boatswain's chair, of a temporary nature, used or intended to be used for the support or protection of workers engaged in or in connection with *construction* work for the purpose of carrying out that work, or for the support of materials used in connection with

any such work; and includes any plank, coupling, fastening, fitting, or device used in connection with the *construction*, erection, or use of *scaffolding*.

Screen wall Any wall or barrier which effectively diverts flammable vapours by virtue of its width, height and position, or which prevents the spread of *fire* from one place to another.

Secondary element A *building element* not providing load bearing capacity to the structure and if affected by *fire*, instability or collapse of the *building* structure will not occur.

Secondary flow path The path over which *surface water* will follow if the drainage system becomes overloaded or inoperative.

Security rating (S) The time in minutes within which a *fire* should not cause structural failure of *primary* or *secondary elements*, resulting in consequential *fire* spread or collapse damage to *other property*, or an *adjacent building* on the same property which contains sleeping *purpose groups*.

Comment:

The purpose of the security rating is to minimise the danger to people and buildings on other property and adjacent buildings in which people sleep. The danger may be caused by radiation, falling debris or by impact from the collapsing structure onto other buildings.

Service ramp means a ramp that is used, or intended to be used, infrequently by service personnel to gain access to spaces for the purposes of maintenance and the movement of goods.

Service stairway means a *stairway* that is used, or intended to be used, infrequently by service personnel to gain access to spaces for the purposes of maintenance and the like.

Sewer A *drain* that is under the control of, or maintained by, a *network utility operator*.

Sitework means work on a *building site*, including earthworks, preparatory to or associated with the *construction, alteration, demolition* or removal of a *building*.

Smoke baffle Part of the floor structure, or a screen attached to the underside of an *intermediate floor*, which extends downwards

to create a smoke reservoir and obstruct the lateral flow of smoke. *Smoke baffles* are either *non-combustible* or have a *FRR*.

Comment:

1. This traps hot smoke around smoke detectors, and is regarded as essential for ensuring early detection of the presence of smoke. If a ceiling is perforated so that smoke can pass into the space below the floor above, and penetration through the ceiling by water spray from sprinkler heads located above the ceiling is not impeded, then the ceiling may be taken as non-existent for the purposes of this definition.

2. Control of smoke spread in large open floor areas (e.g. shopping malls and supermarkets) is aided by dividing underfloor or roof areas into reservoirs with smoke baffles, and providing smoke extraction or venting to each.

Smokecell A space within a *building* which is enclosed by an envelope of *smoke separations*, or *external walls*, roofs, and floors.

Smoke control door A *doorset* with close-fitting single or multi-leaves which are impermeable to the passage of smoke, fitted with smoke seals and forming a part of a *smoke separation*.

Comment:

Requirements for smoke control doors are given in C3/AS1 Paragraph 5.0.

Smoke developed index (SDI) That index number for smoke developed when determined according to the *standard test* method for measuring the properties of lining materials.

Smoke separation Any vertical, horizontal or inclined *building element* with known smoke-stopping or smoke-leakage characteristics.

Socket outlet An accessory fixed to a wall or ceiling and designed to accept a plug that extends the electrical supply to an appliance by means of a flexible cable.

Soil fixture A *sanitary fixture* constructed to receive solid and/or liquid excreted human waste. It includes a bedpan disposal unit, slop sink, urinal, water closet pan, bidet and water-flushed sanitary towel disposal unit.

Sound transmission class, (STC) A single number rating derived from measured values of transmission loss in accordance with classification ASTM E413, Determination of

Sound Transmission Class. It provides an estimate of the performance of a partition in certain common sound insulation situations.

Specified intended life has the meaning ascribed to it by section 39 of the Act as follows: "*specified intended life*" in relation to a proposed *building*, or any existing *building* proposed to be altered, and which is intended to have a use of not more than 50 years, means the period of time, as stated in an application for a *building consent* or in the consent itself, for which the *building* is proposed to be used for its *intended use*.

Spread of flame index (SFI) That index number for spread of flame which is determined according to the *standard test* method for measuring the properties of lining materials.

Stability In the context of *fire* protection, the time in minutes for which a prototype specimen of a *primary element* when subject to the *standard test* for *fire* resistance, has continued to carry its *fire* design load without failure.

Comment:

The fire design load should be as specified in the limit state loadings code NZS 4203.

Stairway A series of steps or stairs with or without landings, including all necessary *handrails* and giving access from between two different levels.

Standard test A test method which is recognised as being appropriate for the *fire* protection properties being assessed.

Comment:

A list of standard test methods is given in Appendix E of the Annex to Fire Safety Documents attached to Approved Document C4.

Standard year For the purposes of determining natural lighting, the hours between 8am and 5pm each day with an allowance being made for daylight saving.

Storage water heater A *water heater* with an integral hot *water tank*.

Sump A chamber which is installed in the *drain* and incorporates features to intercept and retain silt, gravel and other debris.

Surface finish The material on surfaces normally exposed to view, on either interior or exterior *building elements*. It can be a decorative coating or the uncoated lining or cladding itself.

Surface water All naturally occurring water, other than sub-surface water, which results from rainfall on the site or water flowing onto the site, including that flowing from a *drain*, stream, river, lake or sea.

Tailpipe A device placed at the low point of a gas piping system to collect condensate, and from which the condensate may be removed.

Territorial authority has the meaning ascribed to it by section 2 of the Local Government Act 1974; and includes any organisation which is authorised to permit structures pursuant to section 12(1)(b) of the Resource Management Act 1991.

Theatre A place of assembly intended for the production and viewing of performing arts, and consisting of an auditorium and stage with provision for raising and suspending stage scenery above and clear of the working area.

Thermal resistance The resistance to heat flow of a given component of a *building element*. It is equal to the temperature difference ($^{\circ}\text{C}$) needed to produce unit heat flux (W/m^2) through unit area (m^2) under steady conditions. The units are $^{\circ}\text{Cm}^2/\text{W}$.

Threshold A sill to an external door, or the floor under an internal door.

Title boundary A boundary with *other property*.

Comment:

The terms 'Habitable Work' and 'Title Boundary' in this document replace the definition 'Protected Work' used in the Dangerous Goods Regulations 1980/46, 1985/188, 1985/170.

Total thermal resistance The overall air-to-air *thermal resistance* across all components of a *building element* such as a wall, roof or floor. (This includes the surface resistances which may vary with environmental changes e.g. temperature and humidity, but for most purposes can be regarded as having standard values as given in NZS 4214).

Town gas A manufactured gas.

Trap A chamber which is installed in the *drain* and incorporates features to intercept and retain floatable debris.

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*.

Unprotected area - In relation to an *external wall* of a *building* means:

- a) Any part of the *external wall* which has less than the required *FRR*. For example, a non *fire rated* window, door or other opening, or sheet metal.
- b) Any part of the *external wall* which has *combustible* material more than 1.0 mm thick attached or applied to its outermost external face, whether for cladding or any other purpose.

Valve vented storage water heater (unvented *storage water heater*) A *storage water heater* in which the required venting to the atmosphere is controlled by a valve.

Vapour barrier Sheet material or coating having a low water-vapour transmission, and used to minimise water-vapour penetration in *buildings*. (Vapour barriers are sometimes referred to as damp-proof membranes).

Vapour path length The travel distance between the vapour source and the point at which the vapour concentration is being considered.

Vent line A pipe or tube which conveys gas to a safe place outside the *building* from a gas pressure *regulator* relief valve.

Vent pipe A pipe which is open to the atmosphere at one end and acts as a pressure limiting device.

Vent stack A main vertical *vent pipe*, to which two or more *combined vent pipes* are connected.

Waste pipe A *discharge pipe* which conveys the discharge from *waste water fixtures* to a *gully trap*.

Waste water fixture A *sanitary fixture* or *sanitary appliance* used to receive wastes, and which is not a *soil fixture*.

Water heater A device for heating water.

Water seal The depth of water that can be retained in a *water trap*.

Water storage tank A covered *water tank* generally used for reserve water storage in case of failure of the *water main*.

Water supply system Pipes, fittings and tanks used or intended to be used in the piping of water from a *water main* or other water source to *sanitary fixtures*, *sanitary appliances* and fittings within a *building*.

Water supply tank (or cistern) A covered *water tank* generally used for the supply to *sanitary fixtures* or to *storage water heaters*. The water supply to the tank is normally regulated by a float control valve.

Water tank A fixed container for storing water.

Water trap A fitting designed to prevent foul air escaping from the plumbing system or *foul water drainage system* and entering a *building*.

Weatherboards Any overlapping strip cladding. It may be fixed either horizontally or vertically.

Working day means any day except:

- a) A Saturday, a Sunday, Good Friday, Easter Monday, Christmas Day, Boxing Day, Anzac Day, Labour Day, the Sovereign's birthday, Waitangi Day, and any other day observed in any locality concerned as a public holiday; and
- b) Any day in the period commencing on the 20th day of December in any year and ending with the 10th day of January in the following year.

COMPLIANCE SCHEDULES

CONTENTS

	Page
COMPLIANCE SCHEDULES	
1.0 Introduction	51
1.1 Inspection and maintenance	51
1.2 Reporting	51
1.3 Existing buildings	51
CS 1 Automatic sprinkler systems	52
CS 2 Automatic fire doors	53
CS 3 Emergency warning systems	54
CS 4 Emergency lighting systems	55
CS 5 Escape route pressurisation systems	56
CS 6 Riser mains	57
CS 7 Back-flow preventers	58
CS 8/1 Passenger carrying lifts	59
CS 8/2 Service lifts	63
CS 8/3 Escalators and moving walks	66
CS 9 Mechanical ventilation and air conditioning systems	68
CS 10 Other mechanical, electrical, hydraulic or electronic systems	69
CS 11 Building maintenance units	70
CS 12 Signs	71
CS 13 Means of escape	72
CS 14 Safety barriers	73
CS 15 Access and facilities for people with disabilities	74
CS 16 Fire hose reels	75

COMPLIANCE SCHEDULES

1.0 INTRODUCTION

1.0.1 Section 44 of the Building Act 1991 requires specific systems in buildings to be subject to regular inspection, maintenance and reporting procedures. This section of the New Zealand Building Code Handbook provides guidelines for those procedures.

1.0.2 Where suitable reference documents have been identified these are quoted. In other cases suggested check lists are provided, but those lists do not necessarily satisfy the essential requirements for all installations.

1.0.3 In many cases inspection and maintenance requirements will be specific to a particular type of equipment, and recommendations of the designer, manufacturer or supplier should be followed.

1.0.4 The definition (Act s.2) of plans and specifications, includes the proposed procedures for inspection and routine maintenance of design features or systems required to have a compliance schedule. These must be supplied to the territorial authority with the application for a building consent.

1.0.5 The procedures and independent qualified persons, must have the approval of the territorial authority which issues the compliance schedule in the prescribed form in accordance with the Act s.44(2).

1.1 Inspection and maintenance

1.1.1 Inspections will generally cover the complete installation. The frequency of such inspections shall be appropriate to the type of installation and the consequences of the system not functioning.

1.1.2 Maintenance for mechanical, electrical, hydraulic or electronic systems will generally be based on the designer's, manufacturer's or supplier's recommendations for routine servicing, and the frequency will vary for different parts of the installation. Routine maintenance is aimed at avoiding breakdown or malfunction, but should breakdown or malfunction occur, corrective action should be taken as soon as is reasonably practical.

1.2 Reporting

1.2.1 Section 44(4) of the Act requires the compliance schedule to be kept in the building or some other location agreed upon with the territorial authority. Section 45(3) of the Act requires the owner to state on the building warrant of fitness, the location of the compliance schedule and associated written reports.

1.2.2 Depending on the installation it may, for practical reasons, be appropriate for a log book to be kept at the installation, with a summary report held in the designated location with the compliance schedule. Defects and action taken should be recorded with the date and the name of the individual concerned.

1.2.3 Written reports by independent qualified persons shall be filed by the owner in a systematic manner. The reports shall be kept for no less than 2 years and be available for inspection by authorised persons.

1.2.4 Where inspections are undertaken by the owner, details of those inspections and any remedial action taken shall be recorded and filed.

1.3 Existing buildings

1.3.1 Compliance schedules are required for existing buildings containing any of the nominated systems (Act s.44(6)). Existing buildings (other than those subject to alteration or change of use) are not required to be upgraded to comply with the New Zealand Building Code (Act s.8).

1.3.2 It is therefore implicit that the inspection and maintenance procedures for an existing building need only satisfy the requirements appropriate to the system at the time of installation. In such cases the examples given in this part of the Handbook may not be appropriate and this must be taken into account by the territorial authority when issuing compliance schedules for existing buildings.

1.3.3 Sections 38 and 46 of the Act explain the extent to which existing buildings, subject to alteration or change of use, must satisfy the New Zealand Building Code.

CS 1 AUTOMATIC SPRINKLER SYSTEMS

A. Inspections

Automatic sprinkler systems shall be inspected for compliance with New Zealand Building Code C3. Content of the inspections shall be in accordance with NZS 4541 or NZS 4515 as is appropriate for the installation.

Frequency of inspection is dependent upon the type of installation, and shall be weekly, monthly, annually, 2 yearly and 4 yearly as prescribed in the relevant referenced Standard.

B. Maintenance

Automatic sprinkler systems and fire alarms shall be maintained in accordance with NZS 4541 or NZS 4515 as is appropriate for the installation.

C. Persons responsible

All inspections and maintenance shall be undertaken by independent qualified persons.

CS 2 AUTOMATIC FIRE DOORS

A. Inspections

Automatic fire doors shall be inspected for compliance with New Zealand Building Code C3. Inspections shall be monthly and annually and in particular shall check that:

- i) Doors are not damaged or obstructed.
- ii) Door leaves or shutters close and latch automatically from any position.
- iii) Double acting doors and double leaf doors stop with the leaves in line with the frame, and seals are in contact at meeting stile and/or frame.
- iv) Smoke control door seals are intact and provide continuous contact.
- v) Hardware is securely fixed.
- vi) No unauthorised hardware is attached.
- vii) Doors in exitways can be opened without keys to allow ready egress from the inside of the building at all times.
- viii) Door to frame clearances comply with NZS 4232.
- ix) Manufacturer's label is on door leaf or shutter and frame complies with C3/AS1.
- x) Electrical interlocks on hold-open or self-closing devices are operable.

B. Maintenance

Automatic fire doors shall be maintained to ensure continued compliance with New Zealand Building Code C3 and in particular with the requirements (i) to (x) above.

C. Persons responsible

Monthly inspection and maintenance including items (i) to (viii) above shall be undertaken by the owner.

Annual inspection and maintenance including all items (i) to (x) above shall be undertaken by independent qualified persons.

CS 3 EMERGENCY WARNING SYSTEMS

A. Inspections

Emergency warning systems shall be inspected for compliance with New Zealand Building Code F7 and C3. Content of the inspections for the different inspection frequencies shall be in accordance with the following referenced Standards:

- i) Automatic fire alarms - monthly, annually - NZS 4512.
- ii) Manual fire alarms - monthly - NZS 4561.
- iii) Emergency intercommunication systems - monthly, 6 monthly - AS 2220 and AS 1851.10.

B. Maintenance

Emergency warning systems shall be maintained in accordance with the appropriate Standard referenced above.

C. Persons responsible

All inspection and maintenance shall be undertaken by independent qualified persons.

CS 4 EMERGENCY LIGHTING SYSTEMS

A. Inspections

Emergency lighting systems shall be inspected to ensure compliance with New Zealand Building Code F6. Inspections shall be fortnightly or monthly (depending on type of installation), and annually, with inspection content being in accordance with NZS 6742 for the inspection frequency.

B. Maintenance

Emergency lighting systems shall be maintained in accordance with NZS 6742.

C. Persons responsible

The fortnightly or monthly inspection and maintenance shall be undertaken by the owner. Annual inspection and maintenance shall be undertaken by independent qualified persons.

CS 5 ESCAPE ROUTE PRESSURISATION SYSTEMS

A. Inspections

Escape route pressurisation systems shall be inspected for compliance with New Zealand Building Code C3. Inspections shall be monthly, 6 monthly, and 2 yearly. Inspection content shall be in accordance with AS 1851.6 or the designer's recommendations as is appropriate for the installation.

B. Maintenance

Escape route pressurisation systems shall be maintained in accordance with AS 1851.6 or the designer's recommended maintenance procedures, as is appropriate.

C. Persons responsible

All inspection and maintenance shall be undertaken by independent qualified persons.

CS 6 RISER MAINS

A. Inspections

Riser mains for Fire Service use shall be inspected for compliance with New Zealand Building Code C3. Inspections shall be:

- * For pumps - weekly if diesel powered, or monthly if electrically powered.
- * For hydrants - monthly.
- * For total installation - annually.

Inspection content shall be in accordance with NZS 4510.

B. Maintenance

Riser mains for Fire Service use shall be maintained in accordance with NZS 4510.

C. Persons responsible

The monthly inspection of hydrants to detect obvious faults or damage shall be undertaken by the owner. All other inspection and maintenance shall be undertaken by independent qualified persons.

CS 7 BACK-FLOW PREVENTERS

A. Inspections

Automatic back-flow preventers shall be repaired or replaced if they fail the inspection test.

B. Maintenance

Automatic back-flow preventers shall be repaired or replaced if they fail the inspection test.

C. Persons responsible

The above inspection and maintenance procedures shall be undertaken by independent qualified persons.

CS 8/1 PASSENGER CARRYING LIFTS

A. Inspections

Passenger carrying lift installations shall be inspected annually. Installations in existing buildings shall comply with the Power Lift Rules applicable at the time of installation. Where the installation complies with D2/AS1 the attached check list is a suitable basis for the inspection. If D2/AS1 has not been used the owner should provide and work to a similar check list, approved by the territorial authority.

Glazed liftwells shall be inspected in accordance with Power Lift Rule 12.6.2(g).

B. Maintenance

Lifts shall be maintained in accordance with the manufacturer's or supplier's recommendations.

Maintenance frequency shall reflect the rate of lift usage, but in no case shall it be less than six monthly. For heavy usage the maintenance could be fortnightly.

C. Persons responsible

The above inspection and maintenance procedures shall be undertaken by independent qualified persons.

**CHECK LIST SUITABLE FOR PASSENGER CARRYING LIFTS
COMPLYING WITH D2/AS1**

References are to rules in the Power Lift Rules 1989
* Indicates that the rule has been modified by D2/AS1

	Reference	Initials and comments
Machine room		
Visual inspection of machine beams and supports.	6.1, 6.4, 7.18*	
Check security of machine room door.	7.4.1*	
Check there are no obstructions or rubbish in the machine room.	7.2, 7.7*	
Check that lighting in machine room functions.	7.14	
Check ventilation in machine room functions.	7.17	
Check for the presence of circuit diagrams and manual.	24.25	
Check for presence and condition of any emergency hand winding equipment.	8.16	
Machinery		
Check condition of traction sheave, with special attention to the grooves.	18.1, 18.2	
Check condition of divertor sheave and other sheaves.	18.1, 18.2	
Check the condition and operation of the brake and the condition of brake linings.	8.11	
Check the running of machines, gearboxes, motors, generators, their bearings and any commutators.		
Lift well		
Inspect and test safety gear.	29*, 30, 70	
Visual check of liftwell enclosure.	12.1*, 12.4, 12.5	
Check hoisting ropes for equal tension, attachments and terminations correct and in good condition, number of broken wires within acceptable limits, fillings not being shed, all ropes of similar condition.	16, 17*	

	Reference	Initials and comments
Check for presence and legibility of rope data plates.	16.6	
Check that rope retainers are present and correctly fastened.	18.2	
Visual check of guide rails for straightness and security.	20*	
Lift pit		
Check there are no obstructions or rubbish in the pit.	11.3	
Check lighting in the pit functions.	11.6	
Check dryness of pit.	11.3, 11.9	
Visual check of buffer condition.	10	
Lift car exterior		
Check functioning of car external lighting.	22.20.1*	
Check condition of guides or rollers.	19.4, 20.15, 20.16	
Check function of car top controls.	25.3	
Lift car		
Observe door operation.	23	
Check operation of door protective devices.	23.6	
Check lift rating plate present.	21.3	
Check lift controls for correct operation.	25*	
Check correct operation of alarms and emergency telephone.	28.3*	
Check access to emergency trapdoor.	22.15	
Landings doors		
Check door locks	14.1, 14.4	
Check emergency opening facilities on landing doors.	14.5	
Hydraulic systems		
Visual check of the hydraulic system, including hoses, ram and cylinder.	34, 35, 37	
Check caisson for moisture.	34.3.7	
Check condition of flow restriction valve.	36.5	

	Reference	Initials and comments
Check operation of the manual lowering means.	36.6	
Operation		
Check operation of door locks, limit switches, slack rope switch, stop switches, trapdoor switch and other safety switches.	7.12, 11.7, 22.15(f), 24.7, 26.1*, 26.7*, 27, 61*	
Check functioning of lift car emergency lighting.	22.20.2.7*, 22.21	
Check for correct operation under fire conditions.	25.6*, 25.7	
Check correct operation of counterweight displacement detector.	25.9	
Check operation of load weighing device.	26.6*	
Lifts on access routes for people with disabilities		
Check floor levelling.	71.1*	
Check door dwell time.	71.3*	
Check controls position and distinction.	71.4*	
Check correct operation of landing indicators.	71.5*	
Check handrails.	71.6*	
General		
Visual check for any repairs or modifications carried out incorrectly.		
Check maintenance records are properly kept.		

Name of independent qualified person:

Address:

Date of Inspection:

CS 8/2 SERVICE LIFTS

A. Inspections

Service lift installations shall be inspected annually. Installations in existing buildings shall comply with the Rules for Power Lifts not exceeding 750 Watts (1.H.P): applicable at the time of installation. Where the lift installation complies with D2/AS2 the attached check list is a suitable basis for the inspection. If D2/AS2 has not been used the owner should provide and work to a similar check list approved by the territorial authority.

B. Maintenance

Lifts shall be maintained in accordance with the manufacturer's or supplier's recommendations but at least every six months.

C. Persons responsible

The above inspection and maintenance procedures shall be undertaken by independent qualified persons.

CHECK LIST SUITABLE FOR SERVICE LIFTS COMPLYING WITH D2/AS2

References are rules in The Rules For Power Lifts Not Exceeding 750 Watts (1.H.P)

* Indicates that the rule has been modified by D2/AS2

	Reference	Initials and comment
Machinery spaces		
Visual inspection of machine beams and supports.	3.1(a)	
Check security of machine room door.	3.2(f)*	
Clean the machinery space and clear out any rubbish.	3.2(f)*	
Check lighting in the machinery space functions.	3.2(d)	
Check the condition of the controller.		
Check the governor and any position devices.		
Check for the presence of circuit diagrams, manual and log book.		
Machinery		
Check sheaves, pulleys and drums with special attention to the grooves.	6.2	
Check the condition and operation of the brake and the condition of brake linings.	3.1(b)	
Check the running of the lift machinery.		
Check condition of drive belts.	3.1(c)	
Lift well		
Inspect and test any safety gear.	1.5	
Visual check of liftwell enclosure.	5	
Check hoisting ropes for equal tension, attachments and terminations correct and in good condition, number of broken wires within acceptable limits, filling not being shed, all ropes of similar condition, correct length of rope.	6.1.1	
Visual check of guide rails for integrity, straightness and security.	9.2*	
Check condition of guide shoes or rollers.		

	Reference	Initials and comment
Lift pit		
Remove any rubbish from the lift pit.		
Check lighting in the pit functions.	4.4(g)	
Check dryness of pit.	4.4(b)	
Visual check of buffer condition and other pit components.	4.3*	
Landing stations		
Check door locks.	8.3(a) and (b), 8.4	
Check lift controls for correct operation.		
Lift car		
Check car doors or safety barriers.		
Check lift car lighting.		
Hydraulic systems		
Visual check of the hydraulic system, including hoses, ram and cylinder.	12*	
Check caisson for moisture.		
Check operation of anti-creep device.	12.7	
Check the operation of control and auxiliary valves.	12.8, 12.9	
Operation		
Check operation of terminal stopping devices, slack rope switch and any emergency switch.	10	
Check landing door interlocks and opening of the door when the car is away from the landing.	8.4(a)	
General		
Visually check for any repairs or modifications carried out.		
Maintain full records of maintenance and inspections.		

Name of independent qualified person:

Address:

Date of Inspection:

CS 8/3 ESCALATORS AND MOVING WALKS

A. Inspections

Escalators and moving walks shall be inspected annually. Where the installation complies with D2/AS3 the attached check list is a suitable basis for the inspection. If D2/AS3 has not been used the owner should provide and work to a similar check list approved by the territorial authority.

B. Maintenance

Escalators and moving walks shall be maintained in accordance with the manufacturer's or supplier's recommendations.

C. Persons responsible

The above inspection and maintenance procedures shall be undertaken by independent qualified persons.

CHECK LIST SUITABLE FOR ESCALATORS AND MOVING WALKS

References are to clauses in EN115
 * Indicates that the rule has been modified by D2/AS3

	Reference	Initials and comment
Safety devices as appropriate.		
Switches to inspection doors.	5.1.3	
Stop switch in machinery space.	6.3.3*	
Overspeed protection.	12.5	
Emergency stop devices.	14.2.2.3.1	
Other stop switches.	14.2.2.1(a) to (h)	
Brakes	12.4, 16.2.1 (d)	
Driving elements for visible signs of wear and tear and for insufficient tension of belts and chains.	9.0*	
Steps , pallets or the belt for defects, true run and guidance.	8.0*	
Dimensions and tolerances.	0.1.2, 11.0	
Combs for proper condition and adjustment.	8.3, 11.3	
Balustrade interior panelling and the skirting.	5.1.5.4 to 5.1.5.6	
Handrails.	7.0*	

Name of independent qualified person:

Address:

Date of Inspection:

CS 9 MECHANICAL VENTILATION AND AIR CONDITIONING SYSTEMS

A. Inspections

Mechanical ventilation and air conditioning systems shall be inspected to ensure compliance with New Zealand Building Code C3 and G4. Inspection content and frequency shall be as follows:

- i) Mechanical ventilation and air conditioning systems, in accordance with the designer's recommendations for functional operation.

To ensure adequate chemical control is being achieved in cooling towers, bacteriological tests shall be performed for:

- * Legionella - six monthly.
- * Total bacterial count by dip slide methods - weekly, and by pourplate, spread plate or other approved method - monthly.

The total bacterial count shall not exceed 10^5 organisms/ml for safe operation.

- ii) Smoke control systems, monthly, six monthly and two yearly, as required by AS 1851.6, or in accordance with the designer's recommendations as is appropriate.

B. Maintenance

Mechanical ventilation and air conditioning systems shall be maintained in accordance with AS 1851.6 or the designer's recommended maintenance procedures as is appropriate to the installation. Specific design in accordance with G4/AS1 shall include a maintenance manual.

C. Persons responsible

All inspection and maintenance shall be undertaken by independent qualified persons.

CS 10 OTHER MECHANICAL, ELECTRICAL, HYDRAULIC OR ELECTRONIC SYSTEMS

Any other mechanical, electrical, hydraulic or electronic system whose proper operation is necessary for compliance with the New Zealand Building Code, shall have inspection and maintenance procedures determined by the designer.

The information shall be contained in a maintenance manual and include the nature and frequencies of inspection and the required maintenance procedures, and identify which activities may be undertaken by the owner, and which must be undertaken by independent qualified persons.

CS 11 BUILDING MAINTENANCE UNITS

A. Inspections

Building maintenance units shall be inspected 3-monthly, 6-monthly and annually. Inspections shall be in accordance with BS 6037:1981. The annual inspection shall include testing as described in Clause 19.3 of that document.

B. Maintenance

Building maintenance units shall be maintained in accordance with Clause 21 of BS 6037:1981, together with any additional requirements of the manufacturer.

C. Persons responsible

The 3-monthly inspections shall be undertaken by the owner. The 6-monthly and annual inspections, and all maintenance procedures shall be undertaken by independent qualified persons.

CS 12 SIGNS

A. Inspections

Signs shall be inspected to confirm compliance with New Zealand Building Code F8, and in particular that they are of the correct type, are present and in the right locations, and are legible.

Inspections of signs required for emergency purposes to be illuminated, shall (as for emergency lighting) be done monthly. For other signs inspections shall be done annually.

B. Maintenance

Signs shall be refurbished before they become illegible, and shall be replaced immediately should they be missing.

Defects in illuminated emergency signs shall be remedied immediately they are apparent.

C. Persons responsible

The above inspection and maintenance procedures shall be undertaken by the building owner.

CS 13 MEANS OF ESCAPE

A. Inspections

Means of escape shall be inspected:

- * Daily, when the building is in use, for crowd occupancies (purpose groups CL, CO and CM).
- * Monthly in other occupancies.
- * Annually for all occupancies.

Inspections shall check for compliance with New Zealand Building Code C2.

B. Maintenance

Means of escape shall be maintained at all times in a safe condition with particular attention to freedom from obstructions and from storage of combustibles, adequacy of handrails, proper operation of fire and smoke control doors, and ease of opening any doors leading into the escape route and at the final exit.

C. Persons responsible

Daily and monthly inspections shall be undertaken by the building owner, and annual inspections by independently qualified persons. Maintenance shall be undertaken by the owner.

CS 14 SAFETY BARRIERS

A. Inspections

Safety barriers shall be inspected quarterly to confirm that they are located as required, and are serviceable. The inspection shall check where applicable, for compliance with the Fencing of Swimming Pools Act 1987.

B. Maintenance

Safety barriers shall be maintained in a structurally sound condition and, where applicable, self-closing gates and other components required for the protection of children shall be kept operable. Defects shall be remedied immediately they are apparent.

C. Persons responsible

The above inspection and maintenance procedures shall be undertaken by the owner.

CS 15 ACCESS AND FACILITIES FOR PEOPLE WITH DISABILITIES

A. Inspections

Access or facilities for people with disabilities shall be inspected 6 monthly and annually to ensure compliance with New Zealand Building Code D1. The inspection shall check the adequacy of accessible routes from street level or car park to spaces within the building, with particular attention to:

Usability of accessible route to the principal entrance

Manoeuvre spaces in

- accessible routes
- accessible car parking spaces
- accessible toilet areas
- accessible laundry areas
- accessible kitchens

Handrails

Lighting levels

Door hardware

Grab rails in toilets

Lifts

- door opening times
- location and height of control panels
- handrails

B. Maintenance

Defects shall be remedied immediately they become apparent.

C. Persons responsible

The 6 monthly inspections and the maintenance procedures shall be undertaken by the owner. The annual inspections shall be undertaken by independent qualified persons.

CS 16 FIRE HOSE REELS

A. Inspections

Fire hose reels shall be inspected monthly and annually to ensure compliance with NZS 4503.

B. Maintenance

Defects in fire hose reels shall be remedied immediately they are apparent.

C. Persons responsible

Maintenance and monthly inspections shall be undertaken by the owner. Annual inspections shall be undertaken by an independent qualified person.

**LIST OF APPROVED
DOCUMENTS**

The following Approved Documents have been published by the Building Industry Authority. AS indicates an acceptable solution, VM indicates a verification method. The Approved Document for any topic includes both the acceptable solution and verification method (where one has been adopted by the Authority).

