

Seismic Bracing for Building Contents

Fact Sheet

Prepared by Disaster Prepare Ltd



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Introduction

Earthquakes are recognised by WorkSafe NZ as a workplace hazard. The new Health and Safety at Work Act will place significant personal liability on company directors and board members who fail to eliminate or minimise workplace hazards.

This document provides an overview of restraint requirements for building contents to comply with HSWA and NZS-4014 requirements.

Seismic restraint for building contents is specified by New Zealand Standard NZS-4104, which has three objectives:

- Protect people from falling, shifting or toppling equipment and furnishings.
- Ensure egress routes remain unobstructed.
- Minimise damage to equipment and fittings to facilitate rapid resumption of core business operations.

Perspective

During a large earthquake you may be unable to stand or you may drop, cover and hold. In either scenario you will end up at ground level.

Hazards should therefore be considered from a ground level perspective, where everyday items such as bench top equipment and fire extinguishers are now above head level. Risks are significantly elevated in confined spaces with heavy equipment and or large amounts of files.

In addition to isolating or minimising the risks, training staff to identify hazards and immediate action drills are critical.



Damage to unrestrained servers and book shelves at Canterbury University Library

Life safety priorities

Recommendations are prioritised based on our survival philosophy.

- Survive the first few seconds – secure heavy items to prevent injury and knowing what to do
- Survive the next few minutes – training to control the chaos when the shaking stops
- Surviving the next few hours – civil defence kit, emergency communication apps and making appropriate evacuation decisions

- Surviving the next few days – family preparedness, securing your home and water storage

Seismic bracing limitations

Due to the unpredictable nature and ferocity of earthquakes it is important to consider when choosing an appropriate method of seismic restraint:

- Effective restraint relies on the structural integrity of the wall or surface to which they are attached.
- Despite being restrained, poor quality or overloaded loaded furnishings can collapse during violent shaking. For example, a five shelf book case can hold 150-180kgs of files.

Exclusions

The following aspects fall outside the scope of our seismic restraint services:

- The structural integrity of the building
- Building components such as suspended ceilings, partition walls, sprinkler systems and stairwells
- Other components which include mechanical and electrical equipment such as ventilation, heating or lifts
- Hazardous goods covered by HSNO regulations
- Secondary hazards such as electrical shock or burns from shifting, falling or toppling items following an earthquake

Assessment criteria

This assessment is based on the specifications in the NZS-4104 Standard, "Seismic restraint of building contents". Items requiring restraints are generally determined any of the following criteria:

- Item 1.2 meter or taller?
- Does the item have a height to width ratio of greater than 4?
- Is the item in a frequently occupied area?
- Is the item within 3 meters of an escape route?
- Is the item heavier than 40kg with 2 meters of a door frame irrespective of height?
- Bench top items heavier than 5kg?
- Do existing restraints (if any) meet the required standard?
- Proximity to glass?
- Shifting center of gravity caused by opening drawers or kids climbing onto them.

Seismic restraint criteria

The following are the design criteria for seismic restraints:

- Comply with NZS-4104 standards for items under 300kg
- Must not impede the functionality of the item being secured
- Visually as unobtrusive as possible
- Should not rely on manual engaging or disengaging by the user

- Provide a quick release capability for items that require servicing or cleaning
- Careful design to minimise number of anchor points to building
- Use non porous materials for easy cleaning
- Design life of the restraint must match the design life of the item being restrained
- Sustainability considerations

Professional Earthquake Safety Services

Disaster Prepare Ltd are multi award winning earthquake safety specialists, and trusted suppliers of earthquake safety services to GNS Science. Members of the New Zealand Society of Earthquake Engineering and the Natural Hazards Inc.

GNS Science, Government departments and medical facilities use our earthquake safety services as part of their health and safety programs, including Service Level Agreements for most of our larger clients. We have 3 – 5 year service level agreements to provide ongoing seismic restraint maintenance and training for most of our large clients including: The Treasury, Office of the Ombudsman, Health Quality & Safety Commission, Wellington Zoo and NZ Bus.

