

THE AUSTRALIAN EARTHQUAKE LOADING STANDARD

3 years on - how is it working and what have we learned ?



Proceedings of a seminar held by the
Australian Earthquake Engineering Society
Adelaide
1996

This work was published by the Australian Earthquake Engineering Society. The views expressed in the papers are those of the author(s) and not necessarily those of the Society.

© Australian Earthquake Engineering Society

ISBN 0 7325 1472 X

Editors: Michael Griffith, Barbara Butler

Publisher: Australian Earthquake Engineering Society

Cover: Photographs courtesy of Mines and Energy, South Australia
Designed by Barbara Butler

*Ground failure near Robe, S.A. after the 1897 Beachport
earthquake in South Australia*

*Earthquake damage, Beachport, S.A. Post Office after the 1897
earthquake*

FOREWORD

This volume of the proceedings of the Society's Technical Seminar, held in Adelaide in 1996, is the fourth in the series published by the Society since it was formed in 1990 following the Newcastle Earthquake.

The theme for the 1996 seminar was "The Australian Earthquake Loading Standard: 3 years on - how is it working and what have we learned?". The seminar was well supported with 23 papers being presented. The keynote address on "Performance Based Earthquake Engineering" by Dr. Andrew Whittaker, Associate Director of the Earthquake Engineering Research Center at the University of California, was especially informative and thought provoking.

Indeed, the papers presented in each of the four seminar sessions covering the topics of Earthquake Codes, Insurance, Seismology and Unreinforced Masonry are all well worth reading. I commend them to you and look forward to our next meeting - in Brisbane.

Michael C. Griffith
Seminar Organiser

AEES gratefully acknowledges major contributions made by the following sponsors -

TABLE OF CONTENTS

Foreword	iii
Keynote Address -	Paper No.
Performance-Based Earthquake Engineering	
DR. ANDREW WHITTAKER Associate Director, Earthquake Engineering Research Centre, University of California	1
☐ ☐ ☐	
The Dynamic Response of a Bridge During Simulated Intra-Plate Earthquakes E. JANKULOVSKI, C. SINADINOVSKI AND K.F. MCCUE	2
Earthquake Hazard in Queensland: A Reassessment STEVEN C. JAUME, RUSSELL J. CUTHBERTSON, AND WILLIAM BOYCE	3
A Proposed Seismic Design Procedure for High Voltage Electrical Equipment to AS 1170.4 - 1993 TAN PHAM	4
Structural Response Under Intraplate Conditions G.L. HUTCHINSON, J.L. WILSON, N. LAM	5
A Reinsurer's View of Earthquake Risk Assessment ERIC DURAND	6
Earthquake Response of Unreinforced Masonry YAN ZHUGE, DAVID THAMBIRATNAM AND JOHN CORDEROY	7
The Fundamentals of an Earthquake Standard ANDREW KING	8
Synthetic Ground Motions for the December 1989 Newcastle Earthquake VAUGHAN WESSON	9
A Review of the Design of Non Structural Components in Buildings for Earthquake Loads JOHN W. WOODSIDE	10
Simulation of Intra-Plate Earthquakes in Australia Using Green's Function Method: Sensitivity Study for Newcastle Event C. SINADINOVSKI, K.F. MCCUE, M. SOMERVILLE, T. MUIRHEAD AND K. MUIRHEAD	11
Design of Domestic Unreinforced Masonry Buildings to AS1170.4 GREGORY KLOPP AND MICHAEL GRIFFITH	12
Implications of the 1995 Kobe Japan Earthquake for Australia MICHAEL GRIFFITH AND LAM PHAM	13
Earthquake Warning, Alarm and Response Systems WAYNE PECK, GARY GIBSON AND GREG MCPHERSON	14
When is Earthquake Damage not Earthquake Damage ? HUGH K. MOUNTFORD, KOUKOUROU ENGINEERS	15

Overview of Multi-Storey Timber Frame Construction in Australia, Japan and North America	
JOHN W. KEITH, JOHN KEITH & ASSOCIATES	16
Australia's First Eccentrically-Braced Frame - Should There be More ?	
PETER MCBEAN	17
Earthquake Microzonation and the Development of the Australian Earthquake Loading Standard	
T.D. JONES, M.J. NEVILLE, G. SCOTT AND C. SINADINOVSKI	18
Attenuation of Earthquake Ground Motion in Australia	
GARY GIBSON	(Full paper not available) 19
JOHN SANDLAND	(Full paper not available) 20
The Seismic Behaviour of Reinforced Segmental Retaining Walls	
CLAUDIA TAPIA	21
Microtremor Survey and Seismic Microzonation of Launceston, Tasmania	
MARION MICHAEL-LEIBA AND VAGN JENSEN	22
A Note on the Shear Capacity of Membrane Type Damp-Proof Courses	
ADRIAN PAGE AND ROGER TAGGART	(Full paper not available) 23
Index of Authors	

AUTHOR INDEX

NAME	PAPER NO.
BOYCE, WILLIAM	3
CORDEROY, JOHN	7
CUTHBERTSON, RUSSELL J.	3
DURAND, ERIC	6
GIBSON, GARY	(Full paper not available) 14, 19
GRIFFITH, MICHAEL	12, 13
HUTCHINSON, G.L.	5
JANKULOVSKI, E.	2
JAUME, STEVEN C.	3
JENSEN, VAGN	22
JONES, T.D.	18
KEITH, JOHN W.	16
KING, ANDREW	8
KLOPP, GREGORY	12
LAM, N.	5
MCBEAN, PETER	17
MCCUE, K.F.	2, 11
MCPHERSON, GREG	14
MICHAEL-LEIBA , MARION	22
MOUNTFORD, HUGH K.	(Full paper not available) 15
MUIRHEAD, K.	11
MUIRHEAD, T.	11
NEVILLE, M.J.	18
PAGE, ADRIAN	(Full paper not available) 23
PECK, WAYNE	14
PHAM, LAM	13
PHAM, TAN	4
SANDLAND, JOHN	(Full paper not available) 20
SCOTT, G.	18
SINADINOVSKI, C.	2, 11, 18
SOMERVILLE, M.	11
TAGGART, ROGER	(Full paper not available) 23
TAPIA, CLAUDIA	21
THAMBIRATNAM , DAVID	7
WESSON, VAUGHAN	9
WHITTAKER, ANDREW	1
WILSON, J.L.	5
WOODSIDE, JOHN W.	10
ZHUGE, YAN	7