B STABILITY

B1	Structure		
	AS1	VM1	General
	AS2		Timber barriers
	AS3		Small chimneys
	AS4	VM4	Foundations

B2	AS1	VM1	Durability
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C FIRE SAFETY

C1	AS1	VM1	Outbreak of fire
C2	AS1		Means of escape
C3	AS1		Spread of fire
C4	AS1		Structural stability during fire

D ACCESS

D1	AS1		Access routes
D2			Mechanical installations for access:
	AS1		Passenger carrying lifts
	AS2		Domestic and service lifts
	AS3		Escalators and moving walks

E MOISTURE

E1	AS1	VM1	Surface water
E2	AS1		External moisture
E3	AS1		Internal moisture

F SAFETY OF USERS

F1	VM1		Hazardous agents on site
F2	AS2		Hazardous building materials
F3	AS1		Hazardous substances and processes
	AS1		Dangerous goods
F4	AS1		Safety from falling
F5	AS1		Construction and demolition hazards
F6	AS1	VM1	Lighting for emergency
F7	AS1		Warning systems
F8	AS1		Signs

G SERVICES AND FACILITIES

G1	AS1		Personal hygiene
G2	AS1		Laundering
G3	AS1		Food preparation, storage and utensil washing
G4	AS1	VM1	Ventilation
G5	AS1		Interior environment
G6	AS1	VM1	Airborne and impact sound
G7	AS1	VM1	Natural light
G8	AS1	VM1	Artificial light
G9	AS1	VM1	Electricity
G10	AS1	VM1	Piped services
G11	AS1		Gas as an energy source
G12	AS1	VM1	Water supplies
G13			Foul water:
	AS1	VM1	Sanitary plumbing
	AS1	VM2	Drainage
G14	AS1	VM1	Industrial liquid waste
G15	AS1		Solid waste
H1	AS1	VM1	Energy efficiency

INDEX

INDEX

This is a complete index for the Building Code and Approved Documents.

A

Access

see **Access Routes**, and **Mechanical Installations for Access**

Access chambers

see Maintenance access to drains

Access points

see Maintenance access to drains

Access Routes **D1/AS1** 1.1.5, 1.2.2, 1.4.1, 1.5.1, 1.5.3(a), 1.5.4, 1.5.5, 1.6.1, 1.7.1, 1.8.1, 2.0, 5.1.3, 10.1.4, 10.2.1(a), 10.2.2, Figures 27, 33
see also Accessible routes, Activity space, Doors, Escape routes, Handrails, Height clearances, Mechanical Installations for Access, People with Disabilities, Ramps, Stairs, Obstructions, Vehicles, Wheelchairs
access to buildings **D1.1**, **D1.3.1(a) and (b)**, **D1.3.3(a) and (b)**
access within buildings **D1.1**, **D1.3.1(c)**, **D1.3.3(c)**, **D1.3.5**
corridors **D1.3.1(c)**, **F6.3.1**
level access routes **D1/AS1** 2.0,
protection from falling **D1/AS1** 2.3
slip resistance **D1/AS1** 2.1, 2.1.1
width **D1/AS1** 2.2
service and maintenance personnel **D1/AS1** 11.0.4

Access to facilities **D1.3.3(c)**, **G1.3.5**; **G3/AS1** 1.5.1, Figure 1

Accessible accommodation units **D1/AS1** 1.1.3, 9.0, 9.1, 9.1.1, 9.2.1, Table 8
see also People with disabilities
bedrooms **D1/AS1** 9.2.1(c)
dining areas **D1/AS1** 9.2.1(c)
facilities **D1/AS1** 9.2
kitchens **D1/AS1** 9.2.1(b)
..... **G3/AS1** 1.5.2, Figure 1
laundry **G2/AS1** 1.2, Figure 2
sitting areas **D1/AS1** 9.2.1(c)
toilets and baths **D1/AS1** 9.2.1(a); **G1/AS1** 2.3.5, 3.5, Figures 4, 5, 6, 7, 8 Table 2

Accessible routes **D1.3.3**, **D1.3.4**; **D1/AS1** 1.1, 1.1.2, 1.1.3, 1.5.5(b), 2.2.1, 2.3.1, 7.0.1, 7.0.2, 7.0.6, 10.1.3, 11.0.1, Figure 27
access to performance areas **D1/AS1** 8.2

Activity space **D1.3.2(a)**, **D1.3.4(b)**, **G5.1(b)**, **G5.2.1(b)**, **G5.3.3**

Aged, homes for

see Old People's Homes

Air

see also **Ventilation**

changes **G4/VM1** 1.0.1
ducts **C3/AS1** 2.11.4, 5.6.1, 7.1.1(b), 8.4, Table 4
purity **G4/VM1** 2.0.1

Airborne and Impact Sound **G6**
impact insulation class (IIC) **G6.3.2**
noise transmission between
abutting occupancies **G6.1**, **G6.2**
sound insulation tests **G6/VM1** 2.0
sound transmission class (STC) **G6.3.1**, **G6/VM1** 1.0

Alarm systems **C2/AS1** 3.3.2, 7.2.9, 8.2.1; **C3/AS1** 2.2.3(f), 2.13.3(b); 7.1.1(b), 9.1.2;
C4/Annex Table B1, B3.1, D1
fire alarm systems **C4/Annex** B3.2
automatic
heat and smoke detectors **C4/Annex** B3.3
Type 5
heat detectors **C4/Annex** B3.3 Type 3,
Type 4, Type 5, Type 6, Type 9
smoke detectors **C4/Annex** B3.3 Type 4,
Type 5, Type 7, Type 9
manual **C4/Annex** B3.3 Type 6, Type 7
monitored **C4/Annex** B3.3
Type 2, Type 3(b)
non-monitored **C4/Annex** B3.3 Type 1,
Type 3(a)
fire sprinkler systems
automatic **C4/Annex** B3.3 Type 6, Type 7
with smoke detectors **C4/Annex** B3.3
Type 7
voice communication systems **C4/Annex** B3.3
Type 8

Alternative solutions

accessible routes **D1/AS1** 11.0
bedding and backfilling drains **E1/AS1** 3.9.8;
G13/AS2 8.2.6
gas as an energy source **G11/AS1** 9.0
gas fired engines **C1/AS1** 4.0
gas fuel appliances **C1/AS1** 4.0; **G4/AS1** 3.0
gas reticulation **G10/AS1** 5.0
laundry tubs **G2/AS1** 1.0.3
low pressure tank supply **G12/AS1** 4.6
open vented storage water heaters **G12/AS1** 4.6
solid waste storage **G15/AS1** 3.1
storage water heaters
seismic restraint **G12/AS1** 4.10.4
thermal resistance **E3/AS1** 1.1.5
valve vented storage water heaters **G12/AS1**
4.7
water tightness testing of UPVC **G12/AS1** 8.0.2

Ancillary Buildings **A1 8.0, D1.2.1, D1.3.2(h), D1.3.3, G1.3.5, G8.2, G12.3.0**

Apartments
see **Housing**, multi-unit dwellings

Appliances
see also Sanitary appliances
 combustion appliances **C1.2**
 fixed appliances **C1.2, C1.3.1, C1.3.2**

Aprons **C3/AS1 4.1.2(e)**, Figure 8

Artificial Light **C2/AS1 7.5; D1/AS1 1.5.4, 1.8, 4.5; G8**
 adequate lighting **G8.2**
 minimum illuminance ... **D1/AS1 4.5.1**, Table 7; **G8.3**
 wattage required **D1/AS1 4.5.1; G8/AS1 1.0.1**

Asbestos
see **Hazardous Building Materials**

Assembly care buildings
see **Communal Non-Residential Buildings**

Assembly service buildings
see **Communal Non-Residential Buildings**

Atria **C3/AS1 9.2.1**

Auditoriums **C3/AS1 2.5.3**

Automatic extinguishers **G11/AS1 6.0**

B

Backflow prevention
see protection of water supply

Balconies **C2/AS1 4.4.6, 5.4.1(b), 5.4.3, 5.4.4(c)**,
 Figures 20 and 24; **C3/AS1 4.7.1**

Banks **D1.3.4(c)(iv)**
see also **Commercial Buildings**

Barriers **D1/AS1 1.7; F4.3.1, F4.3.4, F4.3.5; F5.3.2, F5.3.4, F4/AS1 1.0, 2.0 & 3.0; F5/AS1 1.0**
see also **Access Routes, Handrails, Safety from Falling**, and Timber barriers
 accessible route **D1/AS1 2.3.1, 5.1.2**, Figure 19, 20 and 21
 balconies with fixed seating .. **F4/AS1 1.2.4**, Figure 1
 cavity barriers **C3/AS1 7.0.1, 7.2, 7.3.1**, Figure 16
 construction **C3/AS1 7.4**
 construction **F4/AS1 1.2, 2.0.1**
 fences **F5/AS1 1.1, 1.1.2**
 around water hazards **F5/AS1 1.2**
 flame barriers **C3/AS1 2.15.1(b), 7.3.1(c)**
 for specific hazards **F5/AS1 1.0.2**
 gantries **F4/AS1 1.3 F5/AS1 1.1.1**
 heights **F4/AS1 1.1**
 hoardings **F5/AS1 1.1, 1.1.3, 1.1.5**
 viewing windows **F5/AS1 1.1.4**
 panels in barriers **F4/AS1 1.2.3**

safety enclosures for ladders **D1/AS1 5.1.2**,
 Figures 21, 22

scaffolding **F4/AS1 2.0.2**

toeboards **F5/AS1 1.4**

types of barriers **F5/AS1 1.0.3**

Basements **C2/AS1 2.3.2(e), 2.9, 5.2, 7.2.11(b)**,
 Figure 5; **C4/Annex B2.9; E2/AS1 5.0**, Figure 6
 drainage **E2/AS1 5.2**
 vapour barriers **E2/AS1 5.1**
see also Floors, basement floors

Basins **E3/AS1 3.2.6**, Figure 8; **G1/AS1 3.3**,
 Figure 7, Table 1; **G13/AS1 2.3.2(d), 5.4.2(b)**,
 Figure 9, Tables 1 and 5

Baths **E3/AS1 3.2, 3.2.6**, Figure 8;
G1/AS1, Table 1; **G13/AS1** Tables 1 and 5

Bearing pressures **B1/VM4 4.0, 4.1, 4.1.1, 4.1.2,**
 4.1.3, 4.2, 4.2.2, Table 1
 allowable bearing pressures **B1/VM4 4.1, 4.1.2,**
 4.1.3, 4.2.1, 4.2.2, Table 1
 determination of **B1/VM4 4.2**
 ultimate bearing pressures **B1/VM4 4.1, 4.1.1, 4.1.2,**
 4.1.3, 4.2.1

Bedrooms
see Habitable Spaces

Beds **C4/Annex A3.6**

Bidets **G1/AS1 2.4; G13/AS1 5.4.2(b)**, Figure 9,
 Tables 1 and 5

Boarding Houses
see Communal Residential Buildings

Boundary
 notional boundary **C3/AS1 4.3.3**
 relevant boundary **C3/AS1 3.1.2, 3.3.1(b),**
 3.3.2(a), 3.3.7, 3.5.1(b), 3.5.2(a), 3.6.6(a), 4.1.2(d),
 4.2.1, 4.3.1, 4.3.2, 4.3.3, 4.6.1, 4.7.2(b), 4.7.3,
 4.8.6, 4.9.2, 8.1.6, Tables 1 and 2; **C4/Annex**
B2.3.1, C1.2, C1.3, C1.5, C1.9(b), C2.1, C3.1,
C4.1, C5.1, C5.2, C5.3.1, C5.3.2, C5.3.3, C5.4.1,
C6.1, C6.3, C6.4(c), Figures C5 and C6,
 Tables C1, C2 and C3

Bridges
see Ancillary Buildings

Building elements **B1.2, B1.3.1, B1.3.2, B1.3.3,**
B2.3, C3.3.1, E2.3.2, E2.3.3, E2.3.4, E2.3.5, E2.3.6,
E3.2, E3.3.5, F3.3(f), G3.3.2(b) and (c), G6.2, G9.3.1(a)
and (e), H1.3.2 B1/VM4 1.0.1
see also Floors, Ceilings, Roofs
 elements in contact with the ground **E2.3.3**
 primary elements **C3/AS1 2.1.8, 2.2.3(d), 2.2.4,**
 2.15.1, 2.15.3, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1(d),
 3.3.2(d), 3.3.5, 3.3.8, 3.4.3, 3.6.1, 3.6.4, 3.6.7,
 3.8.1(a)(b), 4.1.2(b), 4.2.4(a)(b), 4.2.6, 4.5.2, 4.8.4,
 4.8.5(a); **C4/Annex E7.1**

- requiring noise control **G6/AS1** 1.0.2, Figure 1
 secondary elements **C3/AS1** 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1(d), 3.3.8, 3.6.1, 3.6.7, 3.8.3, 4.1.2(b), 4.2.2(a)(b); **C4/Annex** E7.1
 surface finishes **C3.3.1**
 suspended flexible fabrics **C3/AS1** 8.0, 8.3, Table 4
- Buildings** **B1/VM4** 1.0.1, 2.1.1(c), 4.1.1, 7.3.4, 7.3.5, **B1/AS3** 1.9.2, 1.9.4, **B1/AS4** 1.0.1; **C4/Annex** A1.1; **D1/AS1** 1.1, 1.1.2, 1.1.4, 10.1.4, 10.4.1 **E1/AS1** 1.0.1, adjacent buildings **C3/AS1** 1.1(b), 2.1, 2.13.4, 3.1.1(c), 3.3.2(e), 4.1.1(b), 4.3.1, 4.3.2, 4.4.1(a)(b), 4.5, Figure 10
 air supported buildings **C3/AS1** 8.3.3
 building height **C2/AS1** 2.3.4, 2.6.1, 4.3(b), 5.1.1(a), 5.3.1, 5.4.3(a), 5.4.4(a), 7.2.11(c), 7.3.1, Figure 22; **C3/AS1** 2.8.11(b)(c), 2.11.2, 3.3.1(b), 3.3.2(a), 3.6.6(c), 4.1.3, 4.9.2, 9.1.2, Tables 1 and 2; **C4/Annex** B1.2, B2.7.1, B2.9.1, Table B1, C1.4, C1.4(c); **C2.3.2**
 building separation **C3/AS1** 4.1.2(a), 4.3; **B1.3.3(o)**
 intended life
 see **Durability**
 intended use
 see **Intended Use**
 masonry buildings **B1/AS3** 1.1.1, **B1/AS4** 1.0.1
 multi-storey buildings **C3/AS1** 2.1.3; **C4/Annex** A2.5, **C4/Annex** Table B1
 open sided buildings **C3/AS1** 4.7.2
 single storey buildings **C4/Annex** Table B1
 siteworks
 see **Structure**
 three floor buildings **C3/AS1** 5.1.4(b); **C4/Annex** Table B1
 timber framed buildings **B1/AS3** 1.1.1, **B1/AS4** 1.0.1
 two floor buildings **C3/AS1** 2.2.1(a), 5.1.4(b); **C4/Annex** Table B1
- Building papers** **C3/AS1** 2.1.2, 2.1.9(a), 2.2.4(b), 2.15.1, 2.15.3, 3.2.1, 6.1.1; **E2/AS1** 1.3.1(c), 2.0.1(c), 2.3.2(b)(g), 2.3.4(a)(b), 2.4, fire resistance rating **C3/AS1** 3.6
- Building performance index** **H1/VM1** 1.0
 housing **H1/VM1** 1.1 **H1/AS1** 1.0
 other buildings **H1/VM1** 1.2
- Building site** **E1/VM1** 1.0, 1.0.1, 1.1.1, 1.1.3, **AS1** 1.0.1
 evaluation **E1/VM1** 1.1.2,
- C**
- Camping grounds** **G1/AS1** 3.4.2; **G2.2**, **G2.3.4**, **G2/AS1** Table 1
 see also **Communal-Residential Buildings**
- Catchment**
 characteristics **E1/VM1** 1.1.1
- Car parking buildings**
 see **Commercial Buildings and vehicles**
- Car-ports**
 see **Outbuildings**
- Cavity barriers** **C3/AS1** 7.0.1, 7.2, 7.3.1, Figure 16
 construction **C3/AS1** 7.4
- Ceilings** **C3.3.1**, **C3/AS1** 2.15.1, 2.16.2, 7.1.1(d), Table 4; **G3/AS1** 2.1.2, 2.2.3, **G6.3.1**
 floor/ceiling assemblies **G6/AS1** 1.0.3, Figure 3
 surface finishes **C3.3.1**
- Centres for handicapped persons**
 see **Communal Non-Residential Buildings**
- Child care centres**
 see **Early childhood centres and Communal Non-Residential Buildings**
- Children** **B1/AS2** 1.0.2; **C2/AS1** 5.1.1(e),(d); **D1.3.2(h)**, **F4.3.3**, **F4.3.4(f)**, **F4.3.5(a)**, **F4/AS1** 1.2.1; **F5.2(d)**, **F5.3.3**, **F5/AS1** 1.0.2; **G15.3.2(g)**
 see also **Early Childhood Centres**
- Chimneys** **B1/AS1** 1.2, 8.0, **B1/AS3** 2.1 **C1/AS1** 1.0, 1.1, Figure 1, Table 1
 bases **B1/AS3** 1.1.3(a), 1.6.1, 1.9.4(b)
 bracing units **B1/AS3** 1.9, 1.9.3, 1.9.6, Table 2
 breasts **B1/AS3** 1.5, Table 1
 brick chimneys **B1/AS3** 1.1, 1.1.3(a)(b), 1.2.1(a), 1.6.2(a), 1.7.1, 1.7.6, 1.8.1, 1.8.5(a), Figures 2, 3, 4 and 7, Table 1
 cantilever height **B1/AS3** 1.1.2
 clearances **C1/AS1** 1.4, Figure 3
 concrete chimneys **B1/AS3** 1.1.1, 1.1.3(a)(c), 1.2.1(b)(c), 1.6.2(a)(b), 1.7.1, 1.7.13, 1.8.2, 1.8.5 (b), Figures 4 and 5, Table 1
 concrete masonry **B1/AS3** 1.8.4
 depth **B1/AS3** 1.1.3
 floor brackets **B1/AS3** 1.7.1, 1.7.3, 1.7.4, 1.7.5, 1.9.4(b)(c), Figure 6
 flues **C1/AS1** 1.1.1(d), 1.2, Figure 2
 foundations **B1/AS3** 1.1.2, 1.1.3(a), 1.3, 1.3.1, 1.3.2, 1.3.3, 1.7.4, 1.7.5, Figure 1
 foundation slabs **B1/AS3** 1.1.2, 1.3.2, 1.7.4, 1.7.5
 gathers **B1/AS3** 1.6.1, 1.6.2, 1.7.5
 hearths **B1/AS3** 1.4, 2.2, 2.2.1, 2.2.2, 2.2.3; **C1/AS1** 1.3
 hearth slabs **B1/AS3** 2.2, 2.2.1, 2.2.2, 2.2.3
 height **B1/AS3** 1.1.2
 liners **B1/AS3** 1.1.4
 lintels **B1/AS3** Table 1
 packers **B1/AS3** 1.7.2, 1.7.6(c)
 precast pumice concrete chimneys **B1/AS3** 1.1.1, 1.1.3(a)(c), 1.2.1(c), 1.6.2(b), 1.7.1, 1.7.13, 1.8.3, 1.8.3(c), 1.8.5(c), Figures 5 and 7, Table 1
 compressive strength **B1/AS3** 1.8.3(c)
 construction of **B1/AS3** 1.8.3
 restraint **B1/AS3** 1.7, 1.7.1, 1.7.13, Figures 6 and 7
 roof brackets **B1/AS3** 1.7.1, 1.7.3, 1.7.4, Figure 6
 roof ties **B1/AS3** 1.7.5
 stacks **B1/AS3** 1.1.2, 1.6.1
 structural diaphragms **B1/AS3** 1.9.5

wall thicknesses **B1/AS3** 1.2, 1.2.1
 wall ties **B1/AS3** 1.7.5, 1.7.7, 1.7.8
 closely spaced wall ties ... **B1/AS3** 1.7.5, 1.9.4(c)
 width **B1/AS3** 1.1.3

Churches
 see **Communal Non-Residential Buildings**

Cinemas **G5.3.5**
 see also **Communal Non-Residential Buildings**

Classified uses **A1**

Cleaners sinks **G13/AS1** 2.3.1, Tables 1 and 5

Clubrooms
 see **Communal Non-Residential Buildings**

Cold water expansion valves **G12/AS1** 4.2.1(b), 4.3, 4.3.3, 5.2.3(b), Figure 12, Table 4
 installation **G12/AS1** 4.3.4
 relief discharge pipes **G12/AS1** 4.3.5(b)(iii), 4.3.6, Figures 12 and 15

Colleges
 see **Communal Non-Residential Buildings**

Commercial Buildings **A1** 5.0, **E3.3.1**, **G3.2.1**, **G3.3.1(a) and (b)**, **G3.3.2(b)**, **G3.3.6**, **G5.2.1(c)**, **G5.3.4**, **G8.2**, **G9.3.4** **G3/AS1** 2.0.1

Communal Non-Residential Buildings **A1** 4.0, **E1.3.2**, **E3.3.1**, **G5.2.1(c)**, **G5.3.4**, **G5.3.5**, **G8.2**, **G9.3.4**
 auditoriums
 open air auditoriums **C2/AS1** 6.2
 assembly care **A1** 4.0.3
 assembly service **A1** 4.0.2
 halls **G5.3.5**
 places of assembly **D1/AS1** 8.0
 non-residential accommodation **C2/AS1** 5.3

Communal Residential Buildings **A1** 3.0, **G5.2.1(c)**, **G5.3.4**, **G8.2**, **G9.3.4** **D1/AS1** 9.0, 9.1.1
 community care **A1** 4.0.2
 community service **A1** 3.0.2
 residential accommodation **C2/AS1** 5.4

Communes
 see **Housing**, group dwellings

Community care buildings **G12/AS1** 3.1.1
 see also **Communal Residential Buildings**

Community service buildings **AS1** 1.1.3
 see also **Communal Residential Buildings**

Computer centres
 see **Commercial Buildings**

Concealed spaces **C3/AS1** 7.0
 exceptions **C3/AS1** 7.3
 extensive voids **C3/AS1** 7.1
 within firecells **C3/AS1** 7.1.1, Figure 14
 see also **External Moisture**, **Internal Moisture** and **Spread of Fire**

Concealed works **B1/VM4** 2.1.1(b)

Condensation
 see **Internal Moisture**

Concrete
 see **Design**, concrete

Construction
 moisture **E2/AS1** 6.0
 exterior joinery **E2/AS1** 6.0.2(b)
 reconstituted wood products **E2/AS1** 6.0.2(c)
 timber framing **E2/AS1** 6.0.2(a)
 timber weatherboards **E2/AS1** 6.0.2(b)
 residential construction **B1/VM4** 3.1.1
 sites **F5/AS1** 1.0
 barriers **F4/AS1** 2.0

Construction and Demolition Hazards **F5**
 areas accessible to the public **F5.3.2**
 barriers **F5.3.2**, **F5.3.4**
 demolition sites **F5/AS1** 1.0
 entry of children **F5.2d**, **F5.3.3**
 falling objects **F5.2(a) and (b)**, **F5.3.1**
 lifting equipment **F5.3.4**

Contaminants
 see **Hazardous agents on site**, contaminants

Corridors **C2/AS1** 3.3.2, Figure 15
 see also **Access Routes**

Corrosives
 see **Hazardous Substances and Processes**, Class 8

Creep
 see **Structure**, loads

Cross connections
 see **Protection of water supplies**

Cyclic Loads
 see **Structure**, loads

D

Dampness
 see **External Moisture** and **Internal Moisture**

Dams
 see **Ancillary Buildings**

Dangerous Goods
 see also **Hazardous Building Materials** and **Hazardous Substances and Processes**
 compounds **F3/AS1** 4.2
 construction **F3/AS1** 4.2.1
 drainage **F3/AS1** 4.2.4
 isolation distances **F3/AS1** 4.5, Table 1
 storage in bulk **F3/AS1** 4.2.3
 storage not in bulk **F3/AS1** 4.2.2
 depots **F3/AS1** 1.2, 1.5.1, 1.6.2, 3.6(c) 4.1, 4.2.1(a),(b), 4.5.2, 4.8, 4.8.2, 6.2.2,

- ignition hazards **F3/AS1** 2.1.2
- isolation distances .. **F3/AS1** 6.2.2(c)(d), 6.2.3(b),
Tables 5 and 6
- type A **F3/AS1** 1.2, 4.3, 4.5.1(b)(c), 5.1.1,
Tables 1, 2
- type B **F3/AS1** 1.2, 4.5.1(b)(c), 4.5.4(b), 5.1.1
- type B1 **F3/AS1** 1.2, 3.2.1, 3.3.1, 4.3, 6.2.2(ii)
Tables 1, 2
- type B2 **F3/AS1** 1.2, 3.4.1, 3.6.1(b), 4.3
Tables 1, 2
- type C1 **F3/AS1** 1.2, 3.3.1, 5.1.1,
Tables 1 and 2
- type C2 **F3/AS1** 1.2, 3.3.1, 4.3, 4.5.1(b), 6.2.2(i)
6.2.3(a), 5.1.1, Tables 1 and 2
- type D ... **F3/AS1** 1.2, 4.3, 4.5.1(b) 4.6.2(a), 5.1.1
Tables 1 and 2
- type E **F3/AS1** 1.2, 4.5.4(a), 4.5.5(c), 4.7.1,
4.7.12
- type F **F3/AS1** 1.2, 4.4, 4.7.1
- type G **F3/AS1** 1.2, 4.4
- type H **F3/AS1** 1.2, 4.7.1, 5.1.1
- types of construction **F3/AS1** 1.2
- workrooms **F3/AS1** 1.2, 1.3(d), 1.4.1, 1.4.2, 1.5.1,
1.5.2, 1.6.2, 4.0.1(b), 4.2.1(b), 4.4.2, 4.7, 4.7.3,
4.7.5, 4.8.5
- escape routes **F3/AS1** 4.7.6
- storage capacity **F3/AS1** 4.7.4
- storage capacity inside workroom **F3/AS1**
4.7.8
- storage capacity outside workroom **F3/AS1**
4.7.9
- Day care institution
see **Early childhood centres and Communal
Non-Residential Buildings**
- Dead ends **C2/AS1** 2.3.2(b), 2.5.1, 3.4, 3.4.3, 3.4.4,
3.4.5, 4.2.3, 4.2.4(b), 4.2.5, 5.1.1(b)(c), 5.4.1(c),
7.2.10(b), Figure 19, Table 3
- Deflections
see **Structure**
- Demolition
see **Construction and Demolition Hazards**
- Dental surgeries **D1.3.4(c)(iv)**,
see also **Commercial Buildings**
- Design loads
see **Structure**, loads
- Detached dwellings
see **Housing**
- Differential Movement
see **Structure**, loads
- Disabled persons
see **People with disabilities**
- Discharge pipes **G3/AS1** 1.1.5; **G13/AS1** 2.2.1(b)
2.3.2(c), 3.2.5(a), 3.2.6(b), 4.0, Figure 2,
Tables 4 and 6
see also **Pipes**
- developed lengths **G13/AS1** 2.3.1
- diameters **G13/AS1** 4.2.1, 4.3
- fixture discharge pipes **G13/AS1** 1.0.3, 3.1.2,
3.2.4(a)(b), 4.3.2, 5.1.1(a), 5.3.1, 5.4, 5.4.2, 5.6.1,
Figures 4 and 9, Table 6
- gradient **G13/AS1** 4.2
- Discharge stacks **G13/AS1** 2.2.1(b), 3.2.2, 3.2.6(a),
3.2.6(b), 5.4.2, Figures 5, 6 and 9, Table 3, **G13/AS2**
6.1.5, Figure 4,
see also **Discharge pipes**, and **Pipes**
- branch connections **G13/AS1** 3.2.5, Figure 7
- discharge stack vents **G13/AS1** 3.2.3(a), 3.2.4(b),
3.2.6(b), 5.2.1(c), Table 2
- Discharge units **G13/AS1** 4.3.3(a), Tables 4 and 5,
G13/AS2 Table 2
- Dishwashers **G13/AS1** 2.3.2(a), Table 5
- Domestic buildings
see **Housing**
- Doors **C2/AS1** 2.3.5(b), 2.4.4, 7.2; **D1.3.4(f)**;
D1.3.1(c), **D1.3.3(n)**, **D1.3.4(f)**, **D2.3.5(c)**, **F5.3.2(d)**;
D1/AS1 7.0, Figure 27; **E2/AS1** 3.0.1, 3.0.2; **F3/AS1**
1.3/3.2.2, 4.4.2, 4.5.4, 4.6.2(d), 4.7.5, 4.7.8(c), 4.7.12
- accessible doors **D1/AS1** 7.0.3, 7.0.4, 7.0.5
- automatic doors **C2/AS1** 7.2.1, 7.2.7, Figure 28
- degree of opening **C2/AS1** 7.2.5, Figure 27
- direction of opening **C2/AS1** 7.2.3
- door fastenings **C2/AS1** 7.2.1
- doorsets **C3/AS1** 2.1.4(a), 2.1.5, 2.4.1, 2.4.4(b),
5.1.2, 5.1.4, 5.5.2, Figure 12
- fire doors fire doors
C2/AS1 2.3.1, 7.2.11, 7.2.12, 7.6.1, Figures 32, 33
and 34; **C3/AS1** 5.1.2(a)(c), 5.2, 5.5.2; **C4/Annex**
B3.3 Type 12; **F3/AS1** 1.3.2
- glazing **C2/AS1** 7.4.4; **C3/AS1** 5.3
- identification **C3/AS1** 5.2.2
- installation **C3/AS1** 5.2.1
- frameless glass doors **D1/AS1** 7.0.7
- glazing **D1/AS1** 7.0.4, Figure 28
- handles **D1/AS1** 7.0.5
- hold open devices **C2/AS1** 3.3.2, 7.2.9
- lobby doors **D1/AS1** 7.0.1
- locking devices **C2/AS1** 7.2.2
- revolving doors **D1/AS1** 7.0.6, Figure 29
- smoke control doors ... **C2/AS1** 2.3.1, 2.7.3, 3.2.1(b),
3.3.2, 4.2.4, 4.2.6, 4.3(d), 5.4.3(c), 5.4.4(b), 7.2.10,
7.2.11, 7.6.1, 8.3.1, Figures 30 and 31; **C3/AS1**
2.8.5, 5.1.2.(b), 5.2, 5.2.1
- glazing **C3/AS1** 5.3; **C4/Annex** **B3.3** Type 12
- identification **C3/AS1** 5.2.2
- installation **C3/AS1** 5.2.1
- turnstiles **C2/AS1** 2.3.5(e), 7.2.7, **D1/AS1** 7.0.6
- vision panels **C2/AS1** 7.2.6
- width of opening **C2/AS1**
- visibility **D1/AS1** 7.0.4
- width **D1/AS1** 7.0.3
- Downpipes **E1/AS1** 3.4.2(b), 3.7.8, 5.1.1, 4.0
installation **E1/AS1** 4.3
- materials **E1/AS1** 4.1, Table 4
- sizing **E1/AS1** 4.2, Table 5

