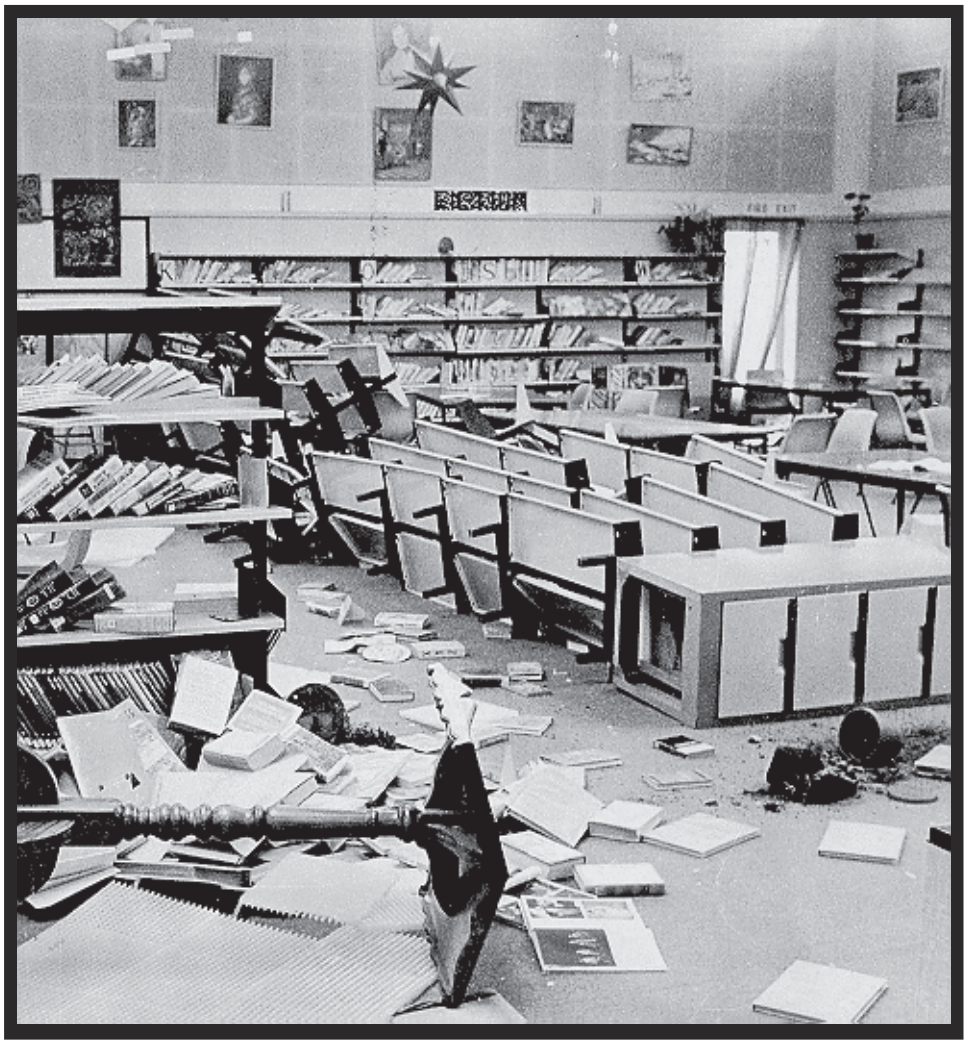
NZS 4104:1994



NEW ZEALAND STANDARD

SEISMIC RESTRAINT OF BUILDING CONTENTS

Pr GG

STANDARDS NEW ZEALAND

COMMITTEE REPRESENTATION

This Standard was prepared by Joint Technical Committee BD/79 under the direction of the Joint Building Standards Policy Board and the Structures and Contracts Joint Standards Advisory Committee of Standards New Zealand and Standards Australia.

The initial draft was prepared by Andrew W. Charleson of Victoria University of Wellington School of Architecture and was prepared for release as a draft for public comment by a Joint Technical Committee consisting of:

Mr D P Bent (Chair)	nominated by the New Zealand Ministry of Civil Defence
Mr P J Armitage	nominated by the New Zealand Department of Labour
Mr A Barker	nominated by Quakesafe Systems Ltd
Mr H J Brookie	nominated by New Zealand Chambers of Commerce
Mr A W Charleson	Co-opted
Mr W D C Clark	nominated by NZ National Society for Earthquake Engineering
Mr K Evans	nominated by the Retail and Wholesale Merchants Association of New Zealand
Mr D W O Jones	nominated by the Insurance Council of New Zealand
Mr M J Simpson	nominated by the Local Government Association of New Zealand.

