

Earthquake Design

The building has been designed to withstand a 'one-in-600 year' earthquake to protect the irreplaceable value of the arthropod, fungal and micro-organism collections.

However the structural mass and sheer weight of the collection vaults on all floors presented a challenge for ensuring this degree of resilience. During a severe earthquake, the vaults could sway with considerable force and magnitude, potentially shaking the rest of the building to pieces.

To overcome this, the two wings of the main building block have been split and seismically isolated by a movement joint, a gap of approx 10cm, right across the building on all levels. (This seismic joint can be seen adjacent to the main stairs.) The separation effectively creates two independent structures that are reasonably symmetrical with regular framing, each of which will move fairly uniformly. This type of configuration exhibits considerably more earthquake resistance than buildings of an irregular nature, which can result in very uneven stresses in inelastic construction materials.



The combination of strength and ductility (or toughness in the face of inelastic deformation) help dissipate energy during an earthquake. In other words, the building is designed to allow reasonably controlled, even movement that will dissipate the earthquake's force before it causes structural damage in the building fabric.

The earthquake provisions are in accordance with the New Zealand Loading Code NZS 4203, although a 'one-in-450 year' earthquake is more commonly used in normal building design.

