



EMERGENCY

SEISMIC DESIGN GUIDELINES

It is important to remember Australia sits on its own tectonic plate. In the last year alone, Australia has had 13 earthquakes, with the most significant being a 6.6 magnitude earthquake in Broome in July this year.

DO YOU NEED TO ASSESS YOUR PROJECT FOR SEISMIC DESIGN?

The short answer is yes. All buildings and their parts need an assessment of their seismic requirements, in accordance with the National Construction Code (NCC). More importantly, it is their 'Level of Importance (LOI)' which determines the extent of the seismic design requirements.

The NCC defines the LOI for the different building types, ranging from 1 through to 4, LOI 1 being the lowest level. The LOI is typically established through occupancy levels and function of the building within the community or broader. The following Table B1.2a from the NCC provides a brief description of the building types applicable to each LOI.

IMPORTANCE LEVEL 1

Building Type: Building or structures presenting a low degree of hazard to life and other property in the case of failure.

IMPORTANCE LEVEL 2

Building Type: Buildings or structures not included Importance Levels 1, 3 and 4.

IMPORTANCE LEVEL 3

Building Type: Buildings or structures that are designed to contain a large number of people.

IMPORTANCE LEVEL 4

Building Type: Buildings or structures that are essential to post-disaster recovery or associated with hazardous facilities.

Some residential buildings of Importance

Level 1 are "deemed to comply" under the NCC, and therefore, do not require a specific seismic design. Conversely, buildings that fall into Importance Level 4 such as a hospital, they are essential to post-disaster recovery and, therefore, require a greater seismic load (or level of safety) to be considered in their design.

For structures of Importance Level 2 or greater, the seismic actions on walls and ceilings in these buildings needs to be considered, in conjunction with any other expected actions, such as wind and occupancy loads. The NCC provides the minimum seismic event to be considered based on the LOI of the building, and the Australian Standard AS1170.4 'Earthquake actions in Australia' provides the method of assessing the seismic actions applicable



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to the walls and ceilings in the building.

1. Building Importance Level: this information is usually found on the Structures Note (S01 Drawing).
2. Sire sub-soil class: this is the details of the foundations for the building, as this will affect the building response to the earthquake. From strong rock to very soft soil; Class Ae, Be, Ce, De or Ee. This information is also found on the Structures Note (S01 Drawing)
3. Building location: this will establish the applicable seismic hazard factor.
4. Architectural drawings: this is used to develop a scope of works, and also to provide the intimate project specific details for the walls and ceiling systems to facilitate the seismic design.
5. Other loads: Include details of any FF&E attached to the walls and ceilings, as seismic actions are very much controlled by mass.

WHEN DOES SEISMIC LOAD GOVERN THE DESIGN OF A BUILDING?

There is no simple answer to this question and the seismic requirements need to be assessed in all cases against the other loading scenarios (such as wind loading) to determine which action results in the higher loading to the wall and ceiling system, e.g. if the wind loading on a partition wall is greater than the seismic loading, it is the wind loading that governs the design or conversely, designing the partition wall for the resulting wind actions will automatically ensure the system complies with the seismic requirements.

In Queensland recently, there has been a greater focus on seismic design and for buildings of Importance Level 2 or greater, this has required a Form 15 Design Certificate. This document confirms the wall or ceiling system design complies to the NCC requirements, not only for seismic design.

Source: Rondo Building Services