- Drainage system
see Drains
- Drains **B1/VM1** 9.0, **B1/AS1** 6.0; **C3.3.10(c)**, **G13.2**, **G13.3.1a**, **G13.3.2**, **G13.3.3**, **G13/AS1** 2.2.1(a)(b), 2.4.2, 3.1.2(a)(b), 5.4.2, 5.6.2, Figure 9, **G13/AS2** 1.0, 1.0.2, 11.1.1; **G15.3.3**
see also Maintenance access to drains
alignment
see Drain, layout
bedding and backfilling **E1/AS1** 3.9, 3.9.2, Figure 13; **G13/AS2** 8.0, 8.2.1, Figure 6
materials **E1/AS1** 3.9.5; **G13/AS2** 8.2.3
placing and compacting **E1/AS1** 3.9.6; **G13/AS2** 8.2.4
proximity to buildings **E1/AS1** 3.9.7, Figure 14; **G13/AS1** 8.2.5, Figure 7.
trench slope **E1/AS1** 3.9.3
trench width **E1/AS1** 3.9.4; **G13/AS1** 8.2.2
- bends **G13/AS2** 2.1
bubble up chamber system **E1/AS1** 3.4.2, Figures 6 and 7
connections **G13/AS2** 2.2, Figure 1
construction **G13/AS2** 8.0
diameter
see Drains, sizing
disused drains **G13/AS2** 11.0
downstream water systems **E1/VM1** 1.1.2(b), 1.1.3, 1.1.4(a)
drain vent pipes **G13/AS2** 6.1.3, 6.1.4, 6.2, Figure 5
drainage access area **G13/AS2** 10.2, Figure 12
existing water systems **E1/VM1** 1.1.2(a)
gradient **E1/AS1** 3.3.1, 3.7.3(b); **G13/AS2** 5.0, 10.1.1
minimum gradient **E1/AS1** 3.4, Table 2; **G13/AS2** 5.2.1, Table 1
- intake structures
primary **E1/VM1** 1.1.4(b)
secondary **E1/VM1** 1.1.4(b)
see also Drains, sumps
surface water inlets **E1/AS1** 3.6
joints **E1/AS1** 3.5, Table 3; **G13/AS2** 7.0, 7.2, 9.3.1(c), 10.1.2
layout **E1/AS1** 3.3.1, 3.7.3(a), Figures 4 and 5; **G13/AS2** 2.0, 10.1
materials **E1/AS1** 3.1, Table 1; **G13/AS2** 7.0, 7.1, Table 3
outfalls **G13/AS2** 9.3.1(a)
proximity to buildings **G13/AS2** 8.2.5, Figure 7
secondary flow path **E1/VM1** 1.1.2(c), 1.1.4, **E1/AS1** 1.0.1
sizing **E1/VM1** 3.0, **E1/AS1** 3.2, Figure 3; **G13/AS2** 5.0, 5.3, Table 1
energy dissipation structures **E1/VM1** 3.4
energy losses **E1/VM1** 3.3, Figure 5
hydraulic design **E1/VM1** 3.2
air entrainment **E1/VM1** 3.2.2, 3.2.3,
minimum size **E1/VM1** 3.1
minimum velocity **E1/VM1** 3.5
pipe size decrease **E1/VM1** 3.3.3
pipe size increase **E1/VM1** 3.3.2
soak pits **E1/VM1** 3.6
sumps **E1/AS1** 3.6.1, 3.6.2, Figures 8 and 9
under buildings **E1/AS1** 3.7.6; **G13/AS2** 10.0
upstream water systems **E1/VM1** 1.1.2(c), 1.1.3
ventilation **G13/AS2** 6.0, Figure 4
watertightness (leakage tests) **E1/VM1** 4.0, **E1/AS1** 3.8; **G13/AS2** 12.0
high pressure air test **E1/VM1** 4.3 Table 5
low pressure air test **E1/VM1** 4.2
water test **E1/VM1** 4.1
- Draught diverters **G4/AS1** 2.3.2
- Drinking fountains **G13/AS1**, Tables 1 and 5
- Durability B2; B2/VM1** 1.0
code compliance certificate **B2.3**
intended life **B1.3.1**, **B2.1**, **B2.3**, **H1.2**
5 year durability **B2 AS1** Table 1
15 year durability **B2/AS1** Table 1
specified intended life **B2.3**
- Dynamic loads
see **Structure**, loads
- E**
- Early childhood centres **G2.2**, **G3.2.1**, **G3.3.1(a)** to (d), **G5.2.1(a)**, **G5.3.1**, **G5.3.2**, **G7.2**, **G12.3.4**; **F2/AS1** 1.3; **G3/AS1** 1.0.1; **G5/AS1** 1.0.3; **G2/AS1** Table 1
see also **Communal Non-Residential Buildings**
- Earth Pressure
see **Structure**, loads
- Earth retaining structures **B1/VM4** 6.0
- Earthquake
see **Structure**, loads
- Earthworks **B1/VM4** 3.0
- Educational buildings **C2/AS1** 3.2.2
- Effluents **B1/VM4** 2.1.1
- Electrical Codes of Practice **G9/VM1** 1.0.2(b)
- Electrical Wiring Regulations **G9/VM1** 1.0.2(a)
- Electricity** **G9**
electrical installations **G9.1**, **G9.2**, **G9.3.1** to **G9.3.3**; **G9/VM1** 1.0
domestic cooking and refrigeration **G3/AS1** 1.4.1
laundries **G2/AS1** 1.1.2
electromechanical stress **G9.3.1(d)**
essential services **G9.3.2**
emergency power **C3/AS1** 9.8
external supply system **G9.3.3**
people with disabilities **G9.3.4**
light switches **G9/AS1** 2.0.1(a)(b)
socket outlets **G9/AS1** 2.0.1(c)
temperature **G9.3.1(c)** and **G9.3.1(d)**

Emergency lighting
see **Lighting for Emergency**

Entrances **D1/AS1** 10.1.3
 principle **D1/AS1** 1.1

Energy cut-offs **G12/AS1** 4.2.2(a), 4.5.1, 4.5.2

Energy Efficiency H1
 heat gain **H1.3.2(b)**
 heat loss **H1.3.2(a), H1.3.2(d)**
 heating **H1.3.2**
 indoor temperature **H1.2, H1.3.1**

Environment
see **Interior Environment**

Escalators
see **Mechanical Installations for Access**

Escape routes **C2.2, C2.3.3, C2.3.3(g) C2/AS1**
 1.0.1, 2.0, 3.1.1, 3.2.1(a), 3.2.2(b), 3.3.1, 3.3.3, 3.4.1,
 3.4.4, 4.3, 4.4.1, 4.4.6, 5.1.1(a), 5.2.1, 6.2.1(d), 6.2.2,
 6.3.1, 7.3.3, 7.4.4, 7.4.5(c), 7.6.1, Figure 1; **C3.3.8(b);**
C3/AS1 5.7.1, 8.3.3(a), 9.3.3, 9.3.4; **C4/Annex A2.7,**
A3.1, A3.5, D2; D1/AS1 1.1.5; **F3/AS1** 4.7.6; **F6.2,**
F6.3.2, F8.2(a), F8.3.3(a); F8/AS1 3.0
see also **Means of Escape**
 features of escape routes **C2/AS1** 7.0
 access **C2/AS1** 7.1
 doors subdividing escape routes **C2/AS1** 7.2
 glazing in exitways **C2/AS1** 7.4
 lighting **C2/AS1** 7.5
 signs **C2/AS1** 7.6
 surface finishes **C2/AS1** 7.8
 warning systems **C2/AS1** 7.7
 windows used for escape **C2/AS1** 7.3, Figure 35
 length of escape routes **C2/AS1** 2.4
 number of escape routes **C2/AS1** 2.2, 2.2.2, Figure 2,
 Table 1
 obstructions **C2/AS1** 2.3.5, 7.3.3
 single escape routes **C2/AS1** 2.2.1, 5.0, 7.4.6(c)
 basements **C2/AS1** 5.2
 bridges **C2/AS1** 5.4.4, Figure 25
 external balconies **C2/AS1** 5.4.3, Figure 24
 external stairs **C2/AS1** 5.4.3, Figure 24
 intermediate floors **C2/AS1** 5.3.2
 internal stairs **C2/AS1** 5.4.2 7.4.6, Figure 23
 non-residential accommodation **C2/AS1** 5.3,
 Figure 22
 residential accommodation **C2/AS1** 5.4,
 Figure 23
 split level exitways **C2/AS1** 5.4.5, Figure 26
 stairs **C2/AS1** 5.4.4, Figure 25
 size of escape routes **C2/AS1** 2.3
 height **C2/AS1** 2.3.1
 width .. **C2/AS1** 2.3.2, Figures 3, 4 and 5, Table 2
 limitations for stairs **C2/AS1** 2.3.3, Figure 6
 through adjoining buildings **C2/AS1** 2.8
 vertical escape routes **C2/AS1** 2.8, Figure 13

Equipotential bonding **G12/AS1** 7.0
 earth bonding conductors **G12/AS1** 7.3

installation of conductors **G12/AS1** 7.2
 metallic sanitary fixtures **G12/AS1** 7.2.2,
 Figure 20
 metallic water supply pipes **G12/AS1** 7.2.1,
 Figure 19

Evacuation time **C3.3.6(b), C3.3.6(c), F6.3.1**

Exitways **C2.3.1, C2.3.2, C2/AS1** 2.1.2, 2.3.1,
 2.3.2(a)(e), 2.3.4, 2.3.5(a)(b), 2.4.2, 2.5.7, 2.7.1, 2.8.1,
 3.2.1, 3.3.1, 3.3.2, 3.3.5, 3.3.6, 3.3.8, 3.4.2, 4.0, 5.3.2,
 5.4.1(a), 6.1.1, 6.1.3, 6.1.4, 6.1.5, 6.2.1, 7.2.1, 7.2.5(b),
 7.2.6(b), 7.2.7(a), 7.2.11(c), 7.3.1, 7.3.2, 7.3.3, 7.3.4,
 7.3.6, 7.4.4, 7.5.1, 8.2.1, 8.2.2, 8.2.4, 8.3.1, Figures 3,
 4, 5 and 18; **C3/AS1** 2.4.6, 2.10.2, 2.11.1, 2.11.4,
 3.1.1(b), 4.2.5, 4.8.3, 8.2.1(a), 9.1, 9.6.1(b); **C4/Annex**
A3.4 (b); G8.2; F8/AS1 3.1.1(a)(b)(c), 3.2.3(a)(b)
 pressurisation **C3/AS1** 9.1.2,
 external exitways **C2/AS1** 4.4
 split level exitways **C2/AS1** 5.4.1(b), 5.4.5,
 Figure 26

Explosion
see **Structure, loads, and Hazardous Substances**
and Processes

Explosives
see also **Hazardous Substances and Processes,**
Class 1 Explosives
 explosives manufacture **F3/AS1** 2.1
 water ingress into buildings **F3/AS1** 2.1.3

Exterior joinery **E2/AS1** 3.0, 6.0.2(b)

External Moisture E2
 concealed spaces **E2.3.5**
 elements in contact with the ground **E2.3.3**
 external walls **E2.3.2**
 moisture present at completion of construction
E2.3.6
 roofs **E2.3.1 E2.3.2**
 snow **E2.3.1**
 suspended floors **E2.3.4**

F

Factor of safety **B1/VM4** 3.2.1, 3.2.2, 3.2.3, 4.1.2,
 4.3, 4.3.1, 6.1, 6.1.2, 6.1.2(a)(b)(c), Table 2, **B1/AS4**
 7.1, 7.1.1, 7.3.4, A6.2, Table A4
 permanent non-seismic **B1/VM4** 6.1.2(a)
 seismic **B1/VM4** 6.1.2(i)
 temporary non-seismic **B1/VM4** 6.1.2(b)

Factories
see **Industrial Buildings**

Falsework
see **Structure**

Farm buildings **B1/VM1** 11.0
see also **Outbuildings**

Filters
See **Strainers**

Final exits **C2.3.1, C2.3.2, C2/AS1** 2.1.2, 2.1.3, 2.4.1, 2.4.4, 2.6.1, 2.9.1(b), 3.2.1, 3.3.1, 4.2.2, 4.3(e), 4.4.1, 5.2.1, 5.4.5(a)(b), 6.1.5, 7.2.5(b), 7.2.7(b), 7.2.12(d), 7.3.1, Figure 34; **C3.3.6(b); C3/AS1** 2.5.1(a)(b), 2.9.2, 2.11.3, 2.18.2, 3.6.6(b), 4.4.5, 8.3.3(a), 9.3.5(c), 9.8.1(b); **C4/Annex** B2.9.1; **F8/AS1** 3.1.1(a)(b), 3.2.3(a)

Fire alarm systems
 automatic fire alarm systems **F7/AS1** 1.2
 call points **F7/AS1** 1.2
 installation and maintenance **F7/AS1** 1.0
 manual fire alarm systems **F7/AS1** 1.1
 requirements **F7/AS1** 2.0
 activation of system **F7/AS1** 2.1
 alerting the Fire Service **F7/AS1** 2.2
 smoke detectors **F7/AS1** 1.2.3

See also fire safety precautions

Fire dampers **C3/AS1** 2.4.4(d), 5.6, 8.4.1, 9.9.1(f)

Fire fighting facilities **C3/AS1** 2.18
 fire control centre **C3/AS1** 2.18.3

Fire fighting operations **C3.1(b), C3.2(b), C3.3.9(b), C4.2(b)**

Fire hazard categories **C2/AS1** 4.3(g), 5.1.1(b), 5.2.1 (c), 5.3.1(a), Figure 22; **C3/AS1** 2.1, 2.16.2(a), 3.3.1(e), 4.1.3, 4.4.3(b), 4.6.1, 4.7.3, 4.9.2, 9.3.2(c), Table 1; **C4/AS1** 2.2; **C4/Annex** A2.1, A2.6, B2.10.1, C1.4(b)
 category 1 **C3/AS1** 3.3.6, 4.2.3, 4.7.3
 category 4 **C3/AS1** 3.3.3

Fire hazards **C2.3.1(c), C2.3.2(d); C3.3.1(c), C3.3.6(d); C3/AS1** 2.3.1(c); C4.3.1

Fire intensity **C4.3.1**

Fire load **C3.3.5, C3.3.6(d)** C4.3.1

Fire rescue operations **C2.1(b), C2.2(b), C3.3.9(a), C4.2(b)**

Fire resistance **C4.3.1, C4.3.2, C4.3.3**

Fire resistance rating **C2/AS1** 1.0.2, 2.8.1(c), 4.4.3, 4.4.6, 5.3.1(c), 6.2.2; **C3.3.3(b); C3/AS1** 2.1.2, 2.1.7, 2.2.1(c), 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.3.1, 2.4.4(f), 2.5.1(a)(b), 2.5.2, 2.5.3, 2.8.1, 2.8.2, 2.8.4, 2.8.7, 2.8.10(a), 2.9.1, 2.9.2, 2.9.3, 2.9.5, 2.9.6 b), 2.10.1, 2.11.2, 2.11.3, 2.11.5, 2.12.2, 2.12.3, 2.12.4, 2.12.5, 2.13.1, 2.14.1(a)(b), 3.0, 3.5.2(c), 4.1.2(b), 4.4.3(b), 4.4.7(c), 4.4.10, 4.5.2, 4.6.1(a), 4.8.3, 4.8.4, 4.9.3, 5.2.2, 5.3.1, 5.5.1, 5.6.1, 6.2.1, 6.2.2, 7.4.1(a); **C4/AS1** 2.0; **C4/Annex** B2.10.1, B2.10.2, C1.6, C2.1(b), E7.1
 application of S, F, and E ratings **C3/AS1** 3.3.8
 application to building elements **C3/AS1** 3.6
 determination of **C3/AS1** 3.2
 external wall rating (E) **C3/AS1** 3.1.2, 3.1.4, 3.2.1(c)(e), 3.3.5, 3.3.6, 3.4, 4.2.4, 4.2.6
 fire resistance tests **C4/AS1** 2.3
 see also Standard test methods, fire resistance

firecell rating (F) **C3/AS1** 2.2.1(a), 2.2.3(d), 2.2.4(a)(b), 2.4.3, 2.7.1, 2.8.1, 2.9.1, 2.11.2, 2.11.5, 2.13.3, 2.14.1(a), 2.16.1, 2.16.2, 3.1.2, 3.1.4, 3.2.1(b)(e), 3.3.4, 3.3.5, 3.3.6, 3.3.7(a), 3.4, 3.5.2, 3.8.3, 4.2.2(b), 4.2.4, 4.2.6, 4.4.10, 4.8.6(b); **C4/Annex** B2.7.1, B2.10.1

for insulation **C3/AS1** 2.1.11, 3.1.1, 3.1.3, 3.1.4, 3.2.1(g), 3.5, 5.3.1

for integrity **C3/AS1** 3.1.1, 3.1.3, 3.1.4; **C4/Annex** C2.1(a)

for stability **C3/AS1** 3.1.1, 3.1.3, 3.1.4

hazard category 4 buildings **C4/AS1** 2.2

security rating (S) **C3/AS1** 2.2.3(d), 1.14.1(a), 2.16.1, 2.16.2, 3.1.2, 3.1.4, 3.2.1(a)(e), 3.3.2, 3.3.3, 3.3.5, 3.3.6, 3.3.7(a), 3.4, 3.5.2(a), 3.8, 3.8.2, 3.8.3, 4.2.2(a)(b), 4.2.4, 4.4.3(b), 4.4.10, Table 1; **C4/Annex** B2.10.1

Fire resisting closure **C3.3.3(a); C3/AS1** 2.4.4(a)(d)

Fire Safety /
 see **Means of Escape, Outbreak of Fire, Spread of Fire, and Structural Stability during Fire.**

Fire safety precautions **C2/AS1** 1.0.2; **C4/Annex**
 emergency electrical power supply .. **C4/Annex** B3.3
 Type 17
 emergency lighting **C4/Annex** B3.3 Type 16
 fire alarm systems **C4/Annex** B3.2
 automatic
 heat and smoke detectors **C4/Annex** B3.3
 Type 5
 heat detectors **C4/Annex** B3.3 Type 3,
 Type 4, Type 5, Type 6, Type 9
 smoke detectors **C4/Annex** B3.3 Type 4,
 Type 5, Type 7, Type 9
 manual **C4/Annex** B3.3 Type 6, Type 7
 monitored **C4/Annex** B3.3
 Type 2, Type 3(b)
 non-monitored **C4/Annex** B3.3 Type 1,
 Type 3(a)

fire hose reels **C3/AS1** 2.18.2; **C4/Annex** B3.3
 Type 14

fire riser mains... **C3/AS1** 2.17(e), 2.18.1; **C4/Annex**
 B3.3 Type 18

fire sprinkler systems
 automatic **C4/Annex** B3.3 Type 6, Type 7
 with smoke detectors **C4/Annex** B3.3
 Type 7
 residential **C4/Annex** F3

fireman's lift controls **C4/Annex** B3.3 Type 15

hold open devices **C4/Annex** B3.3 Type 12

mechanical smoke control .. **C4/Annex** B3.3 Type 11

natural draught ventilation . **C4/Annex** B3.3 Type 10,
 Type 11

pressurisation of safe paths **C4/Annex** B3.3
 Type 13, D1

refuge areas **C4/Annex** B3.3 Type 19

smoke control in air-handling systems **C4/Annex**
 B3.3 Type 9

voice communication systems **C4/Annex** B3.3
 Type 8

- Fire separations **C2/AS1** 2.5.7, 4.1.1(b), 4.2.1(a), 5.3.1(c), 6.2.1(c)(d), 6.2.2, 7.2.12(c), 7.4.2(c), 7.4.6, Figure 33; **C3.3.2**, **C3.3.3**; **C3/AS1** 1.1(a), 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.1.6, 2.1.7, 2.1.8, 2.1.10, 2.1.11, 2.2.1, 2.2.3, 2.2.5, 2.3.1(a), 2.4.2, 2.4.4(f), 2.5.1, 2.5.2, 2.5.3, 2.8.1, 2.8.2, 2.8.4, 2.8.7, 2.9.1, 2.9.2, 2.9.3, 2.9.5, 2.9.6(b), 2.10.1, 2.11.2, 2.11.3, 2.12.1, 2.12.2, 2.12.3, 2.13.1, 2.13.2, 2.14.1(a)(b), 3.1.1(a)(c), 3.3.8, 3.4.1, 3.5.(a), 3.6.2, 3.6.4, 5.1.1, 5.3.2, 5.6.1, 6.1.1, 6.2.1, 6.2.3, 6.3.1, 6.3.2, 7.1.2, 7.2.1, 7.4.1(c), 8.4.1, Figures 1 and 13; **C4/Annex** B2.6.1, B2.6.3, C2.3, E7.2
 closures **C3/AS1** 5.0, Table 3
 fire shutters **C3/AS1** 5.7
 junctions **C3/AS1** 2.1.6
- Fire Service **C3/AS1** 2.8.10(b), 9.1.2, 9.3.1(b); **C4/Annex** B1.1, B3.3 Type 2, Type 3, Type 15
 access **C3/AS1** 2.8.11, 2.17
- Fire spread **C3/AS1** 2.1, 3.4.2, 7.2.1
 horizontally **C3/AS1** 4.1.1(b), 4.6
 vertically **C3/AS1** 1.1(b), 4.1.1(a), 4.4, 4.8.2, Figure 9
 between different levels of a building **C3/AS1** 4.4.5
 from adjacent lower roof **C3/AS1** 4.4.1
- Fire stopping **C3/AS1** 2.1.6, 2.1.8, 2.4.4, 4.4.9(a), 6.0, 7.0.1, 7.2.1, 7.4.1(b); **C4/Annex** E7.1, E7.2
 hollow construction **C3/AS1** 6.3.1
 installation **C3/AS1** 6.3
 materials **C3/AS1** 6.2
 service outlets **C3/AS1** 6.3.2, Figure 13
- Firecells **C2/AS1** 2.5.7, 2.7.2(b), 2.9.1, 3.4.3(b), 4.1.2, 6.1.1, 7.4.2, 7.4.5(a), 7.4.6, 8.1.2; **C3.3.2(a)**, **C3.3.8(a)**; **C3/AS1** 1.1(a), 2.0, 3.1.1(c), 3.2.1, 3.3.1(a)(e), 3.3.2(b)(c)(d)(f), 3.3.3, 3.3.7, 3.3.8, 3.4.3, 3.6.5, 3.7, 3.7.1, 3.7.2, 3.8, 4.2.1, 4.2.2, 4.3.1, 4.4.1, 4.4.3(a)(b), 4.4.6, 4.4.7(c), 4.4.9, 4.4.10, 4.5, 4.5.2, 4.6.1, 4.8.3, 4.8.6(a)(c), 5.1.4, 5.3.2, 5.5.2, 5.5.3, 7.0.1, 7.1.1(a)(b), 7.1.2, 8.1.3, 8.1.5, 8.2.3, 9.2, 9.2.4, 9.2.7, 9.2.10, 9.3.1(a), 9.4.2, 9.5.1(b), 9.7.1, Figure 10, Table 1; **C4/Annex** A2.6, A3.2, Table A2, B1.1, B1.2(d), B2.1.1, B2.2.1, B2.6.1, B2.6.2, B2.7.1, B2.8, B2.10.1, B2.10.2, B2.11.1, Table B1, C1.5, C1.9, C2.3, C5.1, C5.2.1, C5.4, C6.1, C6.2, C6.4(a), Figure C5, D4; **F7/AS1** 2.1.2(b)
 foamed plastic building materials **C3/AS1** 2.15
- Fixtures
 sanitary fixtures
 see **Personal Hygiene**
- Flammable liquids
 see **Hazardous Substances and Processes, Class 3**
 flammable liquids
- Flammable solids
 see **Hazardous Substances and Processes, Class 4**
 flammable solids
- Flame barriers **C3/AS1** 2.15.1(b), 7.3.1(c)
- Flats
 see **Housing**, multi-unit dwelling
- Flooding
 design flood levels **E1/VM1** 1.1.3
 flood risk assessment **E1/VM1** 1.1
 historical information ... **E1/VM1** 1.1.1, **E1/AS1** 1.0.1
 protection from **E1/VM1** 1.0
- Floors **B1/AS2** 2.1.1 **B2.3(a)**, **C2/AS1** 5.3.1(b); **C3.3.1**, **C3/AS1** 1.1(a), 2.1.3, 2.1.11, 2.2, 2.4.2, 2.4.4, 2.8.4, 2.8.10(c), 2.9.6(c), 2.12.4(b), 2.13.3(c), 3.1.1(a)(b), 3.3.1(a), 3.3.2(b)(f), 3.3.6, 3.6.3, 3.6.6(b), 3.7.1, 4.2.3, 4.4.7(c), 4.4.10, 4.8.6(c), 4.9.1, 5.7.1, 7.2, 7.3.1, 8.2, Figures 1 and 16, Tables 1 and 4; **C4/Annex** A2.2, A2.3, B2.2.1, B2.5, B2.6, B2.10.1, B2.11.1, Table B1, C2.3; **D1.3.3(e)**, **D1.3.4(c)**, **E2.3.3**, **E2.3.4**, **G3/AS1** 2.2.3, 2.2.4, 2.3.3, 2.3.4, 2.3.5, 2.3.6, **G6.3.1**, **G6.3.2**,
 basement floors **C3/AS1** 2.2.5, 2.11.3
 concrete slab on ground **E2/AS1** 4.2, 6.0.2(d)
 finished floor levels **E2/AS1** 4.2.5
 vapour barriers under slabs **E2/AS1** 4.2.3, Figure 5
 coverings **C3/AS1** 8.0, Table 4
 floor/ceiling assemblies **G6/AS1** 1.0.3, Figure 3
 floor/wall junctions **G6/AS1** 1.0.3, Figure 5
 intermediate floors **C2/AS1** 2.4.6, 5.3.2, 6.1.3, 6.1.4, 8.1.2, Figure 9; **C3/AS1** 2.2.1(c), 2.2.4, 2.12.5, 3.3.1(a), 3.5.1(c), 3.5.2(c), 9.2, 9.2.1, 9.4, 9.4.2, 9.5.1, 9.7.1, Figure 2; **C4/Annex** B2.2.1, B2.7.1, B2.8, Table B1, D4
 minimum floor level **E1/AS1** 2.0, Figures 1 and 2
 moisture **E2.3.4**
 non-combustible overlays **C3/AS1** 2.16.1(a)
 slip resistant **D1.3.3(d)** **E2/AS1** 4.0; **G15/AS1** 3.0.2
 sub-floor spaces **C3/AS1** 2.2.1(d), 2.3, Figure 3
 surface finishes **C3.3.1**
 timber floors **C3/AS1** 2.1.7, 2.16.1
 suspended timber floors **E2/AS1** 4.1, Figure 4
 subfloor vapour barriers **E2/AS1** 4.1.1(b), 4.1.7
 subfloor ventilation **E2/AS1** 4.1.4
 top floors **C4/Annex** B2.7
 upper floors **C2/AS1** 2.3.2(e), 5.3.1(c), 6.1.3, 6.1.4, Figure 5; **C3/AS1** 3.3.2(d)
- Floor wastes **E3/AS1** 2.0.1, 2.2, Figure 4; **G13/AS1** 2.4
- Flues **G11.3.3** **G4/AS1** 2.3, **G11/AS1** 5.0
 fire damper **G11/AS1** 5.3
 locations on dwellings **G4/AS1** 2.4
 materials **G11/AS1** 5.1
 safety devices **G11/AS1** 5.2
- Food Preparation and Prevention of Contamination**
G3
 cooking **G3.3.1(c)**; **G3/AS1** 1.2.1, 1.4.1
 energy supply **G3.3.3**
 location **G3.3.4**
 people with disabilities **G3.3.5**
 preparation **G3.3.1(b)**, **G3.3.1(d)**, **G3.3.2**

- prevention of contamination **G3.3.6**
 rinsing **G3/AS1 1.1.1**
 storage **G3.3.1(a); G3/AS1 1.3.1**
 refrigeration **G3/AS1 1.3.2, 1.4.1**
 ventilation **G3/AS1 1.3.2, 1.3.3, 1.3.4**
 surfaces **G3/AS1 1.1.2, 1.1.3, Figure 1**
 utensil washing **G3.3.1(b), G3.3.2**
- Foul Water G13**
see also Discharge pipes, Drains, Sanitary appliances,
 Sanitary fixtures, Vent pipes, Water seals, Water
 traps.
 gravity flow **G13.3.1(a), G13.3.2(a)**
 odours **G13.1(b), G13.3.1(c), G13.3.2(e);**
 G13/AS1 2.1.1
 offensive matter **G13.1(b)**
 on-site disposal systems **G13.3.4**
 see also **Industrial Liquid Waste**
 outfalls **G13.2, G13.3.2**
 personal hygiene **G13.1(a)**
 plumbing system **G13.2, G13.3.1**
 sewer **G13.3.3, G13.3.4, G15.3.3**
 three storey buildings **G13/AS1 3.2.1(b), Figure 6**
 two storey buildings **G13/AS1 3.2.1(a), Figure 5**
- Foundations** **B1/VM1 1.2, 7.0, B1/VM4 1.0.1, 4.1.1,**
 4.2.1, **AS1 1.2, 5.0, B1/AS4, 4.0, 4.0.1, 5.0,**
 5.0.1(a)(b)(c), 5.0.2, 5.2, 5.3, Table 2
see also Chimneys, Foundations, and Piles
- Fruit ripening chambers** **F3/AS1 3.2.2**
- G**
- Garages**
see **Outbuildings**
- Gas** **G3/AS1 1.4.1**
- Gas as an Energy Source** **G11**
 automatic cut-offs **G11.3.2**
 flued appliances **G11.3.3**
 gas supply authority **G11.3.6**
 isolation devices **G11.3.4**
 meters **G11.3.6**
 location **G11/AS1 8.0**
 over pressure protection **G11/AS1 3.0**
 safe pressure ranges **G11.3.1**
 service risers **G11.3.6**
 supply system **G11.2, G11.3.1, G11.3.5**
- Gases**
see **Hazardous Substances and Processes, Class 2**
 Gases
- Gas fired engines**
 alternative solution **C1/AS1 4.0**
 clearances **C1/AS1 3.0, Table 3**
 flues **C1/AS1 Table 3**
- Gas fuel appliances** **C1/AS1 2.0**
 alternative solution **C1/AS1 4.0**
 clearances **C1/AS1 Tables 3, 4**
- flues **C1/AS1 2.1, Table 3**
 installation **C1/AS1 2.2**
 automatic dryers **C1/AS1 2.2.7**
 bench mounted appliances **C1/AS1 2.2.6**
 commercial cookers **C1/AS1 2.2.6**
 flue dampers **C1/AS1 2.2.9**
 flueless heater **C1/AS1 2.2.4**
 flueless sink heaters **C1/AS1 2.2.3**
 incinerators **C1/AS1 2.2.8**
 pottery kilns **C1/AS1 2.2.9**
- Gas reticulation**
 alternative solution **AS1 5.0**
 cleaning **G10/AS1 1.1**
 tailpipes **G10/AS1 1.1.3**
 concealed piping **G10/AS1 1.4**
 in concrete **G10/AS1 1.4.1**
 in enclosed spaces **G10/AS1 1.4.2**
 underground **G10/AS1 1.4.3, Table 3**
 construction **G10/AS1 1.0**
 corrosion control **G10/AS1 3.0**
 design **G10/AS1 1.0.1(b)**
 identification **G10/AS1 1.0.1(a)**
 installation **G10/AS1 1.2**
 bends and offsets **G10/AS1 1.2.1(d)**
 risers **G10/AS1 1.2.1(c)**
 separation **G10/AS1 1.2.1(b)**
 supports **G10/AS1 1.2.1(a), Table 2**
 isolating valves **G10/AS1 2.0**
 materials **G10/AS1 1.0.1(c), Table 1**
 pipework in ducts **G10/AS1 1.5**
 unventilated ducts **G10/AS1 1.5.4**
 ventilated ducts **G10/AS1 1.5.3**
 vent lines **G10/AS1 4.0, Tables 4 and 5**
 welded joints **G10/AS1 1.3**
- Geological history** **B1/VM4 2.1.1(a)**
- Glazing** **B1/AS1 7.0; C2/AS1 7.4; C3/AS1 2.1.4(b),**
 2.1.10(b), 2.1.11, 3.5.2(b), 4.8.6(b), 5.3, 5.4.3; **F2.3.3**
see also **Hazardous Building Materials**
 dimensions **C2/AS1 7.4, 7.4.2(b), 7.4.3**
 early childhood centres **F2/AS1 1.3**
 fire resisting glazing **C2/AS1 7.4.2(a); C4/Annex**
 C2.1(a)
 human impact safety **F2/AS1 1.1**
 making glass visible **F2/AS1 1.4**
 modifications to NZS 4223 **F2/AS1 1.2**
 on protected paths **C2/AS1 7.4.1**
 on safe paths **C2/AS1 7.4.2, Figure 36**
 exceptions **C2/AS1 7.4.5**
- Government Agencies** **D1.3.4(c)(iv)**
see also **Commercial Buildings**
- Government Offices** **D1.3.4(c)(iv)**
see also **Commercial Buildings**
- Grandstands** **C2/AS1 6.2.3**
- Grease traps** **G13/AS2 4.0**
 capacity **G13/AS2 4.2**
 construction **G13/AS2 4.3, Figure 3**

Ground
 conditions **B1/VM4** 1.0.1
 good ground **B1/AS3** 1.3.2, **B1/AS4** 1.0.1

