The better building material

For many, the appeal of timber lies in a romantic link to the past, a rich history spanning many centuries and cultures. Its popularity has outlasted the years, endured the fads and remained an aesthetically versatile material; testimony to the fact it makes durable homes.

Evidenced in the aftermath of the 7.1 magnitude earthquake which tore through the Canterbury region, timber construction appears to have the best structural integrity and safety.

In fact, the New Zealand Timber Industry Federation (NZTIF) says that had more homes been constructed with raised timber floors in recent years, Canterbury earthquake damage and costs of repairs would have been substantially less. Deputy director Kevin Hing says it would have cost less in terms of damage and less in terms of remediation due to its flexible nature and its light weight.

"Timber framing is able to absorb the shocks of earthquakes because it's a flexible type of construction, in particular with timber framed construction on piled foundations," he says. "What we found was they were able to cope with liquefaction and lateral spreading of the soil quite comfortably, so remediation is simpler than with other construction methods."

The typical residential concrete house slab is relatively heavy, weak and prone to failure when the ground moves beneath. Many newer concrete slab floors have failed leading to further damage with walls cracking and mud and water entering the building interiors.

Once cracked and slumped, repairing concrete floors is costly, difficult, and in some cases impossible, meaning buildings are written off. It is a relatively simple task to level up a raised timber floor house. Common place since colonial times raised timber floors have been replaced in recent years by concrete slab foundations.

The organisation's opinion has been supported by Canterbury University structural engineer professor Andy Buchanan, who presented a first draught of a report titled 'Performance of Residential Houses in the Darfield (Canterbury) Earthquake (M7.1) 4th September.'

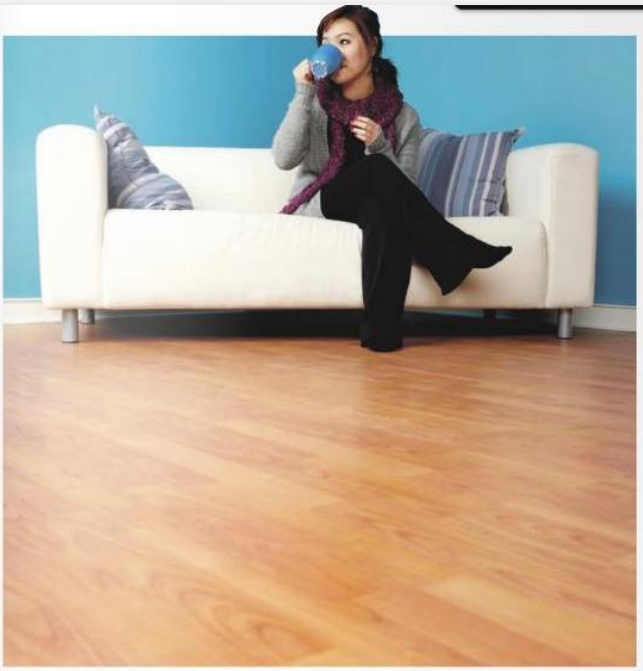
In the report he presented findings based predominantly on observations of the seismic behaviour of light timber construction in timber pile homes which have performed markedly superior to concrete slab homes, the predominant construction in the last 20 years.

The New Zealand Timber Federation says builders need to look past the easy option of a concrete slab foundation in new homes. In addition to being able to withstand high seismic loads raised timber floors provide greater flood protection, better access for services and has unrivaled environmental credentials using only a fraction of the energy and carbon emitted in producing a concrete floor.

It is evident that raised timber floors combined with timber frames and timber weatherboards have provided structural integrity and safety that is unmatched by other house building designs, Hing adds.

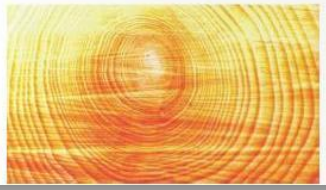
"Timber framing construction is a system that's been used in New Zealand for a long time, as well as in North America, Canada, the United States and Australia. It has a proven record and it's an efficient means of home construction."

In the aftermath of the September 4 and February 22 earthquakes it has been noticed that timber houses 100 years and older have come out unscathed while triple brick and other un-reinforced masonry buildings have collapsed.



New Zealand Timber Federation

Also withstanding the test of time is the New Zealand Timber Federation. Established under the amalgamation of the New Zealand Sawmillers Federation, the New Zealand Timber Merchants Association and the Timber Research & Development Association, the organisation has been in existence for almost 100 years Hing says. All three organisations



The benefits of building with wood

- It is the most renewable of all building materials. Growth and production of one tonne of wood absorbs a net 1.7 tonnes of CO^2 from the atmosphere. A typical wooden house frame has absorbed 9.5 tonnes of CO^2 from the atmosphere – the equivalent of 47,500 kms of driving in an average car
- Timber building components can be reused in other buildings or buried in a landfill at the end of their useful life. In a landfill up to 97 percent of the carbon in the wood is permanently stored, offsetting CO^2 released by fossil fuels
- Timber framing is fast and adaptable. Timber framing provides for flexibility of design and allows for modifications and tweaks to layout during the construction process. Timber frames and roofs have ease of construction and quick erection times, making them popular with builders
- Wood is 400 times better as a thermal insulator than steel and 14 times better than concrete. Solid wood has significant thermal mass properties, retaining heat from the day and releasing it at night
- Wood doesn't rust. All building materials used for the structure of houses in New Zealand are required to have a minimum service life of 50 years to comply with the Building Code. Wood, treated with the appropriate level of preservative and properly maintained, can last in service for a hundred years or more
- Wood can take the heat. Average building fires reach temperature of 700 to 1000 degrees celcius. Steel weakens as its temperature climbs above 230 degrees, retaining only 10 percent of its strength at 750 degrees. Wood does not ignite until it reaches more than 250 degrees. Once it catches fire, it develops a protective insulating char layer. Large timber beams have better fire resistance than unprotected steel beams of similar size because the interior of the timber remains much cooler
- Raised timber pile floors provide better protection in natural disasters such as floods and earthquakes. Damage caused by the recent floods in Queensland provide further evidence of this
- Unlike steel framing, timber framing does not creak or groan with thermal expansion and contraction
- Timber provides natural electrical insulation while steel is a conductor of electricity.