NZ Society for Earthquake Engineering Incorporated

The NZ Society for Earthquake Engineering was formed in April 1968, and through study projects, seminars, conferences and publications of The Bulletin, has made a significant impact on attitudes and practices for earthquake engineering.

It provides a forum for technical debate, promotes reconnaissance of local and overseas earthquakes, is involved in the evolution of relevant legislation and regulations, and contributes to planning for, response to, and recovery from, earthquakes.

The membership of the Society includes professional engineers, scientists and others having an interest in earthquake phenomena or in the effects of earthquakes.

A brief history of the Society can be obtained from their website: www.nzsee.org.nz.

Who Should Attend

The course should be of interest to structural engineers and designers, specialists in seismic assessment, design and retrofit of structures and earthquake risk in general, and to graduate students and researchers interested in the practical implementation of performance based design methodology.

Investment Details

NZSEE Members	$280 (GST exclusive) per person
Non NZSEE Members	$365 (GST exclusive) per person - includes complimentary NZSEE membership for the balance of the NZSEE financial year.

Seminar fees include:

- Tea and coffee on arrival
- Morning tea
- Lunch
- Afternoon tea
- Comprehensive seminar notes

Optional Seminar Special

- *Displacement-Based Seismic Design of Structures* by Priestley, Calvi and Kowalsky (721pp) at a greatly reduced price ($210 GST exclusive).

NIGEL PRIESTLEY - PhD, BE

Nigel Priestley – PhD, BE, Hon FRSNZ, DSc (Hon Causa),ETH Zurich DSc (Hon Causa) Cujo U, Argentina, FACI, FNZSEE.

Nigel is Professor Emeritus of Structural Engineering at the University of California, San Diego, co-Director Emeritus of the European Graduate School for Earthquake Engineering in Italy, and Principal of the consulting firm Priestley Structural Engineering. He has co-authored two previous best-selling texts on Seismic Design (Seismic Design of Reinforced Concrete and Masonry Structures (with Paulay), Seismic Design and Retrofit of bridges (with Seible and Calvi)). He has also published more than 700 papers and reports, principally related to seismic design, and received more than 30 international awards. Over the past 15 years he and co-researchers have been developing displacement-based seismic design, culminating in the new text:

Displacement-Based Seismic Design of Structures
by MJN Priestley, GM Calvi, MJ Kowalsky

Displacement-Based Seismic Design of Structures (721pp) is a book primarily directed towards practicing structural designers who are interested in applying performance-based concepts to seismic design. Although the book describes, in detail, a fundamentally new and coherent approach to seismic structural design, much of the information provided can be directly applied within conventional force-based design approaches.

A CD with computer programs for moment-curvature analysis, non-linear time-history analysis and fibre-based structural analysis (static, pushover and dynamic) is included with the book.

Seminar special price of $210 (GST Exclusive) per copy

NZ SOCIETY FOR EARTHQUAKE ENGINEERING SEMINAR

Displacement-Based Seismic Design

Christchurch	28 April 2009
Wellington	30 April 2009
Auckland	5 May 2009

This seminar aims to introduce participants to performance-based seismic design and show how it can be implemented in the design office as a simple and rational alternative to current seismic design. It will show that serious conceptual problems with current force-based seismic design are resolved when the design is based on displacement considerations.

Presented by
The New Zealand Society for Earthquake Engineering (NZSEE)

Why you & your employees should attend this seminar

Performance-based and displacement based design approaches have been under development in the last decade with the clear aim to provide designers with more rational and robust tools for the seismic design and protection of structures.

A significant shift in the design philosophy has been observed in the recent past due to the recognition of the primary role of displacements and deformation as more reliable and direct measure of structural (and partly non-structural) damage.

The main drawbacks and possibly un-conservative inconsistencies of traditional force-based design approaches have been recognized.

However, in spite of the general consensus reached within the scientific/design community on the crucial need to revise and update present design codes, a complete development of these concepts within a comprehensive and practical-to-use design framework has not until recently been available.

Following the keynote lecture on Displacement Based Design at the European Conference in Earthquake Engineering in 1998, Paris, Professor Nigel Priestley's research team has committed an unprecedented effort in developing a complete displacement-based design approach, accessible for daily use in any practicing engineers office. This challenge has recently culminated in the preparation of a best seller book on Displacement-Based Design, co-authored with Prof. Michele Calvi and Prof. Mervyn Kowalsky and published by the IUSS Press, Pavia, Italy.

This seminar will provide an opportunity to learn from a practical design perspective the basic concepts of performance-based and displacement-based design. Design examples, which could be carried out by hand or easily implemented in an Excel spreadsheet, will be provided for different structural systems. Participants will receive comprehensive design notes and a discounted copy of the book on DBD which include a CD with 3 structural analysis packages.

Other Benefits

- This is the most cost effective way of acquiring this knowledge
- The seminar take home notes will become reference material for the office
- The recently released book on *Displacement Based Design of Structures* by Priestley, Calvi and Kowalsky, a 721 page definitive text on performance-based seismic design at a greatly reduced price
- Knowledgeable, experienced speaker
- The opportunity to network with industry peers

Seminar Content

8.30 – 9.00 am **Registration**

9.00 – 10.30 am **Session 1: Introduction**

- Overview of Book
- Problems with force-based design
- Elastic stiffness of concrete members
- Introduction to Direct Displacement-Based Design (DDBD)

10.30 – 11.00 am **Coffee/Tea Break**

11.00 – 12.30 pm **Session 2: Fundamentals and Application to Frames**

- Single-degree-of-freedom (SDOF) structures
- Representing Multi DOF structures as SDOF for design
- Design displacement
- Equivalent Viscous Damping
- Regular frames
- Irregular frames
- Combination of gravity and seismic moments
- Including P-Δ Effects in DDBD
- Capacity Design (column forces)

12.30 – 1.30 pm **Lunch**

1.30 – 3.00 pm **Session 3: DDBD of Wall and Dual Wall-frame Structures**

- Serviceability and Damage control limit states
- Foundation flexibility
- Cantilever wall structures
- Torsional aspects
- Coupled wall structures
- Capacity design (wall shears)
- Dual wall-frame structures

3.00 – 3.30 pm **Coffee/Tea break**

3.30 – 5.00 pm **Session 4: Other Structures and technical issues**

- Bridges
- Wharves
- Seismic Isolation
- Design Verification
- Does DDBD make a difference?
- Open Discussion

Registration Form

Displacement-Based Seismic Design

Name(s): _____

Company: _____

Postal Address: _____

Postcode: _____

Phone: _____

Fax: _____

Email: _____

Please indicate which seminar and venue:

☐ Christchurch, 28 April 2009
☐ Wellington, 30 April 2009
☐ Auckland, 5 May 2009

Payment Details: Please indicate the number of;
NZSEE member registrants [ ] at $315.00 GST incl. = $_____
Non-NZSEE member registrants [ ] at $410.63 GST incl. = $_____

Optional Seminar Special:
[ ] copies 'Displacement-Based Seismic Design of Structures' at $236.25 GST inclusive = $_____

Total = $ _____

I have enclosed our cheque of $ _____

Or prefer to pay by credit card:

☐ Visa ☐ MasterCard ☐ Amex

Card No: ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐

Expiry Date: _____

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Please complete this form, take a copy for your records and forward it to: NZSEE Seminar, PO Box 12, Beachlands, Auckland 2147.
Fax: (09) 536 5442. If paying by cheque or bank draft please make payable to Blue Pacific Event Management Ltd. For all enquiries phone (09) 536 5410 or email info@bluepacificevents.com