Groundwater **B1/VM4** 2.1.1(e), 4.1.3, 5.0.2(f)
G14/VM1 1.6.1
 seasonal changes **B1/VM4** 2.1.1(d)(e)
 tidal changes **B1/VM4** 2.1.1(e)

Gully traps **G13/AS1** 2.2.1(a), 2.4.2, 3.1.1, 5.4.1,
 5.6.2, Figures 3 and 9, **G13/AS2** 3.0
 construction **G13/AS2** 3.2, Figure 2
 diameters **G13/AS2** 3.2.1(c)

Gutters **E1/AS1** 5.0
 gradients **E1/AS1** 5.3
 materials **E1/AS1** 5.2, Table 6
 overflow outlets **E1/AS1** 5.5
 sizing **E1/AS1** 5.1, Figures 15 and 16
 thermal movement **E1/AS1** 5.4, Table 7

H

Habitable Spaces E3.3.1, G5.2.1a, G5.3.1, G5.3.3,
 G6.2, G7.2

Halls
see also Communal Non-Residential

Halls of Residence
see Communal Residential

Handicapped people
see People with disabilities

Handrails **D1.3.2(j) and (k), D1.3.4(i); D1/AS1**
 1.5.2, 1.5.4(b), 1.6.1, 1.7, 5.2.1g, 6.0, 6.0.1, Figure 6
 clearances **D1/AS1** 6.0.6 Figure 26
 handrail profiles **D1/AS1** 6.0.6, Figure 27
 height **D1/AS1** 6.0.5, Figure 25
 horizontal extensions **D1/AS1** 6.0.3, 6.0.4, Figure 25
 intermediate handrails **D1/AS1** 6.0.1
 slope **D1/AS1** 6.0.2, 6.0.3

Hazards to building elements **F1/VM1** 2.7

Hazardous Agents on Site **F1**
see also Site investigation
 assessment of sites **F1.3.1**
 contaminants **F1/VM1** 1.02(i), 2.1.2, 2.2.1(g),
 2.2.2, 2.3.2, 2.5.1, 2.6.2(a)(b)(c)(d), 2.6.3, Table 2
 degradation of building materials **F1/VM1** 2.7
 likely effects on people **F1.3.2**
 hazardous agents **F1/VM1** 1.0.2(i), 2.2.1, 2.3.2,
 2.5.1, 2.5.5, Table 2
 network utility operators **F1/VM1** 2.2.1(f)
 remedial work **F1/VM1** 2.6, Table 3
 risk assessment **F1/VM1** 1.0.2(ii), 2.5, 2.5.4

Hazardous Building Materials **F2**
see also glazing
 asbestos **F2/AS1** 2.0
 brittle materials **F2.3.3**
 harmful concentrations **F2.3.1**
 transparent panels **F2.3.2**

Hazard category
see Fire hazard categories

Hazardous Substances and Processes F3

Class 1 Explosives **F3/AS1** 2.0
 definition **F3/Appendix A**
 manufacture **F3/AS1** 2.1

Class 2 Gases **F3/AS1** 1.5.2, 3.0
 aerosols **F3/AS1** 3.6
 class 2(a) gases **F3/AS1** 3.1.2
 class 2(b) gases **F3/AS1** 3.2
 storage **F3/AS1** 3.2.1
 class 2(c) gases **F3/AS1** 3.4
 storage **F3/AS1** 3.4.1
 class 2(d) gases **F3/AS1** 3.3
 storage **F3/AS1** 3.3.1
 class 2(e) gases **F3/AS1** 3.1.1(b), 3.4
 storage **F3/AS1** 3.4.2
 class 2(f) gases **F3/AS1** 3.1.1(a), 3.4
 storage **F3/AS1** 3.4.1
 class 2(g) gases **F3/AS1** 3.5
 spillage **F3/AS1** 3.5.1
 definition **F3 Appendix A**

Class 3 Flammable Liquids **F3/AS1** 4.0
 class 3(a) flammable liquids **F3/AS1** 4.2.3(b),
 4.5.5(a), 4.7.3(b), 4.7.4, 4.7.8, 4.7.9, 4.7.10,
 4.7.12, 4.8.5(i)
 class 3(b) flammable liquids **F3/AS1** 3.6(c),
 4.2.3(b), 4.5.1(a), 4.5.3, 4.5.5(a), 4.6.1, 4.7.3(c),
 4.7.4, 4.7.8, 4.7.9, 4.7.10, 4.8.5(ii)
 class 3(c) flammable liquids **F3/AS1** 4.2.3(a),
 4.5.1(a), 4.5.3, 4.5.5, 4.6.1
 definition **F3 Appendix A**
 drying rooms **F3/AS1** 4.7.11
 flammable liquid workrooms **F3/AS1** 4.7
 isolation distances **F3/AS1** 4.7.3, Table 4
 wall thicknesses **F3/AS1** Table 3
 isolation distances **F3/AS1** 4.7.3, Table 4
 spray painting **F3/AS1** 4.5.4
 storage
 in bulk **F3/AS1** 4.2.3,
 not in bulk .. **F3/AS1** 4.2.2, 4.3.1, 4.5.1, 4.5.5
 storage tanks **F3/AS1** 4.6

Class 4 Flammable Solids **F3/AS1** 5.0
 class 4.1A flammable solids **F3/AS1** 5.1.1
 class 4.1B flammable solids **F3/AS1** 5.1.1
 class 4.1C flammable solids **F3/AS1** 5.1.1
 class 4.2A flammable solids **F3/AS1** 5.1.1
 class 4.2B flammable solids **F3/AS1** 5.1.1
 class 4.3 flammable solids **F3/AS1** 5.1.1
 definition **F3 Appendix A**
 storage depots **F3/AS1** 5.1

Class 5 Oxidising Substances **F3/AS1** 6.0, 6.2.2
 class 5A oxidising substances **F3/AS1** 6.1.1,
 6.2.2, Table 5
 class 5B oxidising substances **F3/AS1** 6.2.3,
 Table 6
 construction **F3/AS1** 6.2
 definition **F3 Appendix A**
 sources of heat **F3/AS1** 6.1

Class 6 Toxic Substances
 definition **F3/AS1 Appendix A**

Class 7 Radioactive Substances
 definition **F3 Appendix A**

Class 8 Corrosives
 definition **F3 Appendix A**
 explosions **F3.3(c)**
 food preparation and utensil washing areas
G3.3.2(b)
 hazardous substances associated with building
 services **G10.1, G10.2**
 protected ignition sources **F3.3(d)**
 radioactive hazards
 release of pressure **F3.3(c)**
 released during fire **C3.2(d), C3.3.10**
 rendering hazardous materials harmless **F3.3(e)**
 sewers and public drains **F3.3(b)**
 signs **F3.3(g)**
 surface finishes **F3.3(f)**
 unauthorised access **F3.3(a)**

Hazardous wastes **G14/VM1** 1.3.2, 1.4.1(b), 1.9.1,
 2.1.4, 2.2.1(b), 2.2.4, 2.3.7, 2.4.4, 3.1.3

Health Camps
 see **Communal Residential**

Hearths
 see Chimneys

Heat detectors **C2/AS1** 2.5.3, Table 3; **C3/AS1**
 2.13.3(b), 5.7.2; **C4/Annex** B3.3 Type 3, Type 5

Heat transfer **C1/VM1** 1.0
 limiting heat transfer **C1/VM1** 1.0

Heating
 see **Energy Efficiency and Interior Environment**

Height clearances **D1/AS1** 1.4, 1.4.1, Figure 3,
 Table 1

Hobs **G3/AS1** 1.2.1

Hospitals **C4/Annex** Table B1/5; **D1.3.4(c)(iv)**
 see also **Communal Residential**

Hostels
 see **Communal Residential**

Hot dip galvanising **B1/AS2** 1.0.5(b), **B1/AS3** 1.8.6

Hot plates **G3/AS1** 1.2.1

Hot water supply
 See Water supplies, hot

Hotels **C4/Annex** A2.3
 see also **Communal Residential**

Hotels **D1/AS1** 9.1.1

Housing **A1** 2.0, **D1.3.3**, **E1.3.2**, **G1.3.5**, **G2.2**,
G3.2.1, **G3.3.1(a) to (d)**, **G3.3.2(c)**, **G7.2**, **G9/AS1**
1.0; **G12.3.4**, **G12.3.9**, **H1.3.1** **G3/AS1** 1.0.1
 detached dwellings **A1** 2.0.2, **C3.3.2**, **C3.3.4**,
D1.3.2(i), **F6.2**, **F7.3**, **F8.2**, **G15.2**
 group dwellings **A1** 2.0.4, **G8.2**
 multi-unit dwellings **A1** 2.0.3, **C3.3.2**, **D1.3.2(i)**,
F6.2, **F8.2**, **G8.2**, **G15.2**

I

Identification of non-potable water supply
 See **Water supplies** **G12/AS1** 9.1

Illuminance **G7/VM1** 1.0, **G8/VM1** 1.0 **AS1** 1.0
 measurement **G8/VM1** 1.0.1
 minimum **G8/AS1** 1.0.3,

Impact insulation class **G6/AS1** 2.0

In service history **B2/VM1** 1.1

Industrial Buildings **A1** 6.0, **D1.3.2(h)**, **D1.3.3**,
E3.3.1, **G1.3.5**, **G3.2.1**, **G3.3.1(a) and (b)**, **G3.3.2(b)**,
G3.3.6, **G8.2**, **G9.3.4**, **G12.3.9** **G3/AS1** 2.0.1

Industrial liquid waste
 capacity **G14.3.2(a)**
 contamination of potable water **G14.3.2(c)**
 collection **G14/VM1** 1.1.1, 1.3.2, 1.4
 location of facilities **G14/VM1** 1.4
 conveyance systems **G14/VM1** 2.0
 drainage **G14/VM1** 2.2
 piping systems **G14/VM1** 2.3, Table 2
 pumps **G14/VM1** 2.4, Figure 2
 corrosion **G14/VM1** 1.5.1, 1.5.2
 disposal **G14/VM1** 1.1.1, Table 1
 location of facilities **G14/VM1** 1.4
 to a natural waterway **G14/VM1** 1.2.1(b)
 to a sewer **G14/VM1** 1.2.1(a) 1.3.1,
G14/AS1 1.2.1, 1.2.2
 disposal systems **G14.3.1**
 hazardous wastes
 see Hazardous wastes
 materials used in construction **G14/VM1** 1.5.1
 odours **G14.3.1(c)** **G14.3.2(f)**
 resource consents **G14.3.2(d)**
 safety facilities **G14/VM1** 3.1.4
 separate waste systems **G14/VM1** 1.7.1
 storage **G14/VM1** 1.1.1, 1.2.1(c), 1.3.2
 location of facilities **G14/VM1** 1.4
 containers **G14.3.1**
 tanks
 see Tanks
 treatment **G14/VM1** 1.1.1, 1.2, 1.2.2, 1.3.2,
 Figure 1, Table 1
 location of facilities **G14/VM1** 1.4
 types **G14/VM1** 1.2, Table 1
 unauthorised access **G14.3.2g**, **G14/VM1** 1.9
 vehicle access **G14.3.2(b)**

Inspection chambers
 see Maintenance access to drains

Inspection points
 see Maintenance access to drains

Intellectually handicapped persons
 see People with disabilities

Intended Life
 see **Durability**

Intended use **B1.3.1, B1.3.2, D1.3.5(a), E3.3.5, F1.3.2(a), F3.3(f), F4.3.2, G2.3.1, G3.2.1, G3.3.1(a), G3.3.6, G5.2.1(b), G9.2, G11.1(c), G11.2, G12.3.5, G15.2**

Interior Environment **G5**
 accessible reception areas **G5.3.4**
 adequate activity space **G5.1(b), G5.2.1(b)**
see also Activity space
 enhanced listening systems **G5.3.5 and G5.3.6**
 internal temperature **G5.1(a), G5.2.1(a), G5.3.1, G5/AS1 1.0, Tables 1,2**
 unsafe installations **G5.1(c), G5.2.2, G5.3.2**

Interior lighting
see **Artificial Light**

Interior linings **G3/AS1 1.6, 2.2**
 ceilings **G3/AS1 2.1.2, 2.2.3**
 floors **G3/AS1 2.2.3, 2.2.4, 2.3.3, 2.3.4, 2.3.5, 2.3.6**
 walls **G3/AS1 1.6, 2.1.1, 2.1.2, 2.2.3, 2.2.4**

Interior surfaces **G7/AS1 1.0.2, 1.0.3, 1.0.4, Table 1**

Internal Moisture E3
 concealed spaces **E3.3.6**
 condensation **E3/AS1 1.0.1**
 floor surfaces **E3.3.3, E3.3.5**
 free water overflow **E3.2(b), E3.3.2**
 fungal growth **E3.2(a); E2/AS1 1.0**
 overflow **E3/AS1 2.0**
 containment **E3/AS1 2.0.1, 2.1, Figure 4**
 floor waste **E3/AS1 2.0.1, 2.2**
 thermal resistance **E3.3.1**
 ventilation **E3.3.1**
 wall surfaces **E3.3.4, E3.3.5**
 water splash **E3/AS1 3.0**
 basins **E3/AS1 3.2.6, Figure 8**
 baths **E3/AS1 3.2, 3.2.6, Figure 8**
 floor linings **E3/AS1 3.1.2, 3.2.4, Figure 6**
 laundry tubs **E3/AS1 3.2, 3.2.6, Figure 8**
 showers **E3/AS1 3.2, 3.2.2 3.2.5, Figures 5, 7**
 sinks **E3/AS1 3.2.6, Figure 8**
 urinals **E3/AS1 3.2, 3.2.1**
 wall linings **E3/AS1 3.1.3, 3.2.4, 3.2.6, Figures 6, 8**

Isolating valves **G12/AS1 3.4.1, 3.4.2**

J

Jetties
see **Ancillary Buildings**

K

Kerbs **D1/AS1 1.5.3(a), Figure 6**
see also Ramps

Kindergartens
see Early childhood centres and **Communal Non-Residential**

Kitchens
see **Food Preparation and Prevention of Contamination**

Kitchen sinks **G13/AS1 2.3.2(a), Figure 2, Tables 1 and 5**

L

Laboratory testing **B2/VM1 1.3**

Ladders **C2/AS1 2.4.7, 3.4.4, 7.1.1, Figures 10, 23, 24 and 25; D1/AS1 5.0, 5.1.1**
 height **D1/AS1 5.1.2, 5.1.7**
 individual rung-type ladders **D1/AS1 5.1.1(c), 5.4, Figure 24**
 clearance **D1/AS1 5.4.1(c)**
 height **D1/AS1 5.4.1(c)**
 rungs **D1/AS1 5.4.1(a)**
 tread width **D1/AS1 5.4.1(b)**
 width **D1/AS1 5.4.1(b)**
 landings **D1/AS1 5.3.2, length D1/AS1 5.1.5, 5.1.7 width D1/AS1 5.1.4**
 location **D1/AS1 5.1.3**
 rung spacing **D1/AS1 5.1.6**
 rung-type ladders ... **D1/AS1 5.1.1(b) 5.3, Figure 20**
 clearances **D1/AS1 5.3.1(e)**
 height **D1/AS1 5.3.1(d)**
 landings **D1/AS1 5.3.2, Figure 23**
 rungs **D1/AS1 5.3.1(b)**
 slope **D1/AS1 5.3.1(a)**
 width **D1/AS1 5.3.1(c)**
 safety enclosures **D1/AS1 5.1.2, Figures 21, 22**
 step-type ladders **D1/AS1 5.1.1(a), 5.2, 5.2.1(a), Figure 19**
 clearances **D1/AS1 5.2.1(e)**
 height **D1/AS1 5.2.1(d)**
 horizontal openings **D1/AS1 5.2.1(f)**
 slope **D1/AS1 5.2.1(a)**
 treads **D1/AS1 5.2.1(b)**
 width **D1/AS1 5.2.1(c)**
 types of ladders **D1/AS1 5.1.1**

Landings **D1.3.2(l) and (m), D1.3.4(i)**

Landslip **B1/VM4 2.1.1(a)**

Laundering . G2 G2.2, G2.3.1 to G2.3.4; G2/AS1 1.0
 electricity supply **G2/AS1 1.1.2**
 laundry tubs **E3/AS1 3.2, 3.2.6, Figure 8; G2/AS1 1.0.1(a), 1.0.2, 1.1.1; G13/AS1 2.3.2(b)(c), Figure 2, Table 1 and Table 5**
 alternative solution **G2/AS1 1.0.3**
 capacity **G2/AS1 1.0.2(a)**
 size **G2/AS1 1.0.2(b)**
 minimum dimensions **G2/AS1 1.2.1, Figure 1**
 number of facilities **G2/AS1 1.3.1, Table 1**
 overflow **E3.3.2**
 people with disabilities **G2.3.4; G2/AS1 1.2.2, Figure 2**
 washing machines **G2/AS1 1.0.1(b), 1.1.2, water supply G2/AS1 1.1.1, 1.1.2**

Lavatories
see **Personal Hygiene**

Legionella bacteria **G12/AS1** 4.13.3

Libraries
see **Communal Non-Residential**

Lifts
see **Mechanical Installations for Access**

Light
see **Artificial Light, Natural Light and Lighting for Emergency**

Light switches **G9/AS1** 2.0.1(a)(b)

Lightning protection **F3/AS1** 2.1.4

Lighting for Emergency **C2/AS1** 7.5.2; **C4/Annex** B2.3.3, B3.3 Type 16; **F6**
amendments to NZS 6742 "Code of Practice for
Emergency Lighting in Buildings" **F6/AS1** 1.3
illuminance **F6/VM1** 1.0
adequate illumination **C2.3.3**
duration of illuminance **F8.3.3(b)**
minimum illuminance **F6.3.1, G8.3**
installation **F6/AS1** 1.2
lighting within escape routes **F6.2**
location **F6/AS1** 1.1
signs **F6.3.2**

Liquid Fuel
see also **Piped Services and Hazardous Substances
and Processes**
appliances **C1/AS1** 5.0

Liquifaction **B1/VM4** 5.0.2(h)

Loads
see **Structure, loads**

M

Maintenance **B2.3, D2.3.1(f), D2.3.4(c), E1.3.3(d),
G10.3.6, G11.3.4, G12.3.6(d) and (e), G13.3.1(d),
G13.3.2(d), G14.3.2(h), G15.3.2(c)**

Maintenance access to drains **G13/AS2** 9.0
access chambers **E1/VM1** 3.3.1, 3.3.2; **E1/AS1**
3.7.1, 3.7.2(b), 3.7.4, 3.7.5, Figure 12; **G13/AS2**
9.2.1, 10.1.2, Figures 11 and 12
access points **E1/AS1** 3.7, 3.7.3, 3.7.7, 3.7.8;
G13/AS2 9.1.1, 9.3.1
construction **G13/AS2** 8.0, 9.2
inspection chambers **E1/AS1** 3.7.1, 3.7.2(b),
3.7.4, 3.7.5, Figure 11; **G13/AS2** 9.2.1, 10.1.2,
Figures 11 and 12
inspection points **E1/AS1** 3.7.1, 3.7.2(b);
G13/AS2 9.2.1, Figures 8, 10 and 11
location **G13/AS2** 9.3.1
rodding points **E1/AS1** 3.7.1, 3.7.2(a), Figure 10;
G13/AS2 9.2.1, Figure 9

Maraes
see **Housing, group dwellings**

Masonry
see **Design, masonry**
masonry buildings **B1/AS3** 1.1.1, **B1/AS4** 1.0.1

Materials **B1; C4/Annex** A1.2(c)
barriers **B1/AS2** 1.0.3
bedding and backfilling **E1/AS1** 3.9.5; **G13/AS2**
8.2.3, 8.2.4
brittle materials **F2.3.3**
degradation of building materials **F1/VM1** 2.7
downpipes **E1/AS1** 4.1, Table 4
drains **E1/AS1** 3.1, Table 1; **G13/AS2** 7.0, 7.1,
Table 3
fire stop **C3/AS1** 6.2
foamed plastic **C3/AS1** 2.15
gas pipes **G11/AS1** 5.1
non-combustibility of materials **C4/Annex** E6
piped services **G10/AS1** 1.0.1(c), Table 1
properties of lining materials **C4/Annex** E5
rendering hazardous materials harmless **F3.3(e)**
roof gutters **E1/AS1** 5.2, Table 6
sanitary plumbing **G13/AS1** 6.1, Table 7
thermal resistance **E3/AS1** 1.1.3, Figures 1, 2, 3
used in construction **G14/VM1** 1.5.1
vent pipes **G12/AS1** 4.4.2(a)
wall cladding **E2/AS1** 2.0.1(a)
water supply pipes **G12/AS1** 5.0, 5.1.2, 5.2,
Tables 5 and 6

Means of Escape **C2**
see **Escape routes, Evacuation time, Exitways,
Final exits, Fire hazards, Open paths, Safe paths,
Safe places, Travel distances**

Mechanical Installations for Access **D2**
control system **D2.3.1(e)**
emergency conditions **D2.3.3**
escalators **D1.3.2(e)**
lifts **C3/AS1** 2.4.1, 2.12.6, 5.5.2, 8.4.2, 9.8.1(b),
Figure 12; **C4/Annex** B3.3 Type 15; **D1.3.1(c),
D1.3.2(c), D1.3.4(c)**
lighting **D2.3.2(c)**
loads **D2.3.1(a)**
location of potentially dangerous equipment
D2.3.4
people with disabilities **D2.3.5**
servicing mechanical installations **D2.1(b)**

Medical Consultancy Rooms **D1.3.4(c)(iv)**
see also **Communal Non-Residential**

Mixing devices
see **Water supply, hot**

Moisture
see **External Moisture, Internal Moisture and
Surface Water**

Motels **D1/AS1** 9.1.1
see also **Communal Residential**

Municipal Offices **D1.3.4(c)(iv)**
see also Commercial Buildings

Museums
see Communal Non-Residential

N

Natural Light **G7**
 awareness of the outside environment **G7.1, G7.2, G7.3.2**
 minimum illuminance **G7.3.1**
 non-return valves **G12/AS1 4.9.1(b)**, Table 4
 rooflights **C3/AS1 4.8.6**

Natural Ventilation
see Ventilation

Network utility operators **F1/VM1 2.1.1(f)**, **G11.3.6, G13.3.3, G14/AS1 1.2.1, 1.2.2, G15.3.3**

No-sky line condition **G7/AS1 1.0.3**, Figure 3

Non-evacuation **C4/AS1 1.2**

Non-potable water supply
See Water supply

Nurses's or Nursing Homes
see Communal Residential

O

Obstructions **C2/AS1 2.3.5, 7.3.3; D1.3.2(b); D1/AS1 1.5**
 dangerous projections **D1/AS1 1.5.4**, Figure 6
 isolated columns **D1/AS1 1.5.5**, Figure 7
 major projections **D1/AS1 1.5.3**, Figure 5
 minor projections **D1/AS1 1.5.1, 1.5.2**, Figure 4

Occupants **C2.3.1(b), C2.3.2(c), C2.3.3(a), C2/AS1 8.1.1; C3.2(a), C3.3.1(b), C3.3.8(b), D2.3.5(b), G1.3.3(e)**
 children **C2/AS1 5.1.1(e)(d)**
 occupant density **C2/AS1 2.5.5**
 occupant load **C2/AS1 2.2.2, 2.3.2(c)(d)(e), 2.4.4, 2.4.5, 2.7.2(b), 2.8.1(d), 3.3.12, 3.4.1, 3.4.4, 5.1.1(d), 6.1.1, 6.1.3, 6.1.4, 6.2.1(a), 7.2.3**, Tables 1, 2 and 3; **C3/AS1 1.1(a), 2.2.3(c); 2.2.4, 2.5.1, 2.5.2, 2.5.3, 2.6.1, 2.9.5, 2.18.3, 3.3.1(d), 5.4.1, 8.3.4, 9.2.3, 9.2.4, 9.2.7, 9.2.10, 9.9.1; C4/Annex A1.2(a), A2.5, A3, Table A2, B1.2, B2.1.1, B2.2.1(c), B3.3, Table B1, D4; F7/AS1 2.1.1**
 occupied spaces **C2/AS1 2.2.1, 2.3.2(c); C3/AS1 2.8.8, 2.13.3(b) G4/AS1 1.1.1, 1.2.1(a)**
 people with disabilities **C2/AS1 5.1.1(d)(e)**

Odours
see Foul Water, Industrial Liquid Waste and Solid Waste

Offices
see Commercial Buildings

Oil
 burning chambers **F3/AS1 1.5.2, 4.8.4**,
 storage chambers **F3/AS1 1.5.2, 4.8.3**

Old people's homes **G2.2, G3.2.1, G3.3.1(a) to (d), G2/AS1 Table 1; G3/AS1 1.0.1; G5.2.1(a) and (b), G5.3.1 to G5.3.3, G5.3.5, G5/AS1 1.0.3, 2.0, Table 3; G7.2, G12.3.4**
see also Communal Residential Buildings

Open paths **C2.3.1, C2.3.2; C2/AS1 2.1.2, 2.1.3, 2.4.1, 2.4.2, 2.4.5, 2.4.6, 2.4.7, 2.5.7, 3.0, 4.2.3, 4.2.5, 4.3(e)(f)(g), 5.1.1(b)(c), 5.4(c), 7.2.5(a), 7.2.7(b), 7.2.10(d), 7.2.11(d), 7.2.12(a)**, Figures 7, 31 and 32, Table 3; **C3/AS1 2.8.4, 2.8.5; F8/AS1 3.1.1(a)**

Openings
See Doors **D1/AS1 7.0.1**

Outbreak of Fire **C1**
 accumulation of gases **C1.3.1**
 likelihood of fire **C1.2**
 temperature **C1.3.2**

Outbuildings **A1 7.0. D1.2.1, D1.3.2(h), D1.3.3, G1.3.5, G8.2, G12.3.9**

Outside environment **G7/AS1 2.0.1**

Ovens
see Food Preparation and Prevention of Contamination, cooking

P

Parapets **C3/AS1 2.1.8, 4.1.2(e), 4.6.1(b), 4.6.2**,
 increases in open path lengths **C2/AS1 2.5, 4.2.3**,
 Figure 11
 number of open paths **C2/AS1 3.1**
 separation of open paths **C2/AS1 3.2**, Figure 14
 size of open paths **C2/AS1 3.1**
 special cases **C2/AS1 3.3**
 aisles **C2/AS1 3.3.5, 6.1.2, 6.2.1(b)**, Figure 18
 fixed seating **C2/AS1 3.3.4, 3.3.5**, Figures
 16, 17 and 18, Table 4
 long corridors **C2/AS1 3.3.2**, Figure 15
 loose seating **C2/AS1 3.3.11**
 ramps **C2/AS1 3.3.3**
 separate tenancies **C2/AS1 3.3.1**

Pedestrians
see Access Routes

Penetrations **C3/AS1 2.1.4(a), 2.1.5, 2.4.5(e), 6.1.1, 6.2.3, 6.3.1, 6.3.2, 6.4, 7.4.1(c)**, Figure 13
 support **C3/AS1 6.3.3**

People with disabilities **C2/AS1 5.1.1(e)(f); F8.3.4 D1/AS1 1.1.4**, Table 8, **F7/AS1 2.1.2(d)(f), F8/AS1 5.0, G1/AS1 2.3.5, 3.5** Figures 4, 5, 6, 7, 8, Table 2, **G2/AS1 1.2.2**, Figure 2, **G3/AS1 1.5.2, G5/AS1 3.0, G9/AS1 2.0, G12/AS1 6.0**

- accessible routes **G1/AS1 3.5.1**
 accessible route identification **F8/AS1 5.0.1(a)(b)**
 electrical installations **G9.3.4**
 enhanced listening systems **G5.3.5 and G5.3.6**
 facility identification **F8/AS1 5.0.1(b)**
 food preparation and cooking facilities **G3.3.5**
 information and warning signs **F8.2(d), F8.3.4**
 listening system identification **F8/AS1 5.0.3**
 Figure 7
 mechanical installations for access
 see **Mechanical Installations for Access**
 personal hygiene facilities **G1.3.5**
 provision of laundering facilities **G2.3.4**
 usable water taps **G12/AS1 6.0.1**, Figure 18
 water supply **G12.3.9**
- Personal Hygiene** **G1; G13.1(a)**
see also Sanitary fixtures
 absence of facilities **G1.1(b)**
 access to facilities **D1.3.3(c), G1.3.5**
 location of facilities **G1.3.4**
 non-water-borne disposal system **G1.3.2(h)**
 overflows from sanitary fixtures **E3.3.2 to E3.3.4**
 people with disabilities **G1.3.5**
 privacy **G1.3.2(d) G1/AS1 4.0**
 line of sight **G1/AS1 4.1**, Figure 9
 separation of male and female facilities
 G1/AS1 4.2
 privies **G1/AS1 3.6.2**
 water-borne disposal system .. **G1.3.2(g), G13.1(a)**
- Piles**
 bell diameter **B1/VM4 7.0.4(b)**
 belled piles **B1/VM4 7.0.4(b), 8.2, 8.2.1**
 cast in-situ concrete **B1/VM4 8.2.1**
 bulb diameter **B1/VM4 7.0.4(c)**
 cast in-situ piles **B1/VM4 7.0.2**
 column action **B1/VM4 7.2**
 concrete piles **B1/VM4 8.1, 8.1.1, 8.1.2, 8.1.3**
 cast in-situ **B1/VM4 7.0.2, 8.1.1, 8.1.2, 8.2.1**
 precast piles **B1/VM4 8.1.3**
 friction piles **B1/VM4 7.4, 7.4.2**
 frictional resistance **B1/VM4 7.0.2, 7.4.1, 7.5**
 Hiley Formula **B1/VM4 7.0.3, Appendix A A2, A3, A4, A5, A6, A7, Tables A1, A2 and A3**
 alternative formula for hard driving **B1/VM4 Appendix A A4**
 bearing capacity **B1/VM4 Appendix A A6**
 blow efficiency .. **B1/VM4 Appendix A A3, Table A2**
 field measurements **B1/VM4 Appendix A A7**
 pile stresses and hardness of driving **B1/VM4 Appendix A A5, Table A3**
 symbols **B1/VM4 Appendix A A1**
 temporary compression **B1/VM4 Appendix A A2, Table A2**
 lateral load **B1/VM4 7.3, 7.3.1, 7.3.2, 7.3.3, 7.3.4, 7.3.5, 7.4.3**
 deflection limits **B1/VM4 7.3.5**
 ultimate lateral pile capacity **B1/VM4 7.3.1, 7.3.2, 7.3.3, 7.4.3**
 geotechnical calculation **B1/VM4 7.0.1(a), 7.3.1, 7.3.2**
 static lateral load testing **B1/VM4 7.3.1, 7.3.3**
 lateral loads **B1/VM4 7.3**
 nominal pile width **B1/VM4 7.0.4(a), 7.3.2(a)(b), 7.4.3**
 pile clusters **B1/VM4 7.4**
 pile driving **B1/VM4 7.0.3, 9.0, 9.0.2, 9.1.1**
 jetting **B1/VM4 9.0.2**
 positional tolerance **B1/VM4 9.1**
 pile driving formula **B1/VM4 7.0.3**
 pile spacing **B1/VM4 7.4.3, 9.0.1**
 pile types **B1/VM4 8.0**
 steel piles **B1/VM4 8.3, 8.3.1, 8.3.2**
 corrosion **B1/VM4 8.3.1, 8.3.2**
 encased in concrete **B1/VM4 8.3.2**
 timber piles **B1/VM4 8.4, 8.4.1**
 treatment **B1/VM4 8.4.1**
 ultimate axial compressive pile capacity **B1/VM4 7.0.1(a)(b)(c), 7.0.2, 7.0.3, 7.0.4, 7.4**
 dynamic test driving **B1/VM4 7.0.1(b), 7.0.3**
 geotechnical loading **B1/VM4 7.0.1(a), 7.0.2**
 static load testing **B1/VM4 7.0.1(c), 7.0.4**
 ultimate frictional resistance **B1/VM4 7.0.2, 7.5.2**
 ultimate pile point-bearing resistance **B1/VM4 7.0.2**
- Piped Services** **G10**
 extreme temperatures **G10.1, G10.2**
 gas pipes **G10.3.2, G10.3.5**
 hazardous substances **G10.1, G10.2**
 identification of piping systems **G10.3.4**
 isolating devices **G10.3.6**
 piping systems **G10.3.1**
 preventing sound transmission **G6/AS1 1.0.1 (c)**
 protection against corrosion **G10.3.3**
- Pipes** **G13/AS1 1.0.1, 6.0**,
see also Discharge pipes, Discharge stacks,
 Vent pipes, and Waste pipes
 installation **G11/AS1 4.0**
 jointing methods **G13/AS1 6.2**
 materials **G13/AS1 6.1, Table 7**
 pressure ranges **G11/AS1 1.1**
 flow velocities **G11/AS1 1.4**
 pressures above 1.5 kPa **G11/AS1 1.3**
 pressures below 1.5 kPa **G11/AS1 1.2**
 sizing **G11/AS1 1.0**
 supports **G13/AS1 6.3**
 thermal movement **G13/AS1 6.3.2**
 water tightness **G13/AS1 7.0**
- Places of assembly**
 see Communal Non-Residential
- Plumbing Systems**
 see **Foul Water**
- Pools**
 see Swimming pools
- Potable water supply**
 see **Water Supplies**
- Pressure limiting valves** **G12/AS1 3.3.2, 4.1.1(ii), 4.9.1(a)(b)(c), 5.2.3(a), Table 4**
- Pressure reducing valves** **G12/AS1 3.3.2, 4.1.1, 4.9.1(a)(b)(c), 5.2.3(a), Table 4**

