



Building newsflash number - 446

Residential retaining walls

Purpose

To advise builders, designers and certifiers of the expected performance requirements for retaining walls used in residential developments.

Background

Industry stakeholders have requested clarification of the expected performance requirements for timber retaining walls used in residential applications. Issues raised include, the standards and codes that are applicable; the Building Code of Australia (BCA) requirements; and what the expected design life for retaining walls should be in relationship to their importance.

Issues

Structural design

Structural design of retaining walls usually requires a two step process that addresses both the actions being applied to the wall and the structural adequacy of the wall materials/system used to resist these actions. For material resistance, the BCA calls up the relevant structural codes such as AS 1720 – Timber Structures, AS 3600 – Concrete Structures, AS 3700 Masonry Structures and AS 4100 Steel Structures.

For the loads or actions that are applied to retaining walls and their general design, while the BCA does not reference AS 4678 – Earth Retaining Structures, this standard is the accepted contemporary design standard that should be followed.

Design Life

Except for termite management for Queensland, the BCA has no explicit durability or design life requirements for products or systems. However, the Australian Building Codes Board (ABCB) has published a “Durability in Buildings – Guideline Document” which is intended to provide guidance to manufacturers, appraisers and Standards Committees and others on the implicit durability performance requirements of the BCA.

For normal buildings with a design life of 50 years, the guideline states the design life of components or sub-systems should be five, 15 or 50 years according to factors including access and/or cost of repair or replacement. The 50 year requirement of this guide aligns closely with the 60 year ‘typical’ design life suggested in AS 4678 for ‘residential dwellings’.

Legislation

Building Regulation 2006 – Schedule 1
BCA Volume 2 – Queensland 3.4.3.0 (i)



Interpretation

Construction Timbers in Queensland (CTIQ) is a primary referenced document for Queensland under the BCA. This publication was written to reflect the requirements of the Australian Building Codes Board guideline. For retaining walls, the guideline specifies either 15 or 50 years depending upon the nature of the retaining wall including height and whether it is 'structural' or 'non-structural'.

CTIQ has been amended (see extract below) to clarify the life expectancy for retaining walls by deleting reference to height, structural and non-structural but by considering their importance which includes degree of structural reliability, and risks associated with failure and cost of repair or replacement.

Building member	Environment	Target design life (yrs)	Application (Column no. in Schedules A, B and C)
Retaining walls	Moderate importance ¹	15	14
	High importance ¹	50	17

¹ For the purposes of retaining walls:-

- a. 'moderate importance' means anything other than 'high importance', and
- b. 'high importance' means retaining walls:
 - i. where the total height of the wall and or the fill or cut retained by the wall is greater than 2.0metres or,
 - ii. that provide support to a building and structures such as an in-ground swimming pool, carport, garage or a deck more than 1.0 metre above ground level beneath, where these buildings or structures are not supported by other independent means such as piers and the like that extend beyond the zone of influence of the retaining wall or,
 - iii. that support another retaining wall described in (i) or (ii) above.

In respect of design life, retaining walls used in residential developments and applications should be considered as either of 'moderate importance or 'high importance'. The 'importance' in respect of determining design life should be considered separately to other factors such as structural design requirements and whether walls are prescribed or not prescribed under the relevant provisions of either the Building Regulation or Queensland Development Code.

In respect of the typical design life given in AS 4678 for residential dwellings, it is considered that this is intended to apply to a retaining wall that forms part of a residential dwelling or provides direct support to a residential dwelling.

Contact for further information

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