ACKNOWLEDGMENT

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AMENDMENTS

No	*Date of issue*	*Description*	*Entered by, and date*

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Figure

RELATED DOCUMENTS

Reference is made in this document to the following:

NEW ZEALAND STANDARDS

NZS 4103:0000	Design for safety in the commercial and service workplace (in preparation)
NZS 4203:1992	General structural design and design loadings for buildings
NZS 4219:1983	Specification for seismic resistance of engineering systems in buildings
NZS 4607:1989	Installation of thermal storage electric water heaters: valve-vented systems
NZS 7421:0000/AS 2918:0000	Domestic solid fuel burning appliances — installation (in preparation)

OTHER DOCUMENTS

New Zealand Building Code, 1992.

CHARLESON A. W. Mitigation of Earthquake Damage to Household Chattels and Light Office Equipment. Proceedings of Pacific Conference on Earthquake Engineering, Auckland, November 1991, pp. 281-290.

COONEY R. Strengthening Houses Against Earthquake, Technical Paper P37, Building Research Association, Judgeford, 1982.

SMITH W. D. and BERRYMAN K. R. Revised Estimates of Earthquake Hazard in New Zealand. Bulletin of the New Zealand National Society for Earthquake Engineering, Vol. 16, No. 4, 1983, pp. 259-272.

QUAKESAFE SYSTEMS LTD. Product information, Wellington, 1992.

NEW ZEALAND LEGISLATION

Building Act 1992
Dangerous Goods Regulations 1958
Dangerous Goods Act 1974
Toxic Substances Act 1979
Toxic Substances Regulations 1983

The users of this Standard should ensure that their copies of the above-mentioned New Zealand Standards or of overseas Standards approved as suitable for use in New Zealand are the latest revisions or include the latest amendments. Such amendments are listed in the annual Standards New Zealand *Catalogue* which is supplemented by lists contained in the monthly magazine *Standards* issued free of charge to committee and subscribing members of Standards New Zealand.

FOREWORD

This is a new Standard which draws upon requirements of NZS 4203:1992 *The Loadings Standard*. It may be considered as an extension both of that Standard and NZS 4219:1983 *Specification for seismic resistance of engineering systems in buildings*. This Standard, together with the other two, have as their primary objectives the maintenance of function and safety to people during and after a damaging earthquake. With the proposed incorporation of complete seismic restraint requirements for suspended ceilings, access floors and full-height partitions into another new Standard, all aspects of personal safety and building element performance for seismic conditions will be included in New Zealand Standards.

This document is intended to set out and help promote what is considered to be good practice and help fulfil the goals and objectives of a number of pieces of current legislation and current societal trends including the Health and Safety in Employment Act and the Building Act. It is seen as being a pro-active document.

This Standard has two aims. First, to reduce the risk of injury to people and to ensure access to and from a building after an earthquake, and secondly, to reduce the risk of damage to building contents. The first aim can be achieved by the user of this Standard specifying that building contents be provided with Type 1 restraint. Reduction of damage is to be achieved by specifying Type 2 restraint.

This Standard is intended to be used by non-specialist people (i.e. the owners or occupiers of a building) who have the responsibility for improving the seismic safety of a building interior.

Some limitations on the application of this Standard are:

(a) The contents of domestic dwellings are excluded unless specifically requested by an owner or occupier.

(b) Type 1 and 2 restraint is mandatory for the contents of all Category I and III buildings (refer Appendix A).

(c) Type 1 restraint only is mandatory for the contents of upper storeys of Category II and IV buildings and all other buildings, except where there is less than a 30 % probability of MMVII or greater intensity shaking occurring within a 25 year period. (Refer table B1 and figure B1).

(d) Restraint is not the only means of limiting injury and damage. Items may be relocated or isolated to achieve the aims of this Standard.

Public acceptance of this Standard is reliant upon the public being made more aware of the potential danger of unrestrained contents during an earthquake, the need for egress to be maintained, and the likely serious effect damaged contents (especially equipment) will have on the viability of business and institutional functioning. There is low public awareness of the danger posed by building contents in New Zealand as compared to California as there has not been a damaging earthquake seriously affecting a New Zealand metropolitan centre for over 50 years.