Brace right for the rebuild

IMPORTANT INFORMATION REGARDING BRACING OF HOMES

GIB®

Bracing for wind and earthquake

Wind pushes a building sideways, but can also cause uplift on roof claddings and open structures such as verandas and carports. ***The wind force on a building depends on wind speed (resulting in pressure) and building size.*** A larger building in an exposed location catches more wind and requires more bracing.

Earthquakes cause ground movement. Building foundations move with the ground, but the structure above ground lags behind causing potentially damaging sideways forces that must be resisted. ***The earthquake force on a building depends on the intensity of shaking and the weight of the building.*** The heavier the building, the more bracing that needs to be provided.

WIND FORCE

EARTHQUAKE FORCE

Once wind and earthquake forces have been determined (often referred to as the 'demand'), bracing elements to resist these forces are designed into the building. Bracing resistance must be spread as evenly as possible throughout a building. Uneven distribution of bracing or an irregular building shape can cause unpredictable responses and damage.

When bracing is correctly designed and installed, a building will resist wind and earthquake forces.

Understanding the New Zealand Building Code

The New Zealand Building Code (NZBC) sets out the compliance requirements for new buildings. For most light timber framed homes, the requirements covered in New Zealand Standard NZS3604:2011 (which was recently updated) are deemed to comply with the NZBC. ***NZS3604:2011 specifies the wind and earthquake resistance required for a building.***

GIB EzyBrace® Systems 2011 are fully compliant with NZS 3604:2011.

In addition, GIB EzyBrace® Systems 2011 and the associated software have been extensively tested and are independently appraised by BRANZ Appraisal 294(2011).

BRANZ Appraised
Appraisal No.294 [2011]

Designing to resist ‘serviceabilty’ and ‘ultimate’ events

A ‘serviceability’ event happens reasonably regularly and you can expect a building to survive this without any damage such as cracking or even minor annoyances like sticking doors and windows.

An ‘ultimate’ event has a small probability of occurring during a building’s life. Once every 500 years is the base assumption for houses designed in accordance with NZS3604:2011. ***In an ultimate event, the main objective is to keep occupants safe while some material damage and repairs must be expected.***

A useful analogy for an ultimate event is to liken it to a serious car accident: airbags deploy, seat belt pre-tensioners fire and crumple zones activate to keep the occupants safe, but the vehicle will have been extensively damaged and need repairs to make it driveable again.

Examples of regular serviceability events.

MINOR EARTHQUAKE

STRONG WINDS

DOORS SLAMMING

TRUCK MOVEMENTS

All new houses must be designed to meet the requirements of NZS 3604:2011. These designs are a minimum and ensure adequate performance during exposure to serviceability and/or ultimate events.

BUILDING CODE PLUS

Designing a building’s bracing resistance to a higher standard is a discretionary option that an owner may wish to consider. ***GIB EzyBrace® Systems 2011 software makes it easy to design higher bracing resistance.*** This is achieved by increasing the ‘annual probability of exceedence’ that relates to the likelihood of an event occurring.

For further information refer to “Designing Bracing Upgrades” on www.gib.co.nz/canterburyearthquake

Using an earthquake-proven bracing system

GIB® bracing systems performed very well during the Canterbury earthquakes which were sometimes up to two times the ‘ultimate’ level the building code requires them to be designed for.

Although the severity of the earthquakes did cause some damage to wall linings, typically at sheet joints around window and door openings, this must be expected. The fact that no lives were lost in houses due to collapse, is testament to our building code requirements and the outstanding performance of GIB® bracing systems.

Significant sheet fracture

GIB® bracing systems preformed well

Damage to homes in the Christchurch region has often resulted from movement of the land, due to subsidence or liquefaction, but also depended on how well buildings were designed and constructed. Some poor workmanship and older buildings with linings not designed to resist earthquake forces, such as lath and plaster, have not fared so well.

Brace right with GIB EzyBrace® Systems 2011

- *Fully compliant GIB EzyBrace® Systems 2011 is the easy way to meet or exceed the requirements of the NZ Building Code.*
- *GIB® plasterboard, the key component in GIB® EzyBrace Systems 2011 has been made in New Zealand for New Zealand conditions for over 80 years.*
- *You can trust GIB EzyBrace® Systems 2011 to ensure your home is braced to meet or exceed the requirements of the New Zealand Building Code and NZS 3604:2011.*

Gypsum plasterboard linings are likely to be the stiffest element in a timber framed house. They will attract wind and earthquake forces first and, to minimise damage, must be designed to resist these.

Christchurch is home for us too.

For over half a century, Christchurch has been home to a GIB® products distribution centre, plasterboard plant and plaster mill, currently employing more than 50 Cantabrians, and supporting many thousands of contractors and suppliers. So like you, we've lived through the catastrophic events of the past 18 months.

We're now turning our attention to helping rebuild an even better Christchurch. GIB® plasterboard interior wall lining systems will play an important part in this process.

Our website – **www.gib.co.nz** – is packed full of information you'll find useful in rebuilding or repairing your earthquake damaged home. You can also call the GIB® Technical Support Helpline on **0800 100 442**.

Together, we can rebuild a safe, vibrant and modern city that we can all be proud to call home.

We've been making GIB® plasterboard in Christchurch for over 50 years.

GIB®