New Zealand Standard

Concrete masonry buildings not requiring specific engineering design

Superseding NZS 4229:1999
COMMITTEE REPRESENTATION

This Standard was prepared under the supervision of the P 4229 Committee the Standards Council established under the Standards Act 1988.

The committee consisted of representatives of the following nominating organisations:

BRANZ
Cement and Concrete Association of New Zealand
Design Association of New Zealand
Institution of Professional Engineers New Zealand
Ministry of Business, Innovation and Employment – Building and Housing Group
University of Auckland

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Standards New Zealand gratefully acknowledges the contribution of time and expertise from all those involved in developing this Standard. Standards New Zealand also gratefully acknowledges the New Zealand Concrete Masonry Association for the figures provided for Appendix A.

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REFERENCED DOCUMENTS

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New Zealand Standards

- NZS 1170:----- Structural design actions
  - Part 5:2004 Earthquake actions – New Zealand
  - Part 5: Supplement 1: Earthquake actions – New Zealand Commentary 2004
- NZS 3101:2006 Concrete structures Standard
  - Parts 1 and 2
- NZS 3109:1997 Concrete construction
- NZS 3112:----- Methods of test for concrete
  - Part 1:1986 Tests relating to fresh concrete
  - Part 2:1986 Tests relating to the determination of strength of concrete
  - Part 4:1986 Tests relating to grout
- NZS 3604:2011 Timber-framed buildings
- NZS 4210:2001 Masonry construction: Materials and workmanship
- NZS 4230:2004 Design of reinforced concrete masonry structures
- NZS 4402:----- Methods of testing soils for civil engineering purposes
  - Test 2.2:1986 Soil classification tests – Test 2.2 Determination of the liquid limit
  - Test 2.6:1986 Soil classification tests – Test 2.6 Determination of the linear shrinkage
  - Test 6.5.2:1988 Soil strength tests – Determination of the penetration resistance of a soil – Test 6.5.2 Hand method using a dynamic cone penetrometer
- NZS 4404:2010 Land development and subdivision infrastructure
- NZS 4431:1989 Code of practice for earth fill for residential development

Joint Australian/New Zealand Standards

- AS/NZS 1170:----- Structural design actions
  - Part 0:2002 General principles
  - Part 1:2002 Permanent, imposed and other actions
  - Part 2:2011 Wind actions
  - Part 3:2003 Snow and ice actions
NZS 4229:2013

AS/NZS 2699:---- Built-in components for masonry construction
  Part 1:2000 Wall ties
  Part 3:2002 Lintels and shelf angles (durability requirements)
AS/NZS 4455:---- Masonry units, pavers, flags and segmental retaining wall units
  Part 1:2008 Masonry units
AS/NZS 4671:2001 Steel reinforcing materials

American Standard

ASTM E96/E96M-12 Standard test methods for water vapor transmission of materials

Other publications


New Zealand legislation


Local Government Act 2002

Resource Management Act 1991

Websites

Building and Housing Group, Ministry of Business, Innovation and Employment www.dbh.govt.nz

New Zealand Concrete Masonry Association Inc. www.nzcma.org.nz

New Zealand Legislation www.legislation.govt.nz

RELATED DOCUMENTS

See Appendix D for a list of related documents used to prepare this Standard.
LATEST REVISIONS

The users of this Standard should ensure that their copies of the above-mentioned New Zealand Standards are the latest revisions. Amendments to referenced New Zealand and Joint Australian/New Zealand Standards can be found on www.standards.co.nz.

REVIEW OF STANDARDS

Suggestions for improvement of this Standard are welcomed. They should be sent to the Chief Executive, Standards New Zealand, Private Bag 2439, Wellington 6140.

OUTCOME STATEMENT

NZS 4229:2013 Concrete masonry buildings not requiring specific engineering design sets a minimum standard for the design and construction of reinforced concrete masonry buildings. When applied by architects, designers, builders, engineers, apprentices, building consent authorities, and building industry regulators, NZS 4229 provides these users with a cost effective means of compliance and practical guidance for designing and building to meet New Zealand Building Code requirements, without the need for specific engineering design.