- Pressure regulators **G11/AS1** 2.1
- Pressure relief valves **G12/AS1** 4.2.2(b), 4.3.2, 4.3.3, Table 4
 installation **G12/AS1** 4.3.5
 relief discharge pipes **G12/AS1** 4.3.5(b)(iii), 4.3.6, Figures 12 and 15
- Prisons
 see **Communal Residential**
- Privies
 see **Personal Hygiene**, privies
- Privacy
 see **Personal Hygiene**
- Private water supply
 see **Water Supplies**
- Protecting other property
 see **Spread of Fire, Internal Moisture and Water Supplies**
- Protected paths **C2/AS1** 2.1.2, 2.1.3, 2.4.1, 2.4.3, 2.4.4, 2.4.5, 2.9.1(a), 4.1, 5.2.1(b), 5.3.1(b), 7.2.10(d), 7.2.12(b), 7.4.1, 7.4.2, Figures 8, 31 and 33, Table 3; **C3/AS1** 2.11.1, 2.12.6, 2.13.3(b)
- Protected shafts **C3/AS1** 2.1.5, 2.4, 5.1.4, 5.5, 8.4.2, Figure 4; **F7/AS1** 2.1.2(b)
 access panels **C3/AS1** 5.5.1
 conveyors **C3/AS1** 2.4.1
 fire separations **C3/AS1** 2.4.2
 lifts **C3/AS1** 2.4.1, 2.12.6
 linen chutes **C3/AS1** 2.4.5
 openings **C3/AS1** 2.4.5
 solid waste chutes **C3/AS1** 2.4.6
 services **C3/AS1** 2.4.1
 sprinklers **C3/AS1** 2.4.8
- Protection of gas supply **G11/AS1** 7.0
 contamination **G11/AS1** 7.1
 low pressures **G11/AS1** 7.2
- Protection of water supplies **G12/AS1** 2.1.1, 2.3
 cross connections **G12/AS1** 2.1.1, 2.2
 air gaps **G12/AS1** 2.3.2(a), Figure 1
 devices **G12/AS1** 2.3.2(b), 2.4
 double check valves **G12/AS1** 2.4.3, 2.5.1, Figure 2
 hose connection vacuum breakers **G12/AS1** 2.4.6, 2.4.7, Figure 4
 reduced pressure device **G12/AS1** 2.4.4, 2.4.5, 2.5.1, Figure 3
 hazard levels **G12/AS1** 2.4.1, Table 1
 installation **G12/AS1** 2.4.2
 testing **G12/AS1** 2.5
- Purpose groups **C3/AS1** 1.1(a), 2.1.2, 3.3.1(c)(d), 3.4.1, 3.8.1, 4.1.3, 4.3.1, 4.4.1(b), 4.5.1(b), 4.9.2, 8.1.2, 9.3.2(c), Table 2; **C4/Annex** A1.3, A2, A3.2, B1.2, B2.4, B2.5, B2.6, B2.10, B2.10.2, C6.2(b); **F7/AS1** 2.1.1
- CL **C2/AS1** 5.3.2, 6.1, 6.2.3, Tables 1, 2 and 3;
C3/AS1 2.5, 8.3.2, 8.3.3(d), 8.4.1, 9.3.2(a);
C4/Annex A2.5, A2.7, Table A1, B2.2.1(b), B3.3 Type 2, Type 4, Type 16, Table B1/1, C6.2(a), Tables C2 and C3
- CM **C4/Annex** A2.5, Table A1, Table B1/2, Tables C2 and C3
- CM **C2/AS1** 4.3(a), 5.3.1, Figure 22, Tables 1, 2 and 3;
C3/AS1 2.6, 2.18.3, 3.6.6(b), 4.1.1, 4.4.1(a), 4.4.4(b), 4.4.5, 4.4.10, 4.5.1(b), 9.2.2, 9.2.3, 9.2.11, 9.3.2(b); **C4/Annex** A2.5, Table A1, Table B1/2, Tables C2 and C3
- CO **C2/AS1** 6.2, 7.2.11(a), 7.3.1, Figure 22, Tables 1, 2 and 3; **C3/AS1** 2.7; **C4/Annex** Table A1, B2.2.1, B2.3, B3.3 Type 16, C6.2(a), Tables C2 and C3
- CS **C2/AS1** 5.3.1, 7.2.11(a), 7.3.1, Figure 22, Tables 1, 2 and 3; **C3/AS1** 2.5, 4.4.4(b), 8.3.2, 8.4.1, 9.3.2(a); **C4/Annex** A2.3, A2.5, A2.7, A2.8, Table A1, B3.3 Type 4, Type 16, Table B1/1, C6.2(a), Tables C2 and C3
- IA **C2/AS1** 3.4.4, 5.3.1, Figure 22, Tables 1, 2 and 3;
C3/AS1 2.12, 4.8.6(c); **C4/Annex** A2.5, Table A1, B2.2.1, B2.3, B3.3 Type 16, C6.2(a), Tables C2 and C3
 car parking **C3/AS1** 2.12.3, Figure 5
 solid waste storage **C3/AS1** 2.12.2
 sprinklers **C3/AS1** 2.12.4(a), 2.12.5, 2.12.6
- ID **C2/AS1** Tables 1, 2 and 3; **C3/AS1** 2.13;
C4/Annex Table A1, B2.2.1, B2.3, B3.3 Type 16, Table C2
 plant, boiler and incinerator rooms **C3/AS1** 2.13.3, Figure 6
- IE **C3/AS1** 2.11, 9.1.1; **C4/Annex** Table A1, B2.2.1, B2.3, Table C2
- SA **C2/AS1** 3.4.3, 4.2.2, 4.2.7, 5.4.1, 6.3, 7.3.1, 7.4.6(b), 8.2, Tables 1, 2 and 3; **C3/AS1** 2.4.6, 2.9, 2.15.2(a), 2.18.3, 3.3.2(e), 3.6.6(b), 3.8.2, 4.1.1, 4.3.3, 4.4.1(a), 4.4.5, 4.5.1(b), 8.4.1, 9.3.2(a), Tables 1 and 2;
F7/AS1 2.1.2(d)
 sprinklers **C3/AS1** 2.9.6
- SC **C2/AS1** 2.3.4, 3.4.5, 4.2.7, 4.4.2(a), 6.3, 7.2.4, 7.4.6(b), 8.2, Tables 1, 2 and 3; **C3/AS1** 2.4.6, 2.8, 2.13.3, 2.15.2(b), 2.18.3, 3.3.2(e), 3.6.6(b), 3.8.2, 4.1.1, 4.3.3, 4.4.1(a), 4.4.5, 4.4.10, 4.5.1(b), 4.9.1, 5.3.1, 5.3.2, 5.5.3, 8.2.1(b), 8.4.1, 9.3.2(a), Tables 1 and 2; **C4/Annex** A3.6, Table A1, B2.5.3, B3.3 Type 2, Type 3, Type 4, Type 6, Type 7, Table B1/5, Tables C2 and C3; **F7/AS1** 2.1.2(c)(e)
 sprinklers **C3/AS1** 2.8.10
- SD **C2/AS1** 2.3.5, 3.4.5, 4.2.7, 4.4.2(a), 6.3, 7.2.4, 7.4.6(b), 8.2, Tables 1, 2 and 3; **C3/AS1** 2.4.6, 2.8, 2.13.3, 2.15.2(b), 2.18.3, 3.3.2(e), 3.6.6(b), 3.8.2, 4.1.1, 4.3.3, 4.4.1(a), 4.4.5, 4.4.10, 4.5.1(b), 4.9.1, 5.3.1, 5.3.2, 5.5.3, 8.2.1(b), 8.4.1, 9.3.2(a), Tables 1 and 2; **C4/Annex** A3.6, Table A1, B2.5.3, B3.3 Type 2, Type 3, Type 4, Type 6, Type 7, Table B1/5, Tables C2 and C3; **F7/AS1** 2.1.2(c)(e)
 sprinklers **C3/AS1** 2.8.10
- SH **C2/AS1** 7.6.1; **C3/AS1** 2.2.1(b), 3.3.2(e), 4.3.3, 8.1.1; **C4/Annex** Table A1, B2.2.1, B2.3, Figure C2, Tables C1 and C2

SR **C2/AS1** 3.4.3, 4.2.2, 4.2.7, 5.4.1, 6.3, 7.3.1, 7.4.6(b), 7.6.1, 8.2, Figure 23, Tables 1, 2 and 3; **C3/AS1** 2.2.3(a), 2.4.6, 2.10, 2.15.2(a), 2.18.3, 3.3.2(e), 3.6.6(b), 3.8.2, 4.1.1, 4.3.3, 4.4.1(a), 4.4.5, 4.5.1(b), 8.1.1, 8.4.1, 9.3.2(a), Tables 1 and 2; **C4/Annex** A2.5, A2.9, Table A1, B2.5.3, B3.3 Type 4, Type 6, Type 7, Table B1/7, C1.4(a), Figure C2
 WDC**C2/AS1** 7.4.3, Tables 1, 2 and 3; **C3/AS1** 2.13.1, 9.3.2(b); **C4/Annex** Table A1, Table B1/4, Tables C2 and C3
 WL **C2/AS1** 4.3(a), 5.3.1, 7.2.11(a), 7.3.1, Figure 22, Tables 1, 2 and 3; **C3/AS1** 2.2.3(a), 4.4.4(b), 9.3.2(a); **C4/Annex** A2.5, A2.8, Table A1, Table B1/3, C6.2(a), Tables C2 and C3
 WM **C2/AS1** 5.3.1, Figure 22, Tables 1, 2 and 3; **C3/AS1** 9.3.2(b); **C4/Annex** Table A1, Table B1/3, Tables C2 and C3

R

Radioactive substances
 see **Hazardous Substances and Processes, Class 7**

Ramps **C2/AS1** 3.3.3, 4.4.7, 7.1; **D1/AS1** 1.3.1, 1.3.2, 3.0,
 accessible ramps **D1/AS1** 3.1.3, 6.0.2, 6.0.3,
 Figure 9
 slopes **D1/AS1** Table 2
 width **D1/AS1** 3.2
 kerb ramps **D1/AS1** 3.4, Figure 10
 landings **D1/AS1** 3.3, Figure 25
 intermediate landings **D1/AS1** 3.3.1, Table 4
 length **D1/AS1** 3.3.3
 width **D1/AS1** 3.3.2
 service ramps **D1/AS1** 3.1.2, Figure 8, Table 3
 slip resistance **D1/AS1** 3.1.4
 slopes **D1/AS1** 3.1, 3.1.1,

Reflectances **G7/AS1** Table 2
 high **G7/AS1** 1.0.3, 1.0.4, Table 1
 medium **G7/AS1** 1.0.3, 1.0.4, Table 1

Refuge areas **C2/AS1** 2.6, Figure 12 **C4/Annex** B3.3
 Type 19

Refuse
 see **Solid Waste**

Reinforcing steel **B1/AS3** 1.3.2(b)(c), 1.4, 1.6, 1.6.1,
 1.6.2, 1.8.5, 2.2.1(a), Table 1

Relief discharge pipes
 see **Cold water expansion valves, Temperature
 relief valves**

Remedial work **F1/VM1** 2.6, Table 3

Restaurants **G13/AS2** 4.2.2
 see also **Communal Non-Residential**

Retirement villages
 see **Communal Residential**

Risk assessment **F1/VM1** 1.0.2(ii), 2.5, 2.5.4,

Rodding points
 see **Maintenance access to drains**

Roofs **C3/AS1** 2.1.2, 2.1.8, 2.4.4, 2.14.1(b),
 2.15.1, 3.1.1(b), 3.3.2(d), 3.4.2(a), 3.4.3, 4.0, 4.4.3,
 4.6.1, 4.7.3, 4.8, 7.3.1(c), Figures 7 and 9; **E2/AS1** 1.0
 claddings **E2/AS1** 1.0.1(b), 1.2, Table 2
 eaves **C3/AS1** 4.4.10
 joints **E2/AS1** 1.0.1(c)
 moisture **E2.3.1** E2.3.2
 pitch **E2/AS1** 1.0.1(a)
 rooflights **C3/AS1** 4.8.6
 underlays **E2/AS1** 1.0.1(b)

Rubbish chutes
 see **Solid waste**

Runoff **E1/VM1** 1.1.3
 estimation of runoff **E1/VM1** 2.0
 Modified Rational Method **E1/VM1** 2.0.1,
 2.0.2, 2.2
 alternative to **E1/VM1** 2.0.2,
 shape and area factors **E1/VM1** Table 1
 rainfall intensity **E1/VM1** 2.4, **Appendix A**
 Rational Method **E1/VM1** 2.0.1, 2.2.1
 runoff coefficient **E1/VM1** 2.3, Table 2
 slope correction **E1/VM1** 2.3.4, Table 3
 time of concentration .. **E1/VM1** 2.5, Figure 1
 alternative procedure **E1/VM1** 2.5.11
 catchment slopes ... **E1/VM1** 2.5.12, Figure 4
 channel flow **E1/VM1** 2.5.6(b), 2.5.9,
 2.5.10, Figure 2, Table 4
 minimum time **E1/VM1** 2.5.13
 overland flow **E1/VM1** 2.5.6(a), Figure 1
 pipe flow **E1/VM1** 2.5.7, Figure 3

S

Safe paths **C2/AS1** 2.1.2, 2.4.1, 2.4.3, 2.6.1, 2.6.2,
 2.7.2, 2.7.3, 2.9.1, 4.1.2, 4.2, 4.2.4, 4.4.1, 4.4.6,
 5.2.1(a)(b), 5.3.1(b), 5.4.1(a), 5.4.4(b), 5.4.5(a), 6.1.4,
 6.2.2, 6.3.1, 7.2.10(a), 7.2.12(a)(b)(d), 7.4.2, 7.4.5(c)(d),
 7.4.6, 8.1.2, 8.2.4, 8.3.1, Figures 29, 32, 33 and 34;
C3/AS1 1.1(a), 2.11.1, 2.11.2, 2.11.3, 2.11.5, 2.12.6,
 2.14.1(b), 2.18.1, 3.5.1(b), 4.1.1(b), 5.1.4, 9.3.5(c);
F8/AS1 3.2.3(b)
 length restrictions **C2/AS1** 4.2.3, 5.4.1(c);
C4/Annex B3.3 Type 4, Type 13, Type 19

Safe places **C2.1(a)**, **C2.2(a)**, **C2/AS1** 2.1.1;
C4/Annex B1.1, B3.3 Type 13, Type 16; **C3.2(a)**,
C3.3.6(a), **C3.3.6(c)**, **C3.3.8(b)**, **F7.3**, **F8.3.3(a)**

Safe water temperatures
 see **Water Supplies, hot**

Safety from Falling F4
 see also **Barriers**
 accidental falls **F4.2**
 children under 6 **F4.3.4(f)**
 gates **F4.3.5(a)**
 impact of people **F4.3.4(d)**

- low risk areas **F4/AS1** 1.2.2
 pressure of people **F4.3.4(d)**
 provision of barriers **F4.3.1**
 roofs with permanent access **F4.3.2**
 swimming pools **F4.3.3, F4.3.5**
- Safety of users
see **Hazardous Agents on Site, Hazardous Building Materials, Hazardous Substances and Processes, Safety from Falling, Construction and Demolition Hazards, Lighting for Emergency, Warning Systems and Signs**
- Sanitary appliances **G12/AS1** 2.3.1, 8.0.1, Table 1; **G13.2**; **G13/AS1** 1.0.2(a), 2.3.1(b), Tables 1 and 5
G13/AS2 4.2.1
 washing machines **G13/AS1** 2.3.2(c), Figure 2, Tables 1 and 5
- Sanitary fixtures **E3.3.2 to E3.3.4, G1.3.1, G1.3.2, G12.2; G12.3.3, G12.3.5, G12.3.6(b) G12/AS1** 2.3.1, 3.3.1, 4.11.1, 4.13.2, 7.2.2, Figure 20, Tables 1 and 2; **G13.2; G13/AS1** 1.0.2(a), 2.3.1, 3.2.6(a), Figure 9, Tables 1 and 5, **G13/AS2** 3.1.1(a), 4.2.1,
- see also* Basins, Bidets, **Personal Hygiene**, Showers, Urinals, and WC pans.
- acceptable standards **G1/AS1** 2.6
 access to food and work areas **G1/AS1** 3.2
 communal sanitary fixtures **G1/AS1** 3.4
 construction and installation **G1/AS1** 2.0
 locations **G1/AS1** 3.0, 3.5.1
 non-flushing sanitary fixtures **G1/AS1** 3.6
 number of fixtures required **G1/AS1** 1.0, Tables 1, 2
 safe water temperatures **G12/AS1** 4.13.1, 4.13.2
 space dimensions **G1/AS1** 3.1
 soil fixtures **G13/AS2** 10.2.2, 10.2.3, **G1/AS1** 3.1.1, 3.6.1
 types of fixtures required **G1/AS1** 1.0, Table 1, 2
 usable water taps **G12/AS1** 6.0.1, Figure 18.
- Sanitation
see **Personal Hygiene**
- Schools **C4/Annex A2.7**
see also **Communal Non-Residential**
- Seating **C2/AS1** 2.3.5(c), 3.3.4, 3.3.11, 6.2.1, Figures 16 and 17, Table 4; **C4/Annex A3.5**
- Security **F3/AS1** 2.1.5 4.1; **G14.3.2g, G14/VM1** 1.9 **AS1** 1.1
- Serviceability limit states
see **Structure**, limit states
- Services and facilities
see **Personal Hygiene, Laundering, Food Preparation and Prevention of Contamination, Ventilation, Interior Environment, Airborne and Impact Sound, Natural Light, Artificial Light, Electricity, Piped Services, Gas as an Energy Source, Water Supply, Foul Water, Industrial Liquid Waste and Solid Waste**
- Settlement **B1/VM4** 1.0.1, 5.0, 5.0.1, 5.0.2
 differential settlement **B1/VM4** 5.0.1
 factors affecting settlement **B1/VM4** 5.0.2
- Sewers
see **Foul Water**
- Sheds
see **Outbuildings**
- Shops **C3/AS1** 9.2.1
 shopping malls **C3/AS1** 9.2.1
see also **Commercial Buildings**
- Shower **E3/AS1** 3.2, 3.2.2 3.2.5, Figures 5, 7; **G1/AS1** 2.5, Figure 4, 6; **G13/AS1** Table 1, 5
- Shrinkage
see **Structure**, loads
- Signs **C2.3.3, C2/AS1** 2.3.5(a), 7.6; **D1.3.4(a), D2.3.2(d), D1/AS1** 1.1.1, 10.1.3, **F8**
 escape routes **F8.2(a), F8.3.3(a)**
 exit **F8/AS1** 3.0
 alternative exit **F8/AS1** 3.2.3(b)
 arrows **F8/AS1** 3.2.2, 3.3.2, Figure 3
 backgrounds **F8/AS1** 3.3.3
 colours **F8/AS1** 2.1, 3.4, 3.5.3(a)(b), 4.1.3, Table 3
 illumination **F8/AS1** 3.5
 externally illuminated **F8/AS1** 3.5.2
 internally illuminated **F8/AS1** 3.5.3
 lighting supply **F8/AS1** 3.5.5
 self-luminous **F8/AS1** 3.5.4
 lettering **F8/AS1** 3.3.1, Table 4
 location **F8/AS1** 3.1
 no exit signs **F8/AS1** 3.2.3(a)
 wording **F8/AS1** 3.2
 fire safety **F8/AS1** 4.0, 6.4
 call points **F8/AS1** 4.1, Figure 4
 colours **F8/AS1** 4.1.3
 fire and smoke control doors **F8/AS1** 4.2
 lifts **F8/AS1** 5.4.1
 storage heights **F8/AS1** 6.4.2, Figure 11
 hazard signs **F8/AS1** 6.0
 dangerous goods **F8/AS1** 6.1
 class 1 **F8/AS1** 6.1.4
 class 2 **F8/AS1** 6.1.4
 class 3 **F8/AS1** 6.1.4
 class 5 **F8/AS1** 6.1.4
 class 7 **F8/AS1** 6.1.4
 colour **F8/AS1** 6.1.3, 6.1.4(a)
 radiation warning symbol **F8/AS1** 6.1.4(a), Figure 8
 colour **F8/AS1** 6.1.3
 layout **F8/AS1** 6.1.3
 lettering **F8/AS1** 6.1.3, 6.1.4
 location **F8/AS1** 6.1.4
 electrical hazards **F8/AS1** 6.2, Figure 9
 escalators and moving walks **F8/AS1** 6.6, Figure 13

- floor loadings **F8/AS1** 6.3
 buildings **F8/AS1** 6.3.1, Figure 10
 lifts **F8/AS1** 6.3.2
 machine rooms **F8/AS1** 6.5, Figure 12
 passenger lifts **F8/AS1** 6.3.2(a)
 service lifts **F8/AS1** 6.3.2(b)
 hazardous substances and processes ... **F3.3(g)**,
 identification of hazards **F8.2(c)**, **F8.3.2**
 non-potable water **F8/AS1** 6.7, Figure 14
 lighting for emergency **F6.3.2**, **F8.3.3(b)**
 people with disabilities **F8.2(d)**, **F8.3.4**, **F8/AS1**
 5.0
 access symbol **F8/AS1** 5.0.2(c), Figure 6
 layout **F8/AS1** 5.0.2 Figure 5
 listening systems **F8/AS1** 5.0.3, Figure 7
 readability **F8.3.1**
 lettering type and proportions **F8/AS1** 1.0,
 Table 1
 safety **F8/AS1** 2.0, 3.2.1
 caution **F8/AS1** 2.2.2, 6.1.2, 6.2.2, Figure 2
 colours **F8/AS1** 2.1, Table 3
 layout **F8/AS1** 2.2
 prohibition and stop signs **F8/AS1** 2.2.1,
 Figure 1
 safe condition signs **F8/AS1** 2.2.3
 safety symbols **F8/AS1** 2.3
 visibility **F8.3.1**, **F8.3.3(b)**
- Sinks **E3/AS1** 3.2.6, Figure 8; **G3/AS1** 1.1.5,
G13/AS2 4.1.1
 see also Basins, Cleaners sinks, and Kitchen sinks
- Site characteristics **B1/VM4** 1.0.1, 2.0, 2.1.1(d), 2.2.1,
 2.2.3, 8.3.1,
 field investigation **B1/VM4** 2.2.1
 laboratory testing **B1/VM4** 2.2.1
 seasonal changes **B1/VM4** 2.1.1(d)(e)
 site investigation record **B1/VM4** 2.2.3
 site plan **B1/VM4** 2.2.3
- Site investigation **B1/VM4** 2.0, 2.1, 2.2 **F1/VM1**
 1.0.3, 2.0, Figure 1
 analysis **F1/VM1** 2.4
 assessment **F1/VM1** 1.0.3, 2.5, Figure 2
 detailed investigation **B1/VM4** 2.2 **F1/VM1**
 1.0.2(c), 2.3
 history and records **F1/VM1** 2.1
 preliminary investigation **B1/VM4** 2.1 **F1/VM1**
 1.0.2(b), 2.2
 previous industrial use of site **F1/VM1** 2.1.1,
 Table 1
- Site specific considerations **B2/VM1** 1.2
- Siteworks
 see **Structure**
- Skylights **F3/AS1** 1.4.2, 4.7.8(d)
- Slopes **B1/VM4** 3.2.1 **D1/AS1** 1.2
 changes in level **D1/AS1** 1.3, 1.3.1
 cross falls **D1/AS1** 1.2.2
 permanent slopes **B1/VM4** 3.2.2
 safe slopes **D1/AS1** 1.2.1, Figure 2
 temporary slopes **B1/VM4** 3.2.3
- Slope stability **B1/VM4** 3.2
- Small chimneys
 see Chimneys
- Smoke **C3.3.1**, **C3.3.2**, **C3.3.4**, **C3.3.7**, **C3.3.8**
 see also Fire, Fire Separation
- Smoke control **C2/AS1** 8.0; **C3/AS1** 2.12.7, 9.0;
C4/Annex
 see also Fire safety precautions
 annual tests **C4/Annex** D3
 automatic smoke control systems **C3.3.8**
 horizontal smoke spread **C3/AS1** 9.2.1, 9.2.2
 mechanical smoke control **C2/AS1** 8.1.1(b);
 C3/AS1 9.2.4, 9.2.5, 9.2.6, 9.3, 9.5, 9.6, 9.7
 pre-occupancy tests **C4/Annex** D2
 pressurisation **C2/AS1** 8.1.1(c), 8.2.1, 8.3.1
 smoke baffles **C3/AS1** 9.2.4, 9.2.9, 9.4, Figure 18
 smoke reservoirs **C3/AS1** 9.2.6, Figure 17
 ventilation **C2/AS1** 8.1.1(a)
 vertical safe paths **C2/AS1** 8.3
 vertical smoke spread **C3/AS1** 9.2.1, 9.2.4
- Smoke detectors **C2/AS1** 2.5.4, Table 3; **C3/AS1**
 5.5.3, 5.7.2, 7.1.1(b)(c), 9.2.4, 9.3.1(b), 9.5; **C4/Annex**
 B3.3 Type 4, Type 5, Type 7, Type 9, Type 12, Type 13,
 D; **F7/AS1** 2.1.2(b)
- Smoke developed index (SDI) **C3/AS1** 7.1.1(f), 8.1.3,
 8.1.5, Table 4
- Smoke separations **C2/AS1** 2.7.3, 3.2.1(b), 3.3.2,
 3.4.2, 4.1.1(a)(b), 4.2.4, 4.2.6, 4.3(d), 5.4.3(c), 7.2.10(c),
 7.4.1, 8.3.1, Figure 30; **C3/AS1** 2.1.4, 2.1.5, 2.1.9,
 2.1.10, 2.1.11, 2.5.1, 2.5.3, 2.9.5, 2.12.1, 5.1.1, 5.6,
 5.6.1, 6.4
 closures **C3/AS1** 5.0, Table 3
 fire shutters **C3/AS1** 5.7
- Smoke spread
 see Smoke control
- Smokecells **C3/AS1** 2.1.1, 2.1.5, 2.5.1(a)(b), 2.5.2,
 2.6.1, 2.9.5, 2.11.1, 5.5.2, 5.5.3
- Snow
 see **Structure**, loads
- Socket outlets
 see Electricity, people with disabilities
- Soil fixtures
 see Sanitary fixtures
- Soils
 adverse moisture conditions **B1/VM4** 4.1.3
 properties **B1/VM4** 4.1.1
 compressive strength **B1/VM4** 4.1.1
 shear strength **B1/VM4** 4.1.1
 shrinkage and expansion **B1/VM4** 2.1.1
- Solid fuel appliances **C1/VM1** 1.0.1 **C1/AS1** 1.0

- clearances **C1/AS1 1.4**,
- domestic appliances **B1/AS3 2.0**,
- flues **C1/AS1 1.2**
- hearths **C1/AS1 1.3**

- Solid Waste **G15**
- collection **G15.2, G15.3.1**
- holding **G15.2, G15.3.1**
- sewer **G15.3.3**
- storage **C2/AS1 2.7.1, C3/AS1 2.12.2; G15/AS1 1.0.1, 3.0, Figure 1**
- alternative solution **G15/AS1 3.1**
- capacity **G15/AS1 1.0.1**
- location **G15/AS1 2.0.1**
- floors **G15/AS1 3.0.2**
- walls **G15/AS1 3.0.3**
- water supply **G15/AS1 3.0.7**
- windows **G15/AS1 3.0.4, 3.0.6**
- space required **G15/AS1 1.0.2**
- vehicle access **G15/AS1 3.0.10**
- ventilation **G15/AS1 1.0.3, 3.0.8, 3.0.9**
- temperature **G15.3.1(d)**
- waste disposal units **G15.3.3**
- waste (rubbish) chutes **C2/AS1 2.7.1, G15.3.2; G15/AS1 4.0, Figure 2**
- cleaning **G15/AS1 4.0.3**
- odours **G15.3.2(d)**
- spread of fire **G15.3.2(e)**
- restricted access **G15.3.2(g)**

- Sound insulation tests
 see Airborne and Impact Sound

- Sound transmission class
 see Airborne and Impact Sound

- Space requirements **G5/AS1 2.0, Table 3**

- Spandrels **C3/AS1 4.1.2(e), Figure 8**

- Specified intended life
 see Durability

- Spread of Fire **C3**
- automatic fire suppression systems **C3.3.6**
 see also Sprinklers
- automatic smoke control systems **C3.3.8**
 see also Smoke control
- concealed spaces **C3.3.4**
- external walls
 see Walls, external walls
- firecells
 see Firecells
- fire hazards
 see Fire hazards
- fire load
 see Fire load
- fire resistance rating
 see Fire resistance rating
- fire resisting closures
 see Fire resisting closure
- fire separations
 see Fire separations
- protect adjacent property **C3.1(c), C3.2(c)**
- resistant to spread of fire **C2.3.3, C3.3.1**

- rubbish chutes **C2/AS1 2.7.1 G15.3.2**
- safeguard the environment **C3.1(d), C3.2(d)**
- safety while evacuating **C3.1(a)**
 see also Means of Escape

- Spread of flame index (SFI) **C3/AS1 7.1.1(f), 8.1.3, 8.1.5, Table 4**

- Sprinklers **C2/AS1 2.5.2, 3.4.3(b) 4.4.5, 5.4.2, 5.4.4(a) 7.2.11(c), 7.4.5(a), 8.3.1, Table 3; C3.3.6; C3/AS1 1.1(a), 2.4.3, 2.4.6, 2.4.8, 2.5.2, 2.5.3, 2.7.1, 2.8.4, 2.8.5, 2.8.10, 2.9.6, 2.11.5, 2.12.4(a), 2.12.5, 2.12.6, 2.14.3, 2.15.1(b), 2.16.1(a), 2.16.2(a), 2.17.1(e), 3.3.2(c), 3.7, 3.8, 4.1.2(f), 4.3.1, 4.4.3(a), 4.6.1, 4.8.3, 4.8.6(a), 5.3.2, 5.5.3, 5.7.2, 8.1.2, 8.1.3, 8.1.5, 8.2.3, 9.2.4, 9.4, Table 1; C4/Annex B2.10.2, B3.3 Type 6, Type 7, C1.9, Tables C1, C2 and C3,**