We have a strong track record of training delivery from small businesses to medical centers and government departments. Additionally we work with the United Nations to deliver disaster preparedness training small island holiday resorts across the Pacific.

Earthquake Safety Audit

Our multi hazard approach checks your existing earthquake safety preparations and recommend risk mitigation options with cost estimates. This includes:

- Seismic restraint solutions to meet NZS-4104 “seismic restraint of building contents” requirements
- Highlight potential hazards surrounding the building such as Tsunami zones, liquidation, slope failures, flooding, earthquake prone buildings and other manmade hazards
- Cost \$499 plus \$149 per additional floor. – Disregard for one off home visit

Seismic Restraint installation

We supply and install NZS-4104 compliant seismic restraints to make your workplace safer and provide supporting documentation to help you demonstrate due diligence for HSWA purposes. Our seismic restraint services include:

- Seismic restraint options include our award winning QuakeFlex® seismic restraints
- Custom design, manufacture and installation of seismic restraints
- Independent quality control and tagging
- Hazard management plans
- Project completion and exception reporting to demonstrate due diligence for HSWA compliance purposes

Annual seismic warrant of fitness

On average, 8 percent of office equipment is replaced or moved annually. We provide ongoing support to ensure your earthquake risk mitigation remains optimal. An annual earthquake warrant of fitness certificate is issued for HSWA compliance purposes.

This service includes an inspection of all fitted seismic restraints to ensure:

- They have not been tampered with
- Identify new equipment requiring restraint
- Identify new hazards
- Annual review from \$249
- Update staff training as required.

Staff safety training

Earthquake and Tsunami safety training includes your specific hazards and what to do in the minutes, hours and days following a disaster, including:

- Evacuation responsibilities
- Site specific earthquake hazards
- Stay or evacuate decision making?
- What to do - what not to do?
- Alternative evacuation options from your building?
- Civil defence equipment overview.
- Where to go once you have evacuated?
- Family preparedness
- Free survival and family tracking apps
- Free family preparedness guides
- 30 Minute practical safety walk home route avoiding Tsunami zones, bridges, tunnels and slip prone areas

Training delivery is usually follows within a week of restraint installation or as per client requirements. Training takes 120 mins including Q&A and is scheduled to suit your operational requirements.

Training costs \$499 per session or \$899 for back to back sessions. 5 or more sessions @ \$449 each which should include at least 4 sessions back to back. Groups should not be larger than 30, depending on the venue.

Other training

We offer a wide range of training including:

- Fire Wardens
- Bomb threat
- Spill response
- Trapped in an elevator
- HSWA workshops

Emergency Planning

We offer a fully customisable emergency planning, testing and training service.

Ongoing Support – “ALWAYS READY” Service level agreement

We provide ongoing support to proactively manage earthquake related hazards to aid life safety and HSWA compliance.

Large workplaces are a dynamic environment with frequent staff changes and equipment updates. On average 6-8 percent of office fittings are replaced or moved each year. Accordingly regular maintenance of seismic restraints are required to prevent degradation of seismic safety programs over time.

Additionally, earthquakes are recognised by WorkSafe NZ as a workplace, which therefore requires officers and persons conducting a business to proactively manage earthquake related hazards.

Our earthquake risk reduction strategy integrates several key elements. These include:

- Scheduled WOF inspections and supporting documentation to facilitate informed decision making and demonstrate due diligence for HSWA purposes.
- NZS-4104 Seismic restraint maintenance to reduce earthquake related hazards to improve life safety and reduce property damage to enable a faster recovery of business operations.
- Annual staff safety training to respond appropriately during and after an earthquake
- Provide fixed cost option for ease of budgeting

Conclusion

Please contact me or visit our website for additional information and client testimonials.



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