NZS 4229 provides prescribed methods for the design and construction of reinforced concrete masonry buildings up to 10 metres in height, including domestic dwellings and most other residential buildings, and some commercial buildings.

The use of NZS 4229 during design and building provides consumers with assurance that their home has been built to meet the legislative requirements of the New Zealand Building Code.
This 2013 limited revision has been brought about by the replacement of NZS 4203:1992 General structural design and design loadings for buildings with the AS/NZS 1170 Structural design actions Standard series with a consequent change to the applied actions on structures, particularly earthquake actions.

The earthquake zones have been aligned with those in NZS 3604:2011 Timber-framed buildings, introducing four zones instead of three. Earthquake actions may now be calculated specifically for a site’s subsoil classification. The earthquake actions have increased in some areas as a result of the change in earthquake demand and the greater spread in demand over the country as detailed in NZS 1170.5. An extra high wind zone has also been introduced to align with NZS 3604.

In addition, the durability provisions now align with current requirements by reference to the NZS 3604 requirements.

The opportunity has been taken to correct errors in the 1999 edition of the Standard, although a full detailed review of the document was not undertaken in 2013. Appendix B has been detailed to comply with the revised earthquake demands and the retaining walls in Appendix A have been aligned with the latest designs available in the New Zealand Concrete Masonry Association's New Zealand concrete masonry manual.

This limited revision also incorporates changes introduced to New Zealand Building Code compliance documents by the Ministry of Business, Innovation and Employment (previously the Department of Building and Housing) in 2011, which modified its referencing of NZS 3604:2011 and NZS 4229:1999. These changes include amendments to the definition of 'good ground' for the Canterbury earthquake region and new requirements for concrete slab floors and foundations. The Ministry has published guidance for designers in Canterbury that may inform design for locations other than the Canterbury earthquake region. Amendments can be considered to NZS 4229 or other documents when further information and evidence about liquefaction and lateral spread are available for use nationally.
New Zealand Standard

Concrete masonry buildings not requiring specific engineering design

1 SCOPE AND INTERPRETATION

1.1 Scope

1.1.1

This Standard sets out construction requirements for concrete masonry buildings not requiring specific engineering design within the limitations specified by 1.1.3. It is intended as a means of compliance with the following requirements of the New Zealand Building Code (NZBC):

(a) Clause B1 Structure

Masonry constructed in accordance with this Standard and NZS 4210 will meet the requirements of B1.3.1, B1.3.2, and B1.3.4 for loads from B1.3.3(a), (b), (d), (f), (h), and (j), that is for loads arising from gravity, earth pressure, earthquake, wind, and human impact. This Standard covers masonry constructed to Observation Type B as defined in NZS 4230. Appendix A gives details of concrete masonry walls that are retaining soil. Appendix B gives details of free-standing cantilevered concrete masonry walls;

(b) Clause B2 Durability

Masonry constructed in accordance with this Standard will be durable for at least 50 years and will therefore meet B2.3.1(a) of the New Zealand Building Code;

(c) Clause E2 External Moisture

Construction in accordance with this Standard will ensure against damage to building components or dampness in the building as a result of external moisture entering through the masonry walls or the concrete slab-on-ground. This Standard ensures compliance with E2.3.2 and E2.3.3 of the New Zealand Building Code for walls and floors only. This Standard is not a complete solution to Clause E2 as it does not contain provisions for the other elements of the building envelope such as roofing, exterior joinery, and flashings.

Where this Standard has provisions that are in non-specific or unquantified terms (such as where provisions are required to be appropriate, adequate, suitable, and the like), then these do not form part of the means of compliance with the New Zealand Building Code and shall be to the approval of the building consent authority.
NZS 4229:2013 Concrete masonry buildings not requiring specific engineering design

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