- Stability
 see Structure

- Stadiums
 see Communal Non-Residential

- Stages **C3/AS1 2.5.3, 9.9**

- Staircase
 see stairs

- Stairs
 see Stairways

- Stairways **C2/AS1 2.4.7, 3.4.3, 5.4.1(b), 5.4.2, 5.4.3, 5.4.4, 7.1.1, Figures 10, 23, 24 and 25; C3/AS1 5.7.1; D1.3.2(f) to (i), D1.3.4(g) and (h), D1/AS1 4.0**
 see also Access Routes and accessible routes
- accessible stairs **D1/AS1 4.2.1, 6.0.2, 6.0.3, Tables 5, 6, 7, Figure 11**
- common stairs **D1/AS1 4.2.1, Figure 11, Tables 5, 6, 7**
- curved stairs **D1/AS1 4.4.1, Figure 17**
- landings **D1/AS1 4.3, 4.3.1, Figure 14, 25**
- direction changes **D1/AS1 Figure 16**
- length **D1/AS1 4.3.4**
- maximum rise **D1/AS1 4.3.2 Table 6**
- obstructions **D1/AS1 4.3.5, Figure 15**
- width **D1/AS1 4.3.3**
- pitch **D1/AS1 4.1, Figure 11, Table 5**
- pitch lines **D1/AS1 1.4.1, 4.4.2**
- private stairs ... **D1/AS1 4.4.3, Figure 11, Tables 5, 7**
- risers **D1/AS1 4.1, 4.1.2, 4.1.3, 4.1.8, 4.4.2, Figure 11, Tables 5, 12**
- service stairs .. **D1/AS1 4.4.3, Figure 11, Tables 5, 7**
- spiral stairs **D1/AS1 1.4.1**
- treads **D1/AS1 4.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.1.7, 4.5.1, Figures 11, 12, 13 Tables 5, 12**
- tapered treads **D1/AS1 4.4, 4.4.1, 4.4.2, Figure 17**
- visibility **D1/AS1 4.3.6, 4.5, 4.5.2, Table 7; G8/AS1 1.0.3**

- width **D1/AS1 4.2, 4.2.1, 6.0.1,**
- winders **D1/AS1 4.4.3, Figure 10**

- Standard test methods **C4/Annex**
 fire resistance **C4/Annex E7**
 fire resisting closures **C4/Annex E8**
 flammability of floor coverings **C4/Annex E2**
 flammability of membrane structures ... **C4/Annex E4**
 flammability of suspended flexible fabrics . **C4/Annex E3**
 non-combustibility of materials **C4/Annex E6**
 properties of lining materials **C4/Annex E5**
- Stationary internal combustion engines **F3/AS1 4.7.12**
- Steel
see Design, steel
- Steps
see Stairs
- Storage water heaters **G12/AS1 4.3.5(c), 4.10.3, 8.0.1(b)**
See also Water heaters
- connections **G12/AS1 4.10.3(c)**
 drain pipes **G12/AS1 4.10.3(d)**
 free water surface **G12/AS1** Figure 13, Table 3
 open vented **G12/AS1 4.1.1, 4.2.1, 4.9.1(c), 4.12.1(a), 5.2.3(a), Table 3**
 free outlet type **G12/AS1 4.1.1, 4.4.2(c), 4.4.2(d), Figure 11**
 high pressure mains supply **G12/AS1 4.1.1, 4.9.1, Figures 10 and 12, Table 3**
 high pressure tank supply **G12/AS1 4.1.1, 4.9.1, Figures 10 and 12, Table 3**
 low pressure tank supply **G12/AS1 4.1.1, Figure 9, Table 3**
 safe trays **G12/AS1 4.10.3(a)**
 seismic restraint **G12/AS1 4.10.3(b), Figure 16**
 valve vented **G12/AS1 4.2.1, 4.2.2, 4.7.1, 4.9.1(c), 5.2.3(b), Figures 15 and 17, Table 3**
 safety devices **G12/AS1 4.2.2**
- Storage water tanks
see Water tanks
- Strainers (filters) **G12/AS1 4.9.1(c)**
- Structural Integrity
see **Structure and Structural Stability during Fire**
- Structural Stability during Fire **C4**
 consequential collapse **C4.3.3**
 fire hazards **C4.3.1**
 fire intensity **C4.3.1**
 fire load **C4.3.1**
 fire resistance **C4.3.1, C4.3.2, C4.3.3**
 primary elements **C4/AS1 1.1, 1.3.2, 2.1.1**
 rated **C4/AS1 2.1.3**
 unrated **C4/AS1 2.1.4, Figure 1**
- Structure **B1**
 air supported structures **C3/AS1 8.3.3**
 building instability, **B1.1**
 collapse, **B1.2**
 damage, **B1.2**
 deflections **B1.2, B1/VM4 1.0.1**
 demolition, **B1.3.6**
- design
 concrete **B1/VM1 3.0, B1/AS1 2.0**
 design methods **B1/VM4** Table 2
 elastic design **B1/VM4** Table 2, 6.1.2
 ultimate strength design **B1/VM4** Table 2
 drains
 see Drains
 foundations
 see Foundations
 loadings **B1/VM1 1.4, 2.0**
 earthquake **B1/AS3 1.9, Table 2**
 masonry **B1/VM1 4.0, B1/AS1 3.0**
 siteworks **B1/VM1 8.0**
 steel **B1/VM1 5.0**
 timber **B1/VM1 6.0, B1/AS1 4.0**
 see also Timber barriers
 windows
 see Windows
- failure, **B1.1**
 limit states
 serviceability limit state .. **B1.3.1, B1.3.2, B1.3.5**
 ultimate limit state **B1.3.1, B1.3.2, B1.3.5**
- loads **B1.2, B1.3.3**
 creep **B1.3.3**
 cyclic loads **B1.3.3**
 differential movement **B1.3.3**
 dynamic loads **B1.3.3**
 earth pressure **B1.3.3**
 earthquake **B1.3.3**
 seismic resistance of building services **B1/VM1 12.0**
 explosion **B1.3.3**
 liquid **B1.3.3**
 shrinkage **B1.3.3**
 snow **B1.3.3**
 wind **B1.3.3**
- membrane structures **C3/AS1 8.3.2, Table 4**
 flammability of membrane structures **C4/Annex E4**
- sitework **B1.3.7, B1.3.8**
 small chimneys **B1/3, C1**
 stability **B1.3.7, B2.3; D1/AS1 1.6**
 tanks **G12/AS1 3.2.6, Figure 6**
 seismic restraint **G14/VM1 2.3.2**
- temporary support **B1.3.5**
 vibrations **B1.2**
- Subsidence **B1/VM4 2.1.1**
- Surface finishes **C2/AS1 7.8; C3/AS1 2.15.1(a), 2.16.2(b), 4.1.2(c), 8.0**
 exceptions **C3/AS1 8.1.4**
 exterior surfaces **C3/AS1 4.9, Table 2**
- Surface Water **E1**
see also runoff, drains
 2 % probability storm
 {50 year return period} **E1.3.1**
 10 % probability storm
 {10 year return period} **E1.3.2**
 drainage systems **E1.3.3**
- Swimming pools
see **Safety from Falling**

Swimming pools
 fencing **F4/AS1** 3.0

T

Tanks **F3/AS1** 4.2.3(a)
 industrial liquid waste **G14/VM1** 1.4.1(c), 1.4.3, 3.0, Figure 3, Table 3
 oil storage tanks **F3/AS1** 4.6, 4.6.2
 capacity **F3/AS1** 4.6.4
 on upper floors **F3/AS1** 4.6.3
 storage of hazardous substances **F3/AS1** 3.2.1, 3.3.1, 3.4.1, 3.6, 4.3, 4.4,
 water tanks **G12/AS1** 3.2, 4.8, 8.0.1(b)
 access **G12/AS1** 3.2.5, Figure 5
 covers **G12/AS1** 3.2.4
 location **G12/AS1** 3.2.1
 overflow pipes **G12/AS1** 3.2.2, Figure 5
 safe trays **G12/AS1** 3.2.3, Figure 5
 structural support **G12/AS1** 3.2.6, Figure 6
 seismic restraint **G14/VM1** 2.3.2
 water storage tanks **G12/AS1** 3.1

Taverns **C4/Annex** A2.3
see also Communal Non-Residential

Temperature
see Electricity, Energy Efficiency, Interior Environment, Outbreak of Fire, Piped Services, Solid Waste, Structure, load, and Water Supplies

Temperature control
see Interior Environment, interior temperature

Temperature/pressure relief valves **G12/AS1** 4.2.2(b), 4.3.2, 4.3.3, Figure 12, Table 4
 installation **G12/AS1** 4.3.5
 relief discharge pipes **G12/AS1** 4.3.5(b), 4.3.6, Figures 12 and 15

Theatres **C3/AS1** 2.5.3, 9.2.1, 9.9; **G5.3.5**
see also Communal Non-Residential
 proscenium wall **C3/AS1** 2.5.3, 5.3.1, 5.4, Figure 11

Thermostats **G12/AS1** 4.2.1(a), 4.5.1, 4.10.2, 4.13.3,

Thermal resistance **E3/AS1** 1.0.1, 1.1
 alternative solution **E3/AS1** 1.1.5
 materials and installation **E3/AS1** 1.1.3, Figures 1, 2, 3

Thresholds **D1/AS1** 1.3.2

Timber
see also Design, timber
 floors **C3/AS1** 2.1.7, 2.16.1
 framed buildings **B1/AS3** 1.1.1, **B1/AS4** 1.0.1
 framing **E2/AS1** 6.0.2(a)
 weatherboards **E2/AS1** 6.0.2(b)

Timber barriers **B1/AS1** 1.2, 9.0, **B1/AS2** 1.0
see also Barriers and Safety from falling

alternative details **B1/AS2** 2.7
 balusters **B1/AS2** 2.1.1, 2.2.1, 2.2.2, 2.3, 2.4.1, 2.7.1, 2.7.2, Figures 2, 3 and 4, Tables 1, 2, 3, 4 and 6
 connections **B1/AS2** 1.0.5(c), 2.2.2, 2.3.3, 2.3.4, 2.3.5, 2.3.6, 2.3.7, 2.5.2, 2.5.3, 2.7.2, Figures 2, 3 and 4, Table 3, 4 and 5
 construction **B1/AS2** 2.0
 dimensions of timber **B1/AS2** 1.0.4
 exposed to the weather **B1/AS2** 1.0.5
 joists **B1/AS2** 2.1.1
 blocking **B1/AS2** 2.1.1, 2.3.4, 2.3.6, Table 4
 boundary joists **B1/AS2** 2.1.1, 2.3.2, 2.3.4, 2.3.5, Figure 4, Table 4
 end joists **B1/AS2** 2.3.2, 2.3.4, 2.3.6, Figure 4
 intermediate joists **B1/AS2** 2.3.2, 2.3.3, Figure 3, Table 3
 materials **B1/AS2** 1.0.3
 moisture content **B1/AS2** 2.6
 palings **B1/AS2** 2.1.1, 2.5
 rails
 bottom rails **B1/AS2** 2.1.1, 2.4, 2.5.1, 2.7.1, 2.7.2, Table 6
 top rails **B1/AS2** 2.1.1, 2.2, 2.3.1, 2.5.1, 2.5.3, 2.7.1, 2.7.2, Figure 1, Tables 1 and 2

Time-share accommodation
see Communal Residential

Toilets
see Personal Hygiene

Toxic substances
see Hazardous substances and processes, Class 6

Transport terminals
see Commercial Buildings

Travel distance **C2.3.1(d)**, **C2.3.2**, **C3.3.1(a)**; **C2/AS1** 2.1.1, 2.1.2, 2.4.2, 3.3.8; **C4/Annex** B1.2(b)

Tunnels
see Ancillary Buildings

Turnstiles
see Doors

U

Ultimate limit states
see Structure, limit states

Universities
see Communal Non-Residential

Unprotected areas **C3/AS1** 2.2.3(e), 3.1.1(b), 3.1.4, 3.3.1(f), 3.3.5, 3.3.8, 3.5.1(b), 3.5.2(a), 3.6.5, 3.6.6, 4.3, 4.1.2(d), 4.2.2, 4.2.6, 4.3.1, 4.3.2, 4.3.3, 4.4.4(b), 4.4.5, 4.4.6, 4.4.7, 4.4.8, 4.4.9, 4.5.1, 4.7, 4.9.3, 8.1.6; **C4/Annex**

Urinals **E3/AS1** 3.2, 3.2.1; **G1/AS1** 2.3, Figure 8; **G13/AS1** Tables 1 and 5
 bowl urinals **G1/AS1** 2.3.1, 2.3.3
 continuous wall urinals **G1/AS1** 2.3.1, 2.3.5, Figure 2
 discharge system **G1/AS1** 2.3.2
 flushing systems **G1/AS1** 2.3.6, 2.3.7, 2.3.8, Table 3
 manually operated **G1/AS1** 2.3.9
 stall urinals **G1/AS1** 2.3.1, 2.3.5
 surface finishes **G1/AS1** 2.3.4
 trough urinals **G1/AS1** 2.3.1, 2.3.3

Utensil washing **G3/AS1** 1.1.1

V

Vacuum relief valves **G12/AS1** 4.2.2(c), Table 4

Vehicles **D1.1**, **D1.2.2**, **D1.3.1(d) and (e)**, **D1.3.5** **D1/AS1** 10.0; **G14.3.2(b)** **G14/VM1** 1.8, 2.1.5; **G15/AS1** 3.0.10

car parking buildings
 fire safety **C3/AS1** 2.12.3, Figure 5; **C4/Annex** Table B1/3; **C4/Annex** C1.4(c)
 car parking dimensions **D1/AS1** Table 9
 car parking areas **D1/AS1** 10.1.4
 accessible car parking spaces ... **D1/AS1** 10.1.3, 10.1.5
 gradient **D1/AS1** 10.1.2
 car parking spaces ... **D1/AS1** 10.1 11.0.2, Figure 31
 circulation routes **D1/AS1** 10.2, 10.2.1, 10.2.2, 11.0.2, Figure 33
 grade **D1/AS1** 10.2.1(b), 10.2.2
 height clearances **D1/AS1** 10.2.1(c)
 turning circles **D1/AS1** 10.2.1(d), Figure 32
 visibility **D1/AS1** 10.2.2
 width **D1/AS1** 10.2.1(a)
 commercial vehicles **D1/AS1** 11.0.3
 courier van delivery vehicles **D1/AS1** 10.4, 10.4.1
 loading spaces **D1/AS1** 10.4.1
 queuing spaces **D1/AS1** 10.3, Table 10

Vent pipes **G13/AS1** 3.1.1(b), 3.1.2(b) 3.2.3(d), 5.0, Figure 10, Table 6, **G13/AS2** 2.2.1, **G12/AS1** 4.2.1(b), 4.4
 branch vent pipes **G13/AS1** 5.2.1(c), 5.3, 5.5.1, Figure 8, Table 6
 diameters **G13/AS1** 5.5, **G12/AS1** 4.4.2(b)
 fixture vent pipes **G13/AS1** 3.2.4(a)(b), 5.2.1, 5.4.1, 5.4.2(a), 5.5.1, 5.6.2, Figures 8 and 9, Table 6
 gradient **G13/AS1** 5.3
 height **G12/AS1** 4.4.2(d)
 installation ... **G13/AS1** 5.2, Figure 8, **G12/AS1** 4.4.2
 insulation **G12/AS1** 4.4.3
 materials **G12/AS1** 4.4.2(a)
 relief vent pipes .. **G13/AS1** 3.2.6, 5.3.1(c), Figure 6, Table 3
 terminations **G13/AS1** 5.6, **G12/AS1** 4.4.2(c)

Ventilation **C2/AS1** 4.2.7, 5.4.3(d), 5.4.4(c), 8.1.1(a), 8.2.2; **C3/AS2** 3.7, 3.8, 7.1.1(c), 9.1.1, 9.2.3; **E3/AS1** 1.0.1, 1.2; **F3/AS1** 1.5, 3.1, 4.0.1(c), 4.6.2(f), 4.8, 5.2, 6.3; **G4**
 air purity **G4.3.1**
 bacteria, pathogens and allergens **G4.3.2**
 configuration **C3/AS1** 3.7.2
 contaminated air
 disposal **G4.3.4**
 removal **G4.3.3**
 drains **G13/AS2** 6.0, Figure 4
 fixed combustion appliances **G4.3.5**
 fresh air supply **C3/AS1** 9.3.7
 maximum occupancy **G4.2**
 mechanical ventilation systems **C3.3.7**, **G4.3.2**; **G4/AS1** 1.2, 2.2
 for gas fuel burning appliances **G4/AS1** 2.2
 negative pressures **G4/AS1** 1.2.3
 positive pressures **G4/AS1** 1.2.2
 minimum ventilation **C3/AS1** 3.7.1
 natural **C3/AS1** 2.12.4(b), 2.12.6, 2.12.7, 9.1.1, 9.2.4, 9.2.6, 9.2.12; **G4/AS1** 1.1
 for gas fuel burning appliances **G4/AS1** 2.1
 vent sizes **G4/AS1** 2.1.3
 number of air changes **G4.3.1**
 outdoor air **G4.3.1**
 prevention of internal moisture **E3.3.1**

Vibrations

see **Structure**

W

Walls **B2.3(a)**, **C3.3.1**, **C3.3.5**, **C3/AS1** 2.1.2, 2.1.7, 2.4.2, 2.15.1, 2.16.2, 3.1.1(a), 7.2, 7.3.1, Figures 1 and 16, Table 4; **E2.3.2**, **E2.3.3**, **E3.3.4**, **E3.3.5**, **E2/AS1** 2.0; **G3/AS1** 1.6, 2.1.1, 2.1.2, 2.2.3, 2.2.4, **G6.3.1**
 claddings **E2/AS1** 2.0.1(a)(b)(c)(d)
 fibre cement board **E2/AS1** 2.0.1(a)
 curtain walls **C3/AS1** 4.4.7, 7.2.1, Figure 15
 external walls **C2/AS1** 4.2.1(b), 4.2.2(d), 4.4.2, 4.4.3, 4.4.4, 4.4.5, 5.4.3(c), 5.4.4(b)(c), 7.4.5(d), 8.2.2, Figure 33; **C3.3.5**; **C3/AS1** 1.1(b), 2.1.6, 2.1.10(c) 2.2.3(e) 2.3.1(a), 2.8.9, 2.9.7, 2.10.3, 2.13.3(a)(c), 2.14.1(b), 3.1.1(b), 3.1.2, 3.1.4, 3.2.1(c), 3.3.1(a)(f), 3.3.2(e), 3.3.5, 3.3.8, 3.4.2(b), 3.5.1(b), 3.5.2(a), 3.6.5, 3.6.6, 3.7.1, 3.7.2, 3.8.3, 4.0, 4.8.2, 4.9.2, 4.9.3, 7.2.1, 7.3.1(b), 8.1.6, Figures 1, 7, 8 and 9, Table 2.; **E2.3.2**
 see also Unprotected areas
 calculation of acceptable unprotected areas **C4/Annex**
 exposure at corners **C3/AS1** 4.5, Figure 10
 fire resistance ratings **C3/AS1** 4.2
 floor/wall junctions **G6/AS1** 1.0.3, Figure 5
 internal/external wall junctions **G6/AS1** 1.0.3, Figure 4
 internal walls **C3/AS1** 3.1.1(b)
 joints **E2/AS1** 2.0.1(b)
 light-weight sheet material **E2/AS1** 2.0.1(a)
 masonry veneer **E2/AS1** 2.2, Figure 2
 with suspended timber floor **E2/AS1** Figure 2

- solid plaster **E2/AS1** 2.0.1(a), 2.3, Figure 3
 non-rigid backings **E2/AS1** 2.3.4
 rigid backings **E2/AS1** 2.3.3
 surface finishes **C3.3.1**
 timber framing **E2/AS1** 2.0.1(e)
 timber weatherboards **E2/AS1** 2.0.1(a), 2.1, 6.0.2(b)
 batten-jointed vertical weatherboards **E2/AS1** 2.1.2(b)
 lap-jointed horizontal weatherboards **E2/AS1** 2.1.2(a), Figure 1
 shiplap vertical weatherboards **E2/AS1** 2.1.2(c), Figure 1
 wall assemblies **G6/AS1** 1.0.3, Figure 2
- Warehouses**
 see **Industrial Buildings**
- Warning Systems** **C2/AS1** 7.7; **F7**
 see also **Alarm systems**
 combined fire detection and warning system **F7.3**
- Wash-down areas** **G3/AS1** 2.3
- Washing machines**
 see **Sanitary appliances**
- Waste chutes**
 see **Solid wastes**
- Waste disposal units** **G13/AS1**, Figure 2, Table 5; **G15.3.3**
- Waste pipes** **G13/AS1** 2.2.1(a), 3.1.1, 3.2.4(b), 5.4.1, 5.6.2, Figures 3 and 9, **G13/AS2** 3.2.1(e)(f)(g), 4.1.1, see also **Pipes**
 combined waste pipes ... **G13/AS1** 3.1.1(b), Figure 3
 developed lengths **G13/AS1** 3.1.1(b)
- Water**
 see **External Moisture, Foul Water, Internal Moisture, Surface Water and Water Supplies**
- Water heaters** **G12/AS1** 4.1, Table 3
 installation **G12/AS1** 4.10
 instantaneous water heaters **G12/AS1** 4.1.1, Figure 14, Table 3
 solar water heaters **G12/AS1** 2.2.1(e)
 storage water heaters
 see **Storage water heaters**
 wet back water heaters **G12/AS1** 4.2.1(a), 4.12
- Water Supplies** **G12**; **G12/AS1** 2.2.1(a)
 access for maintenance **G12.3.6(d)**
 backflow prevention devices **G12.3.6(e)**
 cold **G3/AS1** 1.1.4
 drinking water **G12.2**
 isolation of system **G12.3.6(e)**
 leakage **G12.3.6(c)**
 hot ... **G3/AS1** 1.1.4, **G3/AS1** Figure 1; **G12/AS1** 4.0
 pipe sizes **G12/AS1** 4.11.1
 safe water temperatures **G12/AS1** 4.13
 mixing devices
 tempering valves **G12/AS1** 4.13.2, Figure 17
- laundries **G2/AS1** 1.1.1, 1.2
 mains **G12/AS1** 2.1.1, 2.2.1(b), 3.1.1
 non-potable water **G12.3.2**
 location of pipelines **G12/AS1** 9.3
 outlet identification **G12/AS1** 9.1, Figure 21
 pipeline identification **G12/AS1** 9.2
 people with disabilities **G12.3.9**
 potable water **G12.3.1**, **G12.3.6(a)**, **G12/AS1** 2.0, 2.3.2(a), 5.1.1, 9.2, 9.3(c); **G14.3.2(c)**; **G14/VM1** 1.6.2;
 pressure vessels **G12.1(b)**, **G12.3.7(a)**
 private supply **G12/AS1** 2.2.1(b)
 sanitary appliances **G12.2**, **G12.3.3**, **G12.3.5**, **G12.3.6(b)**
 sanitary fixtures **G12.2**, **G12.3.3**, **G12.3.4**, **G12.3.5**, **G12.3.6(b)**
 solid waste areas **G15/AS1** 3.0.7, 4.0.3
 water storage vessels **G12.3.7** and **G12.3.8**
 see also **Storage water heaters**
 water temperature **G12.1(b)**, **G12.1(c)**, **G12.3.3** to **G12.3.5**, **G12.3.7(b)**, **G12.3.8**
- Water piping systems** **G12/VM1** 1.0, **AS1** 3.0
 installation **G12/AS1** 5.0
 anchor points **G12/AS1** 5.3.5
 electrochemical compatibility **G12/AS1** 5.3.1
 in concrete or masonry **G12/AS1** 5.3.4
 pipe supports **G12/AS1** 5.3
 spacing **G12/AS1** 5.3.3, Table 7
 pipes below ground level **G12/AS1** 5.5.2, Table 8
 protection from damage **G12/AS1** 5.5
 protection from frosts **G12/AS1** 5.4
 maintenance facilities **G12/AS1** 3.4
 materials ... **G12/AS1** 5.0, 5.1.2, 5.2, Tables 5 and 6
 pressure limitations **G12/AS1** 5.2.3
 temperature limitations **G12/AS1** 5.2.4, Figure 17
 pipe size **G12/AS1** 3.3, Figure 7
 developed length **G12/AS1** 3.3.1, 3.3.2, Figure 8
 flow rates **G12/AS1** 3.3.1, Table 2
 water tightness **G12/AS1** 8.0
- Water seals** **G1/AS1** 2.1.1(b), Figure 1; **G13/AS1** 1.0.3, 2.2.1, 3.1.1(b), 3.1.2(b), 3.2.4, **G13/AS2** 3.2.1(d)(e)(g)(h)
- Water tanks**
 see **Tanks**
- Water traps** **G13/AS1** 2.0, 3.2.4(a)(b), 5.4.1, 5.4.2(b), Figure 4
 dimensions ... **G13/AS1** 2.2, 2.4.4, Figure 1, Table 1
 location **G13/AS1** 2.3
 multiple outlets **G13/AS1** 2.3.2, Figure 2
- Weather stops** **D1/AS1** 1.3.2,
- Whare Runanga**
 see **Communal Non-Residential, assembly service**

- Wheelchairs **D1/AS1** 7.0.1
see also people with disabilities and accessible routes
spaces for wheelchairs **D1/AS1** 8.1, 8.1.2,
Figure 30
wheelchair access **D1.3.4(b)**, **D1.3.4(d)** and **(e)**
- Wind
see **Structure**, loads
- Windows **B1/VM1** 10.0; **C2/AS1** 2.3.5(d), 7.1,
7.3, Figure 35; **C3/AS1** 3.7.1, 3.7.2, Table 1; **E2/AS1**
3.0.1, 3.0.2, 3.0.3, 3.0.4; **F3/AS1** 1.4, 4.4.2, 4.7.7,
4.7.8(d); **F4/AS1** 1.2.3; **G7/AS1** 1.0.1, 1.0.2, 1.0.3,
2.0.1, Figures 1, 2; **G15/AS1** 3.0.4, 3.0.6
see also **Natural Light**
escape capacity **C2/AS1** 7.3.7
glazing
see Glazing
latching **C2/AS1** 7.3.6
restrictions **F3/AS1** 1.4.3
sill heights **C2/AS1** 7.3.5
size **C2/AS1** 7.3.4
- Work Camps G2.2, **G2/AS1** Table 1; G3.2.1,
G3.3.1a to d, **G3/AS1** 1.0.1
see also **Communal Residential**, community service
- WC pans **G1 AS1** 2.1, 3.1, Figure 3, 4, 5, Table 1;
G13/AS1 3.1.2, 3.2.4(b), Figure 4, Tables 1 and 5
cisterns **G1/AS1** 2.2.2; **G12/AS1** 3.2.2
cubicles **G1/AS1** 4.3, Figure 10
flushing systems **G1/AS1** 2.1.1(e), 2.2; **G12/AS1**
3.2.2
water seals
see Water seals

**THE NEW ZEALAND
BUILDING CODE**

CONTENTS

	Page		Page
A General provisions	113		
A1 Classified uses	113	G12 Water supplies	169
A2 Interpretation	115	G13 Foul water	171
B Stability	116	G14 Industrial liquid waste	173
B1 Structure	116	G15 Solid waste	175
B2 Durability	119	H Energy efficiency	177
C Fire safety	120	H1 Energy efficiency	177
C1 Outbreak of fire	120		
C2 Means of escape	121		
C3 Spread of fire	123		
C4 Structural stability during fire	126		
D Access	127		
D1 Access routes	127		
D2 Mechanical installations for access	131		
E Moisture	134		
E1 Surface water	134		
E2 External moisture	136		
E3 Internal moisture	137		
F Safety of users	139		
F1 Hazardous agents on site	139		
F2 Hazardous building materials	140		
F3 Hazardous substances and process	141		
F4 Safety from falling	143		
F5 Construction and demolition hazards	145		
F6 Lighting for emergency	147		
F7 Warning systems	148		
F8 Signs	149		
G Services and facilities	151		
G1 Personal hygiene	151		
G2 Laundering	153		
G3 Food preparation and prevention of contamination	154		
G4 Ventilation	156		
G5 Interior environment	158		
G6 Airborne and impact sound	160		
G7 Natural light	161		
G8 Artificial light	162		
G9 Electricity	163		
G10 Piped services	165		
G11 Gas as an energy source	167		

A GENERAL PROVISIONS

A1 CLASSIFIED USES

1.0 EXPLANATION

1.0.1 For the purposes of this New Zealand Building Code, *buildings* are classified according to type, under seven categories.

1.0.2 A *building* with a given classified use may have one or more *intended uses* as defined in the Act.

2.0 HOUSING

2.0.1 Applies to *buildings* or use where there is self care and service (internal management). There are three types.

2.0.2 Detached dwellings

Applies to a *building* or use where a group of people live as a single household or family. Examples: a holiday cottage, boarding house accommodating fewer than 6 people, dwelling or hut.

2.0.3 Multi-unit dwelling

Applies to a *building* or use which contains more than one separate household or family. Examples: an attached dwelling, flat or multi-unit apartment.

2.0.4 Group dwelling

Applies to a *building* or use where groups of people live as one large extended family. Examples: within a commune or marae.

3.0 COMMUNAL RESIDENTIAL

3.0.1 Applies to *buildings* or use where assistance or care is extended to the *principal users*. There are two types.

3.0.2 Community service

Applies to a residential *building* or use where limited assistance or care is extended to the *principal users*. Examples: a boarding house, hall of residence, holiday cabin, hostel, hotel, motel, nurse's home, retirement village, time-share accommodation, a work camp, or camping ground.

3.0.3 Community care

Applies to a residential *building* or use where a large degree of assistance or care is extended to the *principal users*. There are two types:

- a) **Unrestrained**; where the *principal users* are free to come and go. Examples: a hospital, an old people's home or a health camp.
- b) **Restrained**; where the *principal users* are legally or physically constrained in their movements. Examples: a borstal or drug rehabilitation centre, an old people's home where substantial care is extended, a prison or hospital.

4.0 COMMUNAL NON-RESIDENTIAL

4.0.1 Applies to a *building* or use being a meeting place for people where care and service is provided by people other than the *principal users*. There are two types:

4.0.2 Assembly service

Applies to a *building* or use where limited care and service is provided. Examples: a church, cinema, clubroom, hall, museum, public swimming pool, stadium, theatre, or whare runanga (the assembly house).

4.0.3 Assembly care

Applies to a *building* or use where a large degree of care and service is provided. Examples: an early childhood centre, college, day care institution, centre for handicapped persons, kindergarten, school or university.

5.0 COMMERCIAL

5.0.1 Applies to a *building* or use in which any natural resources, goods, services or money are either developed, sold, exchanged or stored. Examples: an amusement park, auction room, bank, car-park, catering facility, coffee bar, computer centre, fire station, funeral parlour, hair-dresser, library, office (commercial or government), police station, post office, public laundry, radio station, restaurant, service station, shop, showroom, storage facility, television station or transport terminal.

6.0 INDUSTRIAL

6.0.1 Applies to a *building* or use where people use mental and physical effort to:

- a) Extract or convert natural resources,
 - b) Produce goods or energy from natural or converted resources,
 - c) Repair goods, or
 - d) Store goods (ensuing from the industrial process). Examples: an agricultural building, agricultural processing facility, aircraft hangar, factory, power station, sewage treatment works, warehouse or utility.
-

7.0 OUTBUILDINGS

7.0.1 Applies to a *building* or use which may be included within each classified use but are not intended for human habitation, and are accessory to the principal use of associated *buildings*. Examples: a carport, farm *building*, garage, greenhouse, machinery room, private swimming pool, public toilet, or shed.

8.0 ANCILLARY

8.0.1 Applies to a *building* or use not for human habitation and which may be exempted from some amenity provisions, but which are required to comply with structural and safety-related aspects of the *building code*. Examples: a bridge, derrick, fence, free standing outdoor fireplace, jetty, mast, path, platform, pylon, retaining wall, tank, tunnel or dam.

A2 INTERPRETATION

This Clause of the New Zealand Building code lists defined words used within the code.

Those definitions, plus defined words or terms used in the Approved Documents are included in the section on definitions in this Handbook.

B STABILITY

B1 STRUCTURE

Provisions	Limits on application
<p>OBJECTIVE</p>	
<p>B1.1 The objective of this provision is to:</p> <ul style="list-style-type: none"> (a) Safeguard people from injury caused by structural failure, (b) Safeguard people from loss of <i>amenity</i> caused by structural behaviour, and (c) Protect <i>other property</i> from physical damage caused by structural failure. 	
<p>FUNCTIONAL REQUIREMENT</p>	
<p>B1.2 <i>Buildings, building elements and sitework</i> shall withstand the combination of loads that they are likely to experience during <i>construction or alteration</i> and throughout their lives.</p>	
<p>PERFORMANCE</p>	
<p>B1.3.1 <i>Buildings, building elements and sitework</i> shall have a low probability of rupturing, becoming unstable, losing equilibrium, or collapsing during <i>construction or alteration</i> and throughout their lives.</p>	
<p>B1.3.2 <i>Buildings, building elements and sitework</i> shall have a low probability of causing loss of <i>amenity</i> through undue deformation, vibratory response, degradation, or other physical characteristics throughout their lives, or during <i>construction or alteration</i> when the <i>building</i> is in use.</p>	
<p>B1.3.3 Account shall be taken of all physical conditions likely to affect the stability of <i>buildings, building elements and sitework</i>, including:</p> <ul style="list-style-type: none"> (a) Self-weight, (b) Imposed gravity loads arising from use, 	

Provisions	Limits on application
<ul style="list-style-type: none"> (c) Temperature, (d) Earth pressure, (e) Water and other liquids, (f) Earthquake, (g) Snow, (h) Wind, (i) <i>Fire</i>, (j) Impact, (k) Explosion, (l) Reversing or fluctuating effects, (m) Differential movement, (n) Vegetation, (o) Adverse effects due to insufficient separation from other <i>buildings</i>, (p) Influence of equipment, services, non-structural elements and contents, (q) Time dependent effects including creep and shrinkage, and (r) Removal of support. 	
<p>B1.3.4 Due allowance shall be made for:</p> <ul style="list-style-type: none"> (a) The consequences of failure, (b) The intended use of the <i>building</i>, (c) Effects of uncertainties resulting from <i>construction</i> activities, or the sequence in which <i>construction</i> activities occur, (d) Variation in the properties of materials and the characteristics of the site, and (e) Accuracy limitations inherent in the methods used to predict the stability of <i>buildings</i>. 	

Provisions

B1.3.5 The demolition of *buildings* shall be carried out in a way that avoids the likelihood of premature collapse.

B1.3.6 *Sitework*, where necessary, shall be carried out to:

- (a) Provide stability for *construction* on the site, and
- (b) Avoid the likelihood of damage to *other property*.

B1.3.7 Any *sitework* and associated supports shall take account of the effects of:

- (a) Changes in ground water level,
- (b) Water, weather and vegetation, and
- (c) Ground loss and slumping.

Limits on applications

B2 DURABILITY

Provisions

Limits on application

OBJECTIVE

B2.1 The objective of this provision is to ensure that a *building* will throughout its life continue to satisfy the other objectives of this code.

FUNCTIONAL REQUIREMENT

B2.2 *Building* materials, components and *construction* methods shall be sufficiently durable to ensure that the *building*, without reconstruction or major renovation, satisfies the other functional requirements of this code throughout the life of the *building*.

PERFORMANCE

B2.3 From the time a *code compliance certificate* is issued, *building elements* shall with only normal maintenance continue to satisfy the performances of this code for the lesser of; the *specified intended life* of the *building*, if any, or:

- (a) For the structure, including *building elements* such as floors and walls which provide structural stability: the life of the *building* being not less than 50 years.
- (b) For services to which access is difficult, and for hidden fixings of the external envelope and attached structures of a *building*: the life of the *building* being not less than 50 years.
- (c) For other fixings of the *building* envelope and attached structures, the *building* envelope, lining supports and other *building elements* having moderate ease of access but which are difficult to replace: 15 years.
- (d) For linings, renewable protective coatings, fittings and other *building elements* to which there is ready access: 5 years.

C FIRE SAFETY

C1 OUTBREAK OF FIRE

Provisions

OBJECTIVE

C1.1 The objective of this provision is to safeguard people from injury or illness caused by *fire*.

FUNCTIONAL REQUIREMENT

C1.2 In *buildings* fixed appliances using the controlled combustion of solid, liquid or gaseous fuel, shall be installed in a way which reduces the likelihood of *fire*.

PERFORMANCE

C1.3.1 Fixed appliances and services shall be installed so as to avoid the accumulation of gases within the installation and in *building* spaces, where heat or ignition could cause uncontrolled combustion or explosion.

C1.3.2 Fixed appliances shall be installed in a manner that does not raise the temperature of any *building element* by heat transfer or concentration to a level that would adversely affect its physical or mechanical properties or function.

Limits on application

C2 MEANS OF ESCAPE

Provisions

OBJECTIVE

C2.1 The objective of this provision is to:

- (a) Safeguard people from injury or illness from a *fire* while escaping to a *safe place*, and
- (b) Facilitate *fire* rescue operations.

FUNCTIONAL REQUIREMENT

C2.2 *Buildings* shall be provided with *escape routes* which:

- (a) Give people *adequate* time to reach a *safe place* without being overcome by the effects of *fire*, and
- (b) Give fire service personnel *adequate* time to undertake rescue operations.

PERFORMANCE

C2.3.1 The number of *open paths* available to each person escaping to an *exitway* or *final exit* shall be appropriate to:

- (a) The *travel distance*,
- (b) The number of occupants,
- (c) The *fire hazard*, and
- (d) The *fire safety systems* installed in the *firecell*.

C2.3.2 The number of *exitways* or *final exits* available to each person shall be appropriate to:

- (a) The *open path travel distance*,
- (b) The *building height*,
- (c) The number of occupants,

Limits on application

Provisions

- (d) The *fire hazard*, and
- (e) The *fire safety systems* installed in the *building*.

C2.3.3 *Escape routes* shall be:

- (a) Of *adequate* size for the number of occupants,
- (b) Free of obstruction in the direction of escape,
- (c) Of length appropriate to the mobility of the people using them,
- (d) Resistant to the spread of *fire* as required by Clause C3 "Spread of Fire",
- (e) Easy to find as required by Clause F8 "Signs",
- (f) Provided with *adequate* illumination as required by Clause F6 "Lighting for Emergency", and
- (g) Easy and safe to use as required by Clause D1.3.3 "Access Routes".

Limits on applications

C3 SPREAD OF FIRE

Provisions

OBJECTIVE

C3.1 The objective of this provision is to:

- a) Safeguard people from injury or illness when evacuating a *building* during *fire*.
- b) Provide protection to fire service personnel during firefighting operations.
- c) Protect adjacent *household units* and *other property* from the effects of *fire*.
- d) Safeguard the environment from adverse effects of *fire*.

FUNCTIONAL REQUIREMENT

C3.2 *Buildings* shall be provided with safeguards against *fire* spread so that:

- a) Occupants have time to escape to a *safe place* without being overcome by the effects of *fire*,
- b) Firefighters may undertake rescue operations and protect property,
- c) Adjacent *household units* and *other property* are protected from damage, and
- d) Significant quantities of *hazardous substances* are not released to the environment during *fire*.

PERFORMANCE

C3.3.1 Interior surface finishes on walls, floors, ceilings and suspended *building elements*, shall resist the spread of *fire* and limit the generation of toxic gases, smoke and heat, to a degree appropriate to:

- a) The *travel distance*,

Limits on application

Requirement C3.2 (d) applies only to *buildings* where significant quantities of *hazardous substances* are stored or processed.

Provisions

- b) The number of occupants,
- 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*.

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* 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,
- 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

Limits on applications

Performance C3.3.2 shall not apply to *Detached Dwellings*, or within *household units* of *Multi-unit Dwellings*.

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

Provisions

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 applications

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

C4 STRUCTURAL STABILITY

Provisions

OBJECTIVE

C4.1 The objective of this provision is to:

- (a) Safeguard people from injury due to loss of structural stability during *fire*, and
- (b) Protect *household units* and *other property* from damage due to structural instability caused by *fire*.

FUNCTIONAL REQUIREMENT

C4.2 *Buildings* shall be constructed to maintain structural stability during *fire* to:

- (a) Allow people *adequate* time to evacuate safely,
- (b) Allow fire service personnel *adequate* time to undertake rescue and firefighting operations, and
- (c) Avoid collapse and consequential damage to adjacent *household units* or *other property*.

PERFORMANCE

C4.3.1 Structural elements of *buildings* shall have *fire* resistance appropriate to the function of the elements, the *fire load*, the *fire intensity*, the *fire hazard*, the height of the *buildings* and the *fire* control facilities external to and within them.

C4.3.2 Structural elements shall have a *fire* resistance of no less than that of any element to which they provide support within the same *firecell*.

C4.3.3 Collapse of elements having lesser *fire* resistance shall not cause the consequential collapse of elements required to have a higher *fire* resistance.

Limits on application

D ACCESS

D1 ACCESS ROUTES

Provisions	Limits on application
<p>OBJECTIVE</p> <p>D1.1 The objective of this provision is to:</p> <p>(a) Safeguard people from injury during movement into, within and out of <i>buildings</i>,</p> <p>(b) Safeguard people from injury resulting from the movement of vehicles into, within and out of <i>buildings</i>, and</p> <p>(c) Ensure that <i>people with disabilities</i> are able to enter and carry out normal activities and functions within <i>buildings</i>.</p> <p>FUNCTIONAL REQUIREMENT</p> <p>D1.2.1 <i>Buildings</i> shall be provided with reasonable and adequate access to enable safe and easy movement of people.</p> <p>D1.2.2 Where a <i>building</i> is provided with loading or parking spaces, they shall be constructed to permit safe and easy unloading and movement of vehicles, and to avoid conflict between vehicles and pedestrians.</p> <p>PERFORMANCE</p> <p>D1.3.1 <i>Access routes</i> shall enable people to:</p> <p>(a) Safely and easily approach the main entrance of <i>buildings</i> from the apron or <i>construction edge</i> of a <i>building</i>,</p> <p>(b) Enter <i>buildings</i>,</p> <p>(c) Move into spaces within <i>buildings</i> by such means as corridors, doors, stairs, ramps and lifts,</p> <p>(d) Manoeuvre and park cars, and</p> <p>(e) Manoeuvre and park delivery vehicles required to use the loading space.</p>	<p>Objective D1.1(c) shall apply only to those <i>buildings</i> to which section 25 of the Disabled Persons Community Welfare Act 1975 applies.</p> <p>Requirement D1.2.1 shall not apply to <i>Ancillary buildings</i> or <i>Outbuildings</i>.</p>

Provisions

D1.3.2 At least one *access route* shall have features to enable *people with disabilities* to:

- (a) Approach the *building* from the street boundary or, where required to be provided, the *building* car park,
- (b) Have access to the internal space served by the principal access, and
- (c) Have access to and within those spaces where they may be expected to work or visit, or which contain facilities for personal hygiene as required by Clause G1 "Personal Hygiene".

D1.3.3 Access routes shall:

- (a) Have *adequate* activity space,
- (b) Be free from dangerous obstructions and from any projections likely to cause an obstruction,
- (c) Have a safe cross fall, and safe slope in the direction of travel,
- (d) Have *adequate* slip-resistant walking surfaces under all conditions of normal use,
- (e) Include stairs to allow access to upper floors irrespective of whether an escalator or lift has been provided,
- (f) Have stair treads, and ladder treads or rungs which:
 - (i) provide *adequate* footing, and
 - (ii) have uniform rise within each flight and for consecutive flights,
- (g) Have stair treads with a leading edge that can be easily seen,
- (h) Have stair treads which prevent children falling through or becoming held fast between treads, where open risers are used,
- (i) Not contain isolated steps,

Limits on application

Performance D1.3.2 shall not apply to *Housing*, *Outbuildings*, *Ancillary buildings*, and to *Industrial buildings* where no more than 10 people are employed.

Performance D1.3.3 (h) shall not apply within *Industrial buildings*, *Outbuildings* and *Ancillary buildings*.

Performance D1.3.3 (i) shall not apply within *Detached Dwellings* or within *household units of Multi-unit Dwellings*, or to *Outbuildings* and *Ancillary buildings*.

Provisions

- (j) Have smooth, reachable and graspable *handrails* to provide support and to assist with movement along a stair or ladder,
- (k) Have *handrails* of *adequate* strength and rigidity as required by Clause B1 "Structure",
- (l) Have landings of appropriate dimensions and at appropriate intervals along a stair or ramp to prevent undue fatigue,
- (m) Have landings of appropriate dimensions where a door opens from or onto a stair, ramp or ladder so that the door does not create a hazard, and
- (n) Have any automatically controlled doors *constructed* to avoid the risk of people becoming caught or being struck by moving parts.

D1.3.4 An *accessible route*, in addition to the requirement of Clause D1.3.3, shall:

- (a) Be easy to find, as required by Clause F8 "Signs",
- (b) Have *adequate* activity space to enable a person in a wheelchair to negotiate the route while permitting an ambulant person to pass,
- (c) Include a lift complying with Clause D2 "Mechanical Installations for Access" to upper floors where:
 - (i) *buildings* are four or more storeys high,
 - (ii) *buildings* are three storeys high and have a total design occupancy of 50 or more persons on the two upper floors,
 - (iii) *buildings* are two storeys high and have a total design occupancy of 40 or more persons on the upper floor, or
 - (iv) an upper floor, irrespective of design occupancy, is to be used for the purposes of public reception areas of banks, central, regional and local government offices and facilities, hospitals, medical and dental surgeries, and medical, paramedical and other primary health care centres,

Limits on application

Performance D1.3.3(j) shall not apply to isolated steps.

Provisions	Limits on application
<p>(d) Contain no thresholds or upstands forming a barrier to an unaided wheelchair user,</p> <p>(e) Have means to prevent the wheel of a wheelchair dropping over the side of the <i>accessible route</i>,</p> <p>(f) Have doors and related hardware which are easily used,</p> <p>(g) Not include spiral stairs, or stairs having open risers,</p> <p>(h) Have stair treads with a leading edge which is rounded, and</p> <p>(i) Have <i>handrails</i> on both sides of the <i>accessible route</i> when the slope of the route exceeds 1 in 20. The <i>handrails</i> shall be continuous along both sides of the stair, ramp and landing except where the <i>handrail</i> is interrupted by a doorway.</p> <p>D1.3.5 Vehicle spaces and circulation routes shall have:</p> <p>(a) Dimensions appropriate to the <i>intended use</i>,</p> <p>(b) Appropriate crossfall, and slope in the direction of travel,</p> <p>(c) <i>Adequate</i> queuing and circulation space, and</p> <p>(d) <i>Adequate</i> sight distances.</p> <p>D1.3.6 Vehicle spaces for use by <i>people with disabilities</i>, shall, in addition to the requirements of Clause D1.3.5, be:</p> <p>(a) Provided in sufficient numbers,</p> <p>(b) Located to avoid conflict between vehicles and people using or moving to or from the space, and</p> <p>(c) Easy to find as required by Clause F8 "Signs".</p>	

D2 MECHANICAL INSTALLATIONS FOR ACCESS

Provisions	Limits on application
<p>OBJECTIVE</p> <p>D2.1 The objective of this provision is to:</p> <p>(a) Safeguard people from injury and loss of amenity while using mechanical installations for movement into, within and out of <i>buildings</i>,</p> <p>(b) Safeguard maintenance personnel from injury while servicing mechanical installations for access, and</p> <p>(c) Ensure that <i>people with disabilities</i> are able to carry out normal activities and processes within <i>buildings</i>.</p> <p>FUNCTIONAL REQUIREMENT</p> <p>D2.2 Mechanical installations for access into, within and out of <i>buildings</i> shall provide for the safe and easy movement of people, and for the safety of maintenance personnel.</p> <p>PERFORMANCE</p> <p>D2.3.1 Mechanical installations for access shall:</p> <p>(a) Move people safely, and stop and hold as required for the normal use of the installation, for all loads up to and including 25% in excess of the rated load,</p> <p>(b) Not produce excessive acceleration or deceleration,</p> <p>(c) Be constructed to avoid the likelihood of people falling, tripping, becoming caught, being able to touch or be struck by moving parts, sharp edges or projections, under both normal and reasonably foreseeable abnormal conditions of use,</p>	<p>Objective D2.1(c) shall apply only to those <i>buildings</i> to which section 25 of the Disabled Persons Community Welfare Act 1975 applies.</p>

Provisions	Limits on application
<p>(d) Be constructed to prevent collision between components, or between components and the <i>building</i>,</p> <p>(e) Have a control system that ensures safe abnormal operation in the event of overloading or failure of any single component, and</p> <p>(f) Be capable of being isolated for inspection, testing and maintenance.</p>	
<p>D2.3.2 Mechanical installations for access shall be provided with:</p> <p>(a) <i>Adequate</i> control over normal use, to ensure people's safety throughout any operation involving starting, stopping or changing the direction of travel,</p> <p>(b) Notification of position, where people are fully enclosed and the installation serves more than two levels,</p> <p>(c) <i>Adequate</i> lighting and ventilation for both normal and emergency use, and</p> <p>(d) Signs as required by Clause F8 "Signs".</p>	
<p>D2.3.3 Mechanical installations for access shall, for emergency purposes, be provided with a means of:</p> <p>(a) Calling outside help,</p> <p>(b) Releasing people safely,</p> <p>(c) Safeguarding people from exposure to <i>hazardous</i> situations, and</p> <p>(d) Allowing authorised personnel to override the normal running procedure and take exclusive control of the installation.</p>	<p>Performance D2.3.3 (d) shall not apply to installations travelling less than 15 m vertically.</p>
<p>D2.3.4 Potentially dangerous equipment shall be located in spaces which:</p> <p>(a) Are secure from unauthorised entry and contain only equipment associated with the installation,</p> <p>(b) Are appropriately sized and suitably guarded to provide <i>adequate</i>, safe working areas for maintenance personnel,</p>	

Provisions	Limits on application
<p>(c) Are provided with <i>adequate</i> power and lighting for maintenance, and</p> <p>(d) Have an environment that ensures the safe operation of the equipment under all likely conditions of use.</p> <p>D2.3.5 Mechanical installations on <i>accessible routes</i> shall:</p> <p>(a) Where the passenger conveyor is manually controlled, provide:</p> <ul style="list-style-type: none">(i) controls which are easily identifiable and easy to use,(ii) <i>adequate</i> notification that the passenger conveyor has registered a summoning call, and(iii) <i>adequate</i> notification that the passenger conveyor has arrived, and of its future direction of travel, <p>(b) Where the passenger conveyor is fully enclosed and serves more than two levels, provide an <i>adequate</i> means of informing occupants of their location,</p> <p>(c) Where appropriate, have doors which:</p> <ul style="list-style-type: none">(i) are power operated,(ii) are readily distinguishable from their surroundings, and(iii) where automatic, remain open sufficiently long to enable <i>people with disabilities</i> to pass through, and <p>(d) Have <i>handrails</i> within the passenger conveyor.</p>	

E MOISTURE

E1 SURFACE WATER

Provisions	Limits on application
<p>OBJECTIVE</p>	
<p>E1.1 The objective of this provision is to:</p> <p>(a) Safeguard people from injury or illness, and <i>other property</i> from damage, caused by <i>surface water</i>, and</p> <p>(b) Protect the <i>outfalls</i> of drainage systems.</p>	
<p>FUNCTIONAL REQUIREMENT</p>	
<p>E1.2 <i>Buildings</i> and <i>sitework</i> shall be constructed in a way that protects people and <i>other property</i> from the adverse effects of <i>surface water</i>.</p>	
<p>PERFORMANCE</p>	
<p>E1.3.1 <i>Surface water</i>, resulting from a storm having a 10% probability of occurring annually and which is collected or concentrated by <i>buildings</i> or <i>sitework</i>, shall be disposed of in a way that avoids the likelihood of damage or nuisance to <i>other property</i>.</p>	
<p>E1.3.2 <i>Surface water</i>, resulting from a storm having a 2% probability of occurring annually, shall not enter <i>buildings</i>.</p>	<p>Performance E1.3.2 shall apply only to <i>Housing, Communal Residential</i> and <i>Communal Non-residential buildings</i>.</p>
<p>E1.3.3 Drainage systems for the disposal of <i>surface water</i> shall be constructed to:</p> <p>(a) Convey <i>surface water</i> to an appropriate <i>outfall</i> using gravity flow where possible,</p> <p>(b) Avoid the likelihood of blockages,</p> <p>(c) Avoid the likelihood of leakage, penetration by roots, or the entry of ground water where pipes or lined channels are used,</p> <p>(d) Provide reasonable access for maintenance and clearing blockages,</p>	

Provisions

- (e) Avoid the likelihood of damage to any *outfall*, in a manner acceptable to the *network utility operator*, and
- (f) Avoid the likelihood of damage from superimposed loads or normal ground movements.

Limits on application

E2 EXTERNAL MOISTURE

Provisions

OBJECTIVE

E2.1 The objective of this provision is to safeguard people from illness or injury which could result from external moisture entering the *building*.

FUNCTIONAL REQUIREMENT

E2.2 *Buildings* shall be constructed to provide *adequate* resistance to penetration by, and the accumulation of, moisture from the outside.

PERFORMANCE

E2.3.1 Roofs shall shed precipitated moisture. In locations subject to snowfalls, roofs shall also shed melted snow.

E2.3.2 Roofs and exterior walls shall prevent the penetration of water that could cause undue dampness, or damage to *building elements*.

E2.3.3 Walls, floors and structural elements in contact with the ground shall not absorb or transmit moisture in quantities that could cause undue dampness, or damage to *building elements*.

E2.3.4 *Building elements* susceptible to damage shall be protected from the adverse effects of moisture entering the space below suspended floors.

E2.3.5 *Concealed spaces* and cavities in *buildings* shall be constructed in a way which prevents external moisture being transferred and causing condensation and the degradation of *building elements*.

E2.3.6 Excess moisture present at the completion of *construction*, shall be capable of being dissipated without permanent damage to *building elements*.

Limits on application

Requirement E2.2 shall not apply to *buildings* in which moisture from outside would result in effects which are no more harmful than those likely to arise indoors during normal use.

E3 INTERNAL MOISTURE

Provisions

OBJECTIVE

E3.1 The objective of this provision is to:

- (a) Safeguard people against illness or injury which could result from accumulation of internal moisture, and
- (b) Protect *household units* from damage caused by free water from another occupancy in the same *building*.

FUNCTIONAL REQUIREMENT

E3.2 *Buildings* shall be constructed to avoid the likelihood of:

- (a) Fungal growth or the accumulation of *contaminants* on linings and other *building elements*,
- (b) Free water overflow penetrating to an adjoining *household unit*, and
- (c) Damage to *building elements* being caused by use of water.

PERFORMANCE

E3.3.1 An *adequate* combination of *thermal resistance* and ventilation shall be provided to all *habitable spaces*, bathrooms, laundries, and other spaces where moisture may be generated.

E3.3.2 Accidental overflow from *sanitary fixtures* or laundering facilities shall be constrained from penetrating to another occupancy in the same *building*.

E3.3.3 Floor surfaces of any space containing *sanitary fixtures* or laundering facilities shall be *impervious* and easily cleaned.

Limits on application

Performance E3.3.1 shall not apply to *Communal Non-residential, Commercial, Industrial, Outbuildings* or *Ancillary buildings*.

Provisions

E3.3.4 Wall surfaces adjacent to *sanitary fixtures* or laundering facilities shall be *impervious* and easily cleaned.

E3.3.5 Surfaces of *building elements* likely to be splashed or become contaminated in the course of the *intended use* of the *building*, shall be *impervious* and easily cleaned.

E3.3.6 Water splash shall be prevented from penetrating behind linings or to *concealed spaces*.

Limits on application

F SAFETY OF USERS

F1 HAZARDOUS AGENTS ON SITE

Provisions	Limits on application
<p>OBJECTIVE</p>	
<p>F1.1 The objective of this provision is to safeguard people from injury or illness caused by <i>hazardous</i> agents or <i>contaminants</i> on a site.</p>	
<p>FUNCTIONAL REQUIREMENT</p>	
<p>F1.2 <i>Buildings</i> shall be constructed to avoid the likelihood of people within the <i>building</i> being adversely affected by <i>hazardous</i> agents or <i>contaminants</i> on the site.</p>	
<p>PERFORMANCE</p>	
<p>F1.3.1 Sites shall be assessed to determine the presence and potential threat of any <i>hazardous</i> agents or <i>contaminants</i>.</p>	
<p>F1.3.2 The likely effect of any <i>hazardous</i> agent or <i>contaminant</i> on people shall be determined taking account of:</p>	
<ul style="list-style-type: none"> (a) The <i>intended use</i> of the <i>building</i>, (b) The nature, potency or toxicity of the <i>hazardous</i> agent or <i>contaminant</i>, and (c) The protection afforded by the <i>building</i> envelope and <i>building</i> systems. 	

F2 HAZARDOUS BUILDING MATERIALS

Provisions

OBJECTIVE

F2.1 The objective of this provision is to safeguard people from injury and illness caused by exposure to *hazardous building materials*.

FUNCTIONAL REQUIREMENT

F2.2 *Building materials* which are potentially *hazardous*, shall be used in ways that avoid undue risk to people.

PERFORMANCE

F2.3.1 The quantities of gas, liquid, radiation or solid particles emitted by materials used in the *construction of buildings*, shall not give rise to harmful concentrations at the surface of the material where the material is exposed, or in the atmosphere of any space.

F2.3.2 Transparent panels capable of being mistaken for an unimpeded path of travel shall be marked to make them visible.

F2.3.3 Glass or other brittle materials with which people are likely to come into contact shall:

- (a) If broken on impact, break in a way which is unlikely to cause injury, or
- (b) Resist a reasonably foreseeable impact without breaking, or
- (c) Be protected from impact.

Limits on application

Performance F2.3.2 does not apply to *Housing*.

F3 HAZARDOUS SUBSTANCES AND PROCESSES

Provisions	Limits on application
<p>OBJECTIVE</p>	
<p>F3.1 The objective of this provision is to safeguard people from injury or illness, and <i>other property</i> from damage, caused by <i>hazardous substances</i> or processes in <i>buildings</i>.</p>	
<p>FUNCTIONAL REQUIREMENT</p>	
<p>F3.2 <i>Buildings</i> where <i>hazardous substances</i> are stored and <i>hazardous</i> processes undertaken, shall be constructed to provide <i>adequate</i> protection to people and to <i>other property</i>.</p>	
<p>PERFORMANCE</p>	
<p>F3.3 Spaces in <i>buildings</i> where <i>hazardous substances</i> are stored, handled or used, or where <i>hazardous</i> processes are undertaken, shall be located and constructed to protect people, and <i>other property</i>, under both normal and reasonably foreseeable abnormal conditions, and shall be provided with:</p>	
<ul style="list-style-type: none"> (a) Means of restricting unauthorised access, (b) Means of preventing <i>hazardous substances</i>, or other materials unacceptable to the <i>network utility operator</i>, from entering <i>sewers</i> or public <i>drains</i>, (c) Means of allowing the harmless release of pressure where there is a significant risk of explosion occurring, (d) Protected ignition sources where flammable or explosive goods are stored, (e) Means of rendering harmless by ventilation, containment, dilution, or chemical or biological action, any radioactive, toxic or flammable vapours, gases or materials which may escape from pipes, vessels or containers, 	

Provisions

- (f) Impervious, easily cleaned surface finishes on *building elements* likely to be splashed or become contaminated in the course of the *intended use* of the *building*, and
- (g) Signs as required by Clause F8 "Signs".

Limits on application

F4 SAFETY FROM FALLING

Provisions	Limits on application
<p>OBJECTIVE</p>	
<p>F4.1 The objective of this provision is to safeguard people from injury caused by falling.</p>	
<p>FUNCTIONAL REQUIREMENT</p>	
<p>F4.2 <i>Buildings</i> shall be constructed to reduce the likelihood of accidental fall.</p>	
<p>PERFORMANCE</p>	
<p>F4.3.1 Where people could fall 1 metre or more from an opening in the external envelope or floor of a <i>building</i>, or from a sudden change of level within or associated with a <i>building</i>, a barrier shall be provided.</p>	<p>Performance F4.3.1 shall not apply where such a barrier would be incompatible with the <i>intended use</i> of an area, or to temporary barriers on <i>construction sites</i> where the possible fall is less than 3 metres.</p>
<p>F4.3.2 Roofs with permanent access shall have barriers provided.</p>	
<p>F4.3.3 Swimming pools having a depth of water exceeding 400 mm, shall be constructed with a barrier to restrict access to the pool or the immediate pool area, by children under 6 years of age.</p>	<p>Performance F4.3.3 shall not apply to any pool exempted under section 5 of the Fencing of Swimming Pools Act 1987.</p>
<p>F4.3.4 Barriers shall:</p>	
<p>(a) Be continuous and extend for the full extent of the hazard,</p>	
<p>(b) Be of appropriate height,</p>	
<p>(c) Be constructed with <i>adequate</i> rigidity,</p>	
<p>(d) Be of <i>adequate</i> strength to withstand the foreseeable impact of people and, where appropriate, the static pressure of people pressing against them,</p>	
<p>(e) Be constructed to prevent people from falling through them, and</p>	

Provisions

- (f) Restrict the entry of children under 6 years of age, when located in areas likely to be frequented by them.

F4.3.5 Barriers to swimming pools shall have in addition to performance F4.3.4:

- (a) All gates constructed so that they close, and latch automatically with latching devices not readily operated by children, and
- (b) No permanent objects on the outside of the barrier that could provide a climbing step.

Limits on application

F5 CONSTRUCTION AND DEMOLITION HAZARDS

Provisions	Limits on application
<p>OBJECTIVE</p> <p>F5.1 The objective of this provision is to safeguard people from injury, and <i>other property</i> from damage, caused by <i>construction</i> or demolition site hazards.</p> <p>FUNCTIONAL REQUIREMENT</p> <p>F5.2 <i>Construction</i> and demolition work on <i>buildings</i> shall be performed in a manner that avoids the likelihood of:</p> <ul style="list-style-type: none"> (a) Objects falling onto people on or off the site, (b) Objects falling on property off the site, (c) Other hazards arising on the site affecting people off the site and <i>other property</i>, and (d) Unauthorised entry of children to hazards on the site. <p>PERFORMANCE</p> <p>F5.3.1 Suitable <i>construction</i> methods shall be used to avoid the likelihood of tools or materials falling onto places where people might be present.</p> <p>F5.3.2 Where <i>construction</i> or demolition work presents a hazard in places to which the public has access, barriers shall be provided and shall:</p> <ul style="list-style-type: none"> (a) Be of appropriate height and <i>construction</i> to prevent site hazards from harming traffic or passersby, (b) Be difficult to climb, (c) Have no opening other than those approved by the <i>territorial authority</i> for access and viewing, 	

Provisions

- (d) Have no gates or doors which project beyond the site when opened,
- (e) Contain no projection that would be a hazard to traffic or people, and
- (f) Be clearly marked where the barrier itself may otherwise present a hazard to traffic or passersby.

F5.3.3 Where a *construction* or demolition site contains any hazard which might be expected to attract the unauthorised entry of children, the hazard shall be enclosed to restrict access by children.

F5.3.4 Suitable barriers shall be constructed to provide a safe route for people where lifting equipment creates a risk of accident from objects falling on a place of public access, or where a similar risk results from the height at which *construction* or demolition work is being carried out.

Limits on application

F6 LIGHTING FOR EMERGENCY

Provisions

OBJECTIVE

F6.1 The objective of this provision is to safeguard people from injury due to inadequate lighting being available during an emergency.

FUNCTIONAL REQUIREMENT

F6.2 *Buildings* shall be provided with *adequate* lighting within all *escape routes* in an emergency.

PERFORMANCE

F6.3.1 An *illuminance* of 1 lux minimum shall be maintained at floor level throughout *buildings* for a period equal to 1.5 times the *evacuation time*.

F6.3.2 Signs to indicate *escape routes* shall be provided as required by Clause F8 "Signs".

Limits on application

Requirement F6.2 shall not apply to *Detached Dwellings, household units within Multi-unit Dwellings, Outbuildings or Ancilliary buildings*.

Performance F6.3.1 shall not apply to spaces infrequently inhabited such as plant rooms, storage areas and service tunnels.

F7 WARNING SYSTEMS

Provisions

OBJECTIVE

F7.1 The objective of this provision is to safeguard people from injury or illness due to lack of awareness of an emergency.

FUNCTIONAL REQUIREMENT

F7.2 *Buildings* shall be provided with appropriate means of warning people to escape to a *safe place*.

PERFORMANCE

F7.3 A warning system shall consist of a combined *fire* detection and warning system that will alert people in *adequate* time for them to reach a *safe place*.

Limits on application

Performance F7.3 shall not apply to *Detached Dwellings, Outbuildings* or *Ancillary buildings*.

F8 SIGNS

Provisions	Limits on application
<p>OBJECTIVE</p> <p>F8.1 The objective of this provision is to:</p> <ul style="list-style-type: none"> (a) Safeguard people from injury or illness resulting from inadequate identification of <i>escape routes</i>, or of hazards within or about the <i>building</i>, (b) Safeguard people from loss of <i>amenity</i> due to inadequate direction, and (c) Ensure that <i>people with disabilities</i> are able to carry out normal activities and processes within <i>buildings</i>. <p>FUNCTIONAL REQUIREMENT</p> <p>F8.2 Signs shall be provided in and about <i>buildings</i> to identify:</p> <ul style="list-style-type: none"> (a) <i>Escape routes</i>, (b) Emergency related safety features, (c) Potential hazards, and (d) <i>Accessible routes</i> and facilities for <i>people with disabilities</i>. <p>PERFORMANCE</p> <p>F8.3.1 Signs shall be clearly visible and readily understandable under all conditions of foreseeable use.</p> <p>F8.3.2 Signs indicating potential hazards shall be provided in sufficient locations to notify people before they encounter the hazard.</p>	<p>Objective F8.1(c) shall apply only to those <i>buildings</i> to which section 25 of the Disabled Persons Community Welfare Act 1975 applies.</p> <p>Requirement F8.2 shall not apply to <i>Detached Dwellings</i>, or within <i>household units</i> of <i>Multi-unit Dwellings</i>.</p>

Provisions

F8.3.3 Signs to facilitate escape shall:

- (a) Be provided in sufficient locations to identify *escape routes* and guide people to a *safe place*, and
- (b) Remain visible in the event of a power failure of the main lighting supply, for the same duration as required by Clause F6 'Lighting for Emergency'.

F8.3.4 Signs shall be provided in sufficient locations to identify *accessible routes* and facilities provided for *people with disabilities*.

Limits on application

G SERVICES AND FACILITIES

G1 PERSONAL HYGIENE

Provisions	Limits on application
<p>OBJECTIVE</p> <p>G1.1 The objective of this provision is to :</p> <p>(a) Safeguard people from illness caused by infection or contamination,</p> <p>(b) Safeguard people from loss of <i>amenity</i> arising from the absence of appropriate personal hygiene facilities, and</p> <p>(c) Ensure <i>people with disabilities</i> are able to carry out normal activities and processes within <i>buildings</i>.</p> <p>FUNCTIONAL REQUIREMENT</p> <p>G1.2 <i>Buildings</i> shall be provided with appropriate spaces and facilities for personal hygiene.</p> <p>PERFORMANCE</p> <p>G1.3.1 <i>Sanitary fixtures</i> shall be provided in sufficient number and be appropriate for the people who are intended to use them.</p> <p>G1.3.2 <i>Sanitary fixtures</i> shall be located, <i>constructed</i> and installed to:</p> <p>(a) Facilitate <i>sanitation</i>,</p> <p>(b) Avoid risk of food contamination,</p> <p>(c) Avoid harbouring dirt or germs,</p> <p>(d) Provide appropriate privacy,</p> <p>(e) Avoid affecting occupants of adjacent spaces from the presence of unpleasant odours, accumulation of offensive matter, or other source of annoyance,</p> <p>(f) Allow effective cleaning,</p>	<p>Objective G1.1(c) shall apply only to those <i>buildings</i> to which section 25 of the Disabled Persons Community Welfare Act 1975 applies.</p>

Provisions

- (g) Discharge to a plumbing and drainage system as required by Clause G13 "Foul Water" when water-borne disposal is used, and
- (h) Provide a healthy, safe disposal system when non-water-borne disposal is used.

G1.3.3 Facilities for personal hygiene shall be provided in convenient locations.

G1.3.4 Personal hygiene facilities provided for *people with disabilities* shall be *accessible*.

Limits on application

Performance G1.3.4 shall not apply to *Housing, Outbuildings, Ancillary buildings*, and to *Industrial buildings* where no more than 10 people are employed.

G2 LAUNDERING

Provisions

OBJECTIVE

G2.1 The objective of this provision is to ensure:

- (a) *Adequate amenities* for people to do laundering, and
- (b) That *people with disabilities* are able to carry out normal activities and processes within *buildings*.

FUNCTIONAL REQUIREMENT

G2.2 *Buildings* shall be provided with *adequate* space and facilities for laundering.

PERFORMANCE

G2.3.1 Facilities shall have capacity for the *intended use*, and consist of *fixtures*, or space and services for appliances.

G2.3.2 Space shall be *adequate* in size to provide for the installation and use of *fixtures* or appliances.

G2.3.3 Space and facilities shall be provided within each accommodation unit or may be grouped elsewhere in a convenient location.

G2.3.4 *Accessible* facilities shall be provided for *people with disabilities*.

Limits on application

Objective G2.1(b) shall apply only to those *buildings* to which section 25 of the Disabled Persons Community Welfare 1975 Act applies.

Requirement G2.2 shall apply only to *Housing*, old people's homes, early childhood centres, camping grounds and work camps.

Performance G2.3.4 shall apply only to camping grounds.

G3 FOOD PREPARATION AND PREVENTION OF CONTAMINATION

Provisions	Limits on application
OBJECTIVE	
<p>G3.1 The objective of this provision is to:</p> <p>(a) Safeguard people from illness due to contamination,</p> <p>(b) Enable hygienic food preparation without loss of <i>amenity</i>, and</p> <p>(c) Ensure that <i>people with disabilities</i> are able to carry out normal activities and processes within <i>buildings</i>.</p>	<p>Objective G3.1(c) shall apply only to those <i>buildings</i> to which section 25 of the Disabled Persons Community Welfare Act 1975 applies.</p>
FUNCTIONAL REQUIREMENT	
<p>G3.2.1 <i>Buildings</i> shall be provided with space and facilities for the hygienic storage, preparation and cooking of food, that are <i>adequate</i> for the <i>intended use</i> of the <i>building</i>.</p>	<p>Requirement G3.2.1 shall apply to <i>Housing</i>, work camps, old people's homes and early childhood centres, and where appropriate shall also apply to <i>Commercial</i> and <i>Industrial buildings</i> whose <i>intended uses</i> include the manufacture, preparation, packaging or storage of food.</p>
<p>G3.2.2 <i>Buildings</i> used for the storage, manufacture or processing of food, including animal products, shall be constructed to safeguard the contents from contamination.</p>	
<p>G3.2.3 <i>Buildings</i> used for the medical treatment of humans or animals, or the reception of dead bodies, shall be constructed to avoid the spread of contamination from the <i>building</i> contents.</p>	
PERFORMANCE	
<p>G3.3.1 Food preparation facilities shall be hygienic and include:</p> <p>a) Space for a refrigerator, or a perishable food storage area capable of being cooled and protected from vermin and insects.</p>	<p>Performance G3.3.1 (a) and (b) shall apply to <i>Housing</i>, work camps, old people's homes, early childhood centres and <i>Commercial</i> or <i>Industrial buildings</i> whose <i>intended uses</i> include the handling of perishable food.</p>

Provisions

(b) Means for food rinsing, utensil washing and waste water disposal.

(c) Means for cooking food, and

(d) Space and a surface for food preparation.

G3.3.2 Spaces for food preparation and utensil washing shall have:

(a) Interior linings and work surfaces shall be *impervious* and easily cleaned,

(b) All *building elements* constructed with materials which are free from *hazardous substances* which could cause contamination to the *building* contents, and

(c) Exposed *building elements* located and shaped to avoid the accumulation of dirt.

G3.3.3 An *adequate* energy supply shall be provided, appropriately located for use by cooking and refrigeration appliances.

G3.3.4 Space and facilities shall be provided within each *household unit*, or grouped elsewhere in a convenient location.

G3.3.5 Where facilities are provided for *people with disabilities* they shall be *accessible*.

G3.3.6 Spaces in *buildings* shall be protected from the likelihood of contamination or vermin entering areas used for the storage, processing or preparation of food, and shall have a means of preventing contamination spreading from these areas to other spaces.

Limits on application

Performance G3.3.1 (c) shall apply to *Housing*, work camps, old people's homes and early childhood centres.

Performance G3.3.1 (d) shall apply to *Housing*, work camps, old people's homes and early childhood centres.

Performance G3.3.2 (b) shall apply to *Housing*, work camps, old people's homes and early childhood centres, and where appropriate shall also apply to *Commercial* and *Industrial buildings* whose *intended uses* include the manufacture, preparation, packaging or storage of food.

Performance G3.3.2 (c) shall not apply to *Housing*.

Performance G3.3.5 shall apply only to camping grounds and *accessible* accommodation units in *Communal Residential buildings*.

Performance G3.3.6 shall apply to *Commercial* or *Industrial buildings* whose *intended uses* include the handling of perishable food, the medical treatment of humans or animals, the slaughter of animals or the reception of dead bodies.

G4 VENTILATION

Provisions

OBJECTIVE

G4.1 The objective of this provision is to safeguard people from illness or loss of *amenity* due to lack of fresh air.

FUNCTIONAL REQUIREMENT

G4.2 Spaces within *buildings* shall be provided with *adequate* ventilation consistent with their maximum occupancy.

PERFORMANCE

G4.3.1 Spaces within *buildings* shall have means of ventilation with *outdoor air* that will provide an *adequate* number of air changes to maintain air purity.

G4.3.2 Mechanical air-handling systems shall be constructed and maintained in a manner that prevents harmful bacteria, pathogens and allergens from multiplying within them.

G4.3.3 *Buildings* shall have a means of collecting or otherwise removing, the following products from the spaces in which they are generated:

- (a) Cooking fumes and odours,
- (b) Steam from laundering, utensil washing, bathing and showering,
- (c) Odours from sanitary and waste storage spaces,
- (d) Gaseous by-products and excessive moisture from commercial or industrial processes,
- (e) Poisonous fumes and gases,
- (f) Flammable fumes and gases,
- (g) Airborne particles,

Limits on application

Provisions

(h) Bacteria, viruses or other pathogens, or

(i) Products of combustion.

G4.3.4 Contaminated air shall be disposed of in a way which avoids creating a nuisance or hazard to people and *other property*.

G4.3.5 The quantities of air supplied for ventilation shall meet the additional demands of any fixed *combustion appliances*.

Limits on application

G5 INTERIOR ENVIRONMENT

Provisions

OBJECTIVE

G5.1 The objective of this provision is to:

- (a) Safeguard people from illness caused by low air temperature,
- (b) Safeguard people from injury or loss of *amenity* caused by inadequate activity space,
- (c) Safeguard people from injury caused by unsafe installations, and
- (d) Ensure that *people with disabilities* are able to carry out normal activities and processes within *buildings*.

FUNCTIONAL REQUIREMENT

G5.2.1 *Buildings* shall be *constructed* to provide:

- (a) An *adequate*, controlled interior temperature,
- (b) *Adequate* activity space for the *intended use*, and
- (c) *Accessible* spaces and facilities.

G5.2.2 Heating appliances in *buildings* shall be installed in a way that reduces the likelihood of injury.

PERFORMANCE

G5.3.1 *Habitable spaces*, bathrooms and recreation rooms shall have provision for maintaining the internal temperature at no less than 16 °C measured at 750 mm above floor level, while the space is *adequately* ventilated.

Limits on application

Objective G5.1(d) shall apply to those *buildings* to which section 25 of the Disabled Persons Community Welfare Act 1975 applies.

Requirement G5.2.1 (a) shall apply only to *habitable spaces*, bathrooms and recreation rooms in old people's homes and early childhood centres.

Requirement G5.2.1 (b) shall apply only to *old people's homes*.

Requirement G5.2.1 (c) shall apply only to *Communal Residential, Communal Non-residential, and Commercial buildings*.

Performance G5.3.1 shall apply only to old people's homes and early childhood centres.

Provisions

G5.3.2 Heating appliances, and any attached cables, pipes or other fittings shall be securely fixed in place.

G5.3.3 *Habitable spaces* shall have sufficient space for activity, furniture, and sanitary and mobility aids.

G5.3.4 Where reception counters or desks are provided for public use, at least one counter or desk shall be *accessible*.

G5.3.5 *Buildings* shall be provided with listening systems which enable enhanced hearing by people with hearing aids.

G5.3.6 Enhanced listening systems shall be identified by signs complying with Clause F8 "Signs".

Limits on application

Performance G5.3.2 shall apply only to old people's homes and early childhood centres.

Performance G5.3.3 shall apply only to old people's homes.

Performance G5.3.4 applies only to *Communal Residential, Communal Non-Residential, and Commercial buildings*.

Performance G5.3.5 applies only to:

- (a) *Communal Non-residential* assembly spaces occupied by more than 250 people, and
- (b) Any theatre, cinema, or public hall, and
- (c) Assembly spaces in old people's homes occupied by more than 20 people.

G6 AIRBORNE AND IMPACT SOUND

Provisions

OBJECTIVE

G6.1 The objective of this provision is to safeguard people from illness or loss of *amenity* as a result of undue noise being transmitted between abutting occupancies.

FUNCTIONAL REQUIREMENT

G6.2 *Building elements* which are common between occupancies, shall be constructed to prevent undue noise transmission from other occupancies or common spaces, to the *habitable spaces of household units*.

PERFORMANCE

G6.3.1 The *Sound Transmission Class* of walls, floors and ceilings, shall be no less than 55.

G6.3.2 The *Impact Insulation Class* of floors shall be no less than 55.

Limits on application

G7 NATURAL LIGHT

Provisions

OBJECTIVE

G7.1 The objective of this provision is to safeguard people from illness or loss of *amenity* due to isolation from natural light and the outside environment.

FUNCTIONAL REQUIREMENT

G7.2 *Habitable spaces* shall provide *adequate* openings for natural light and for a visual awareness of the outside environment.

PERFORMANCE

G7.3.1 Natural light shall provide an *illuminance* of no less than 30 lux at floor level for 75% of the *standard year*.

G7.3.2 Openings to give awareness of the outside shall be transparent and provided in suitable locations.

Limits on application

Requirement G7.2 shall apply only to *Housing*, old people's homes and early childhood centres.

G8 ARTIFICIAL LIGHT

Provisions

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 *buildings* used by people, shall be provided with *adequate* artificial lighting which, when activated in the absence of sufficient natural light, will enable safe movement.

PERFORMANCE

G8.3 *Illuminance* at floor level shall be no less than 20 lux.

Limits on application

Requirement G8.2 shall apply to:

- (a) All *exitways* in *Multi-unit Dwellings*, *Group Dwellings* and *Communal Residential*, *Communal Non-residential*, *Commercial* and *Industrial buildings*.
- (b) All *access routes* except those in *Outbuildings* and *Ancillary buildings*, and
- (c) All common spaces within *Multi-unit Dwellings*, *Group Dwellings*, and *Communal Residential* and *Communal Non-residential buildings*.

Performance G8.3 shall not apply in emergencies, for which *Illuminance* requirements are given in Clause F6 "Lighting for Emergency".

G9 ELECTRICITY

Provisions	Limits on application
OBJECTIVE	
G9.1 The objective of this provision is to ensure that:	
(a) In <i>buildings</i> supplied with electricity, the <i>electrical installation</i> has safeguards against outbreak of <i>fire</i> and personal injury, and	
(b) <i>People with disabilities</i> are able to carry out normal activities and processes within <i>buildings</i> .	Objective G9.1(b) shall apply only to those <i>buildings</i> to which section 25 of the Disabled Persons Community Welfare Act 1975 applies.
FUNCTIONAL REQUIREMENT	
G9.2 Where provided in a <i>building</i> , <i>electrical installations</i> shall be safe for their <i>intended use</i> .	
PERFORMANCE	
G9.3.1 The <i>electrical installation</i> shall incorporate systems to:	
(a) Protect people from contact with parts of the installation which are live during normal operation, and to prevent parts of the installation or other <i>building elements</i> becoming live during fault conditions,	
(b) Permit the safe isolation of the installation and of electrical fittings and appliances,	
(c) Safeguard people from excessive temperatures resulting from either normal operation of electrical equipment, or from currents which could exceed the installation rating,	
(d) Safeguard people from injury which may result from electromechanical stress in electrical components caused by currents in excess of the installation rating,	

Provisions

- (e) Protect *building elements* from risk of ignition, impairment of their physical or mechanical properties, or function, due to temperature increases resulting from heat transfer or electric arc,
- (f) Operate safely in its intended environment, and
- (g) Safeguard against ignition of the surrounding atmosphere where it is potentially flammable or explosive.

G9.3.2 An *electrical installation* supplying an *essential service* shall:

- (a) Maintain the supply for a time appropriate to that service, and
- (b) Be capable of being isolated from the supply system, independently of the remainder of the installation.

G9.3.3 An *electrical installation* connected to an *electrical supply system*, shall contain safeguards which protect the safety features of the external supply.

G9.3.4 In *buildings* intended for use by *people with disabilities*, light switches and plug socket outlets shall be *accessible* and usable.

Limits on applications

Performance G9.3.4 shall not apply to Housing, *Outbuildings*, *Ancillary buildings*, and to *Industrial buildings* where no more than 10 people are employed.

G10 PIPED SERVICES

Provisions

OBJECTIVE

G10.1 The objective of this provision is to safeguard people from injury or illness caused by extreme temperatures or *hazardous substances* associated with *building services*.

FUNCTIONAL REQUIREMENT

G10.2 In *buildings* provided with potentially *hazardous services* containing hot, cold, flammable, corrosive or toxic fluids, the installations shall be constructed to provide *adequate* safety for people.

PERFORMANCE

G10.3.1 Piping systems shall be constructed to avoid the likelihood of:

- (a) Significant leakage or damage during normal or reasonably foreseeable abnormal conditions,
- (b) Detrimental contamination of the contents by other substances,
- (c) Adverse interaction between services, or between piping and electrical systems, and
- (d) People having contact with pipes which could cause them harm.

G10.3.2 Provision shall be made for the ready removal of moisture or condensate in gas pipes.

G10.3.3 Pipes shall be protected against corrosion in the environment of their use.

G10.3.4 Piping systems shall be identified with markings if the contents are not readily apparent from the location or associated equipment.

Limits on application

Provisions

G10.3.5 Enclosed spaces shall be constructed to avoid the likelihood of accumulating vented or leaking gas.

G10.3.6 Piped systems shall have isolation devices which permit the installation or individual items of apparatus to be isolated from the supply system, for maintenance, testing, fault detection and repair.

Limits on application

G11 GAS AS AN ENERGY SOURCE

Provisions

OBJECTIVE

G11.1 The objective of this provision is to:

- (a) Safeguard people from injury arising from the use of gas as an energy source,
- (b) Safeguard people and *other property* from the risk of *fire* or explosion, and
- (c) Safeguard people from loss of *amenity* due to the gas supply being inadequate for the *intended use*.

FUNCTIONAL REQUIREMENT

G11.2 In *buildings* where gas is used as an energy source, the supply system shall be safe and *adequate* for its *intended use*.

PERFORMANCE

G11.3.1 Supply systems shall be *constructed* to maintain a safe pressure range appropriate to the appliances and the type of gas used.

G11.3.2 The gas supply to all appliances in a single ventilated space, shall be fitted with an automatic cut-off activated by failure of any continuous forced ventilation system used for combustion, ventilation or safe operation of a fixed gas appliance.

G11.3.3 A flued fixed gas appliance shall have no adverse interaction with any other flued appliance.

G11.3.4 Supply systems shall have isolation devices which permit the whole installation, or individual items of apparatus, to be isolated from the supply for maintenance, testing, fault detection or repair.

Limits on application

Provisions

G11.3.5 Where gas is supplied from an external source, the supply system within *buildings* shall be constructed to avoid the likelihood of:

- (a) Contamination of the external supply from other gas sources within the *building*,
- (b) Adverse effects on the pressure of the external supply, and
- (c) The external supply pipe acting as an earthing conductor.

G11.3.6 The location and installation of meters and service risers shall meet the requirements of the *network utility operator*.

Limits on application

G12 WATER SUPPLIES

Provisions	Limits on application
<p>OBJECTIVE</p>	
<p>G12.1 The objective of this provision is to:</p> <ul style="list-style-type: none"> (a) Safeguard people from illness caused by infection from contaminated water or food, (b) Safeguard people from injury due to the explosion of a pressure vessel or from contact with excessively hot water, (c) Safeguard people from loss of <i>amenity</i> arising from a lack of hot water for personal hygiene, or from a water supply which is offensive in appearance or odour, and (d) Ensure that <i>people with disabilities</i> are able to carry out normal activities and functions within <i>buildings</i>. 	<p>Objective G12.1(d) shall apply only to those <i>buildings</i> to which section 25 of the Disabled Persons Community Welfare Act 1975 applies.</p>
<p>FUNCTIONAL REQUIREMENT</p>	
<p>G12.2 <i>Buildings</i>, provided with drinking water outlets, <i>sanitary fixtures</i> or <i>sanitary appliances</i>, shall have a safe and <i>adequate</i> piped water supply.</p>	
<p>PERFORMANCE</p>	
<p>G12.3.1 Piped water supplies intended for human consumption, food preparation, utensil washing or oral hygiene shall be potable.</p>	
<p>G12.3.2 Piped water supply and outlets provided with non-potable water shall be clearly identified.</p>	
<p>G12.3.3 <i>Sanitary fixtures</i> and <i>sanitary appliances</i> shall be provided with hot water when intended to be used for:</p> <ul style="list-style-type: none"> (a) Utensil washing, and (b) Personal washing, showering or bathing. 	<p>Performance G12.3.3(b) shall apply only to <i>Housing</i>, old people's homes and early childhood centres.</p>

Provisions

G12.3.4 Where hot water is provided to *sanitary fixtures* and *sanitary appliances*, used for personal hygiene, it shall be delivered at a temperature which avoids the likelihood of scalding.

G12.3.5 *Water supply systems* shall be installed in a manner which:

- (a) Avoids the likelihood of potable water contamination within both the system and the *water main*,
- (b) Provides water to *sanitary fixtures* and *sanitary appliances* at flow rates which are *adequate* for the correct functioning of those *fixtures* and *appliances* under normal conditions,
- (c) Avoids the likelihood of leakage,
- (d) Allows reasonable access for maintenance of mechanical components, and
- (e) Allows the system and any backflow prevention devices to be isolated for testing and maintenance.

G12.3.6 Vessels used for producing or storing hot water shall be provided with safety devices which:

- (a) Relieve excessive pressure during both normal and abnormal conditions, and
- (b) Limit temperatures to avoid the likelihood of flash steam production in the event of rupture.

G12.3.7 *Storage water heaters* shall be capable of being controlled to produce, at the outlet of the *storage water heater*, an *adequate* daily water temperature to prevent the growth of legionella bacteria.

G12.3.8 Water supply taps shall be *accessible* and usable for *people with disabilities*.

Limits on application

Performance G12.3.8 shall not apply to *Housing*, *Outbuildings*, *Ancillary buildings*, and to *Industrial buildings* where no more than 10 people are employed.

G13 FOUL WATER

Provisions

OBJECTIVE

G13.1 The objective of this provision is to:

- (a) Safeguard people from illness due to infection or contamination resulting from personal hygiene activities, and
- (b) Safeguard people from loss of *amenity* due to the presence of unpleasant odours or the accumulation of offensive matter resulting from *foul water* disposal.

FUNCTIONAL REQUIREMENT

G13.2 *Buildings*, in which *sanitary fixtures* and *sanitary appliances* using water-borne waste disposal are installed, shall be provided with an *adequate* plumbing and drainage system to carry *foul water* to appropriate *outfalls*.

PERFORMANCE

G13.3.1 The *plumbing system* shall be constructed to:

- (a) Convey *foul water* from *buildings* to a drainage system,
- (b) Avoid the likelihood of blockage and leakage,
- (c) Avoid the likelihood of foul air and gases entering *buildings*, and
- (d) Provide reasonable access for maintenance and clearing blockages.

G13.3.2 The drainage system shall:

- (a) Convey *foul water* to an appropriate *outfall*,
- (b) Be constructed to avoid the likelihood of blockage,

Limits on application

Provisions

- (c) Be supported, jointed and protected in a way that will avoid the likelihood of penetration of roots or the entry of ground water,
- (d) Be provided with reasonable access for maintenance and clearing blockages,
- (e) Be ventilated to avoid the likelihood of foul air and gases accumulating in the drainage system and *sewer*, and
- (f) Be constructed to avoid the likelihood of damage from superimposed loads or normal ground movement.

G13.3.3 Where a *sewer* connection is available, the drainage system shall be connected to the *sewer*, and the connection shall be made in a manner that avoids damage to the *sewer* and is to the approval of the *network utility operator*.

G13.3.4 Where no *sewer* is available, an *adequate* on-site disposal system shall be provided for *foul water* in the same manner as detailed in Clause G14 "Industrial Liquid Waste".

Limits on application

G14 INDUSTRIAL LIQUID WASTE

Provisions

OBJECTIVE

G14.1 The objective of this provision is to safeguard people from injury or illness caused by infection or contamination resulting from industrial liquid waste.

FUNCTIONAL REQUIREMENT

G14.2 *Buildings* in which industrial liquid waste is generated shall be provided with *adequate* spaces and facilities for the safe and hygienic collection, holding, treatment and disposal of the waste.

PERFORMANCE

G14.3.1 Industrial liquid waste shall be conveyed to storage containers and within disposal systems in a way which will:

- (a) Transfer wastes from *buildings* safely and hygienically,
- (b) Avoid the likelihood of blockage and leakage,
- (c) Avoid the likelihood of foul air and gases entering *buildings*, and
- (d) Provides reasonable access for clearing of blockages.

G14.3.2 Facilities for the storage, treatment, and disposal of industrial liquid waste shall be constructed:

- (a) With *adequate* capacity for the volume of waste and the frequency of disposal,
- (b) With *adequate* vehicle access for collection if required,
- (c) To avoid the likelihood of contamination of any potable water supplies in compliance with Clause G12 "Water Supplies",

Limits on application

Provisions

- (d) To avoid the likelihood of contamination of soils, ground water and waterways except as permitted by a resource consent given under the Resource Management Act 1991.
- (e) From materials which are impervious both to the waste for which disposal is required, and to water,
- (f) To avoid the likelihood of foul air and gases accumulating within or entering into *buildings*,
- (g) To avoid the likelihood of unauthorised access by people, and
- (h) To permit easy cleaning and maintenance.

Limits on application

G15 SOLID WASTE

Provisions

OBJECTIVE

G15.1 The object of this provision is to safeguard people from injury or illness caused by infection or contamination from solid waste.

FUNCTIONAL REQUIREMENT

G15.2 *Buildings* shall be provided with space and facilities for the collection, and safe hygienic holding prior to disposal, of solid waste arising from the *intended use* of the *buildings*.

PERFORMANCE

G15.3.1 Where provision is made within *buildings* for the collection and temporary holding of solid waste, the spaces provided shall be:

- (a) Of sufficient size for the volume of waste and frequency of disposal,
- (b) Provided with reasonable access for the depositing and collection of the waste,
- (c) Capable of maintaining sanitary conditions having regard to the types of waste and storage containers, and
- (d) Capable of maintaining the appropriate temperature for the type of waste stored.

G15.3.2 Where a rubbish chute is provided, it shall be located and constructed to:

- (a) Convey the solid waste to an appropriate storage container,
- (b) Avoid the likelihood of blockage or leakage,
- (c) Permit easy cleaning and maintenance,
- (d) Avoid the likelihood of foul air or gases accumulating or entering the *building*,

Limits on application

Requirement G15.2 shall not apply to *Detached Dwellings, household units of Multi-unit Dwellings, Outbuildings or Ancillary buildings* if there is independent access or private open space at ground level.

Provisions

- (e) Avoid the likelihood of the spread of *fire* beyond the refuse chute,
- (f) Have openings that allow waste to be safely deposited in the chute, and
- (g) Restrict access by children, animals and vermin.

G15.3.3 Where it is acceptable to the *network utility operator*, solid waste which has been suitably treated for disposal to a *sewer* may be discharged via a *foul water drain* complying with Clause G13 "Foul Water".

Limits on application

H ENERGY EFFICIENCY

H1 ENERGY EFFICIENCY

Provisions	Limits on application
<p>OBJECTIVE</p>	
<p>H1.1 The objective of this provision is to facilitate efficient use of energy.</p>	
<p>FUNCTIONAL REQUIREMENT</p>	
<p>H1.2 <i>Buildings</i>, throughout their lives, shall have provision for ensuring efficient energy use in controlling indoor temperature when that energy is sourced from a public electricity supply, or any other depletable energy resource.</p>	
<p>PERFORMANCE</p>	
<p>H1.3.1 The <i>building</i> envelope shall be <i>constructed</i> to ensure that the <i>building performance index</i> shall not exceed 0.13 kWh.</p>	Performance H1.3.1 applies only to <i>Housing</i> .
<p>H1.3.2 Where any space within a <i>building</i> is intended to have a controlled temperature, <i>construction of building elements</i> affecting energy use shall take account of:</p>	Performance H1.3.2 shall not apply to <i>Housing, Outbuildings, Ancillary buildings, or buildings</i> with a floor area of less than 50 m ² .
<p>(a) Thermal resistance to heat loss through the <i>building</i> envelope,</p>	
<p>(b) Heat gains (including solar radiation) through the building envelope,</p>	
<p>(c) Airtightness,</p>	
<p>(d) The contribution to space heating of heat losses from <i>building</i> services (including hot water systems, and lighting),</p>	
<p>(e) Control systems for heating and ventilating, and for other services, and</p>	
<p>(f) Utilisation of waste heat from internal processes.</p>	

The New Zealand Building Code

Publications associated with the New Zealand Building Code consist of a Handbook and 35 Approved Documents. These documents identify requirements to ensure a building is safe, durable, healthy, accessible and energy efficient, and contain:

- **Acceptable solutions – approved ways of meeting the requirements of the Code.**
- **Verification methods – acceptable test and calculation methods to establish compliance with the Code.**

Developed by the Building Industry Authority and published by Standards New Zealand, the documents are available in both looseleaf and bound editions. Each document is available separately and the New Zealand Building Code Handbook and Approved Documents may also be purchased as a full set in two binders.

New Zealand Building Code Handbook and Approved Documents:

No.	Title	No.	Title
HB	New Zealand Building Code Handbook	F7	Warning systems
B1	Structure	F8	Signs
B2	Durability	G1	Personal hygiene
C1	Outbreak of fire	G2	Laundering
C2	Means of escape	G3	Food preparation and prevention of contamination
C3	Spread of fire	G4	Ventilation
C4	Structural stability during fire	G5	Interior environment
D1	Access routes	G6	Airborne and impact sound
D2	Mechanical installations for access	G7	Natural light
E1	Surface water	G8	Artificial light
E2	External moisture	G9	Electricity
E3	Internal moisture	G10	Piped services
F1	Hazardous agents on site	G11	Gas as an energy source
F2	Hazardous building materials	G12	Water supplies
F3	Hazardous substances and processes	G13	Foul water
F4	Safety from falling	G14	Industrial liquid waste
F5	Construction and demolition hazards	G15	Solid waste
F6	Lighting for emergency	H1	Energy efficiency

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