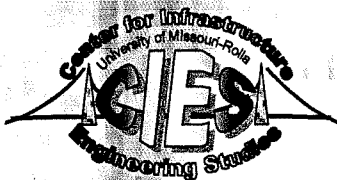


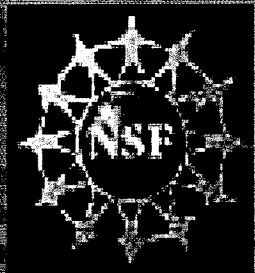
1st US-Portugal International Workshop
Grand challenges in earthquake engineering
250 years after the 1755 Lisbon Earthquake



Universidade do Minho



Edited by
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Pedro Silva (UMR)



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FCT Fundação para a Ciência e a Tecnologia

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

1st US-Portugal International Workshop

Grand challenges in earthquake engineering

250 years after the 1755 Lisbon Earthquake

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Preface

A new era in earthquake engineering research is upon us. Today the George E. Brown, Jr. Network for Earthquake Engineering Research (NEES) is attempting to revolutionize earthquake engineering research to a more predominant multi-disciplinary, multi-institutional and multi-national collaboration. Under NEES, 16-research equipment sites are currently either completed or in the final stages of equipment installation and are geographically distributed around the U.S. An important feature of these NEES research facilities is the tele-observation and tele-operation capabilities, which allows researchers at different locations to observe and operate the same physical test at one site. This feature of teleconferencing can benefit the exchange of information between institutions, while simultaneously expanding the experimental capability of many research institutions. Furthermore, as these NEES research facilities will be open to a larger number of U.S. and international researchers, it can be expected a significant impact on the education and the training of the next-generation engineers either in the U.S or around the world. This without a doubt will propel the field of earthquake engineering research to new horizons.

The goal for establishing NEES was to provide a national and international resource that will shift the emphasis of earthquake engineering research from current reliance on physical testing to integrated experimentation, computation, theory, databases, and model-based simulation. Another main goal of the NEES consortium is to expand these research opportunities to other researchers around the world. In line with this goal, the main objective of the proposed international workshop is to develop research ties between researchers from the U.S. and Portugal. Furthermore, researchers from England, New Zealand and Italy will participate in the workshop, which will expand this workshop to a truly multi-international participation. This international workshop will focus on the following objectives:

- Present to the international engineering research community the goals of NEES along with its 16 research sites;
- Establish partnerships in the field of earthquake engineering research within the collaborative goals of NEES;
- Outline expected seismic research goals in the U.S. within the NEES potential;
- Explore the potential to formulate Grand Challenge projects with international researchers.

Within this last objective of developing Grand Challenge teams, it is of extreme value to include researchers that have an extensive research background that extends beyond the field of earthquake engineering. As such, international researchers were invited to participate in this workshop that have an extensive background in the following areas of research:

- Seismic vulnerability and assessment of existing and new structures;
- Testing of large scale structures;
- Retrofit of structures with composites;
- Construction of new structures with advanced composites;
- Soil structure interaction;
- Development of new design methodologies;
- Non destructive evaluation techniques;
- Structural optimization.

In conclusion, this workshop fits well within the NEES goals, as the NEES consortium believes that these research facilities can be significantly enhanced and its usage further explored if international researchers participate in the work conducted at these institutions.

Lamego, 11th July 2005

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INDEX

Paper Title (Authors)	Page
Research in Earthquake Engineering in Portugal and potentials for Grand Challenges involvement within the international community (C. Sousa Oliveira, M. Lopes)	1.1-1.7
Experimental facilities in the George E. Brown Jr. Network for Earthquake Engineering Simulation (Ian Buckle)	2.1-2.13
Earthquake response studies of a large-scale, two-span bridge model on shake tables (M. Saiid Saiidi, David Sanders, Nathan Johnson, Marc Eberhard & Tyler Ranf)	3.1-3.9
Structural optimization problem in support to building retrofitting decision (Humberto Varum, Aníbal Costa, Artur Pinto)	4.1-4.9
Performance based design of multiple span bridges (Pedro F. Silva & Abdeldjelil Belarbi)	5.1-5.8
Seismic vulnerability of historical churches (P.B. Lourenço & D.V. Oliveira)	6.1-6.8
Improving Bridge Seismic Performance “Caltrans Seismic Research Program” (Saad El-Azazy)	7.1-7.8
Proposed research investigating retrofit solutions for New Zealand’s earthquake risk multistorey buildings (Jason Ingham)	8.1-8.6
NEES Visualization Portal at the University of Auckland (Barry J. Davidson, Jason Ingham & Daniel H. Whang)	9.1-9.3
FHWA Recommendations for Seismic Performance Testing of Bridge Piers (Jia-Dzwan Jerry Shen, W. Phillip Yen & John O’Fallon)	10.1-10.9
Differential multiple support excitation: geotechnical and structural considerations (Andrew Heath & Antony Darby)	11.1-11.9
The Research on Earthquake Engineering at the Instituto Superior Técnico (Luís Gerreiro & João Azevedo)	12.1-12.5
An efficient confinement strategy with CFRP sheets to increase the energy absorption capacity of concrete columns (Joaquim Barros & D.R.S.M. Ferreira)	13.1-13.8
Preliminary seismic analysis and strengthening proposals of two churches in Azores (Aníbal Costa, António Arêde, Domingos Moreira & Nuno Neves)	14.1-14.17
GFRC and GFRP for new structures and seismic rehabilitation (J. G. Ferreira, F. A. Branco & J. P. Correia)	15.1-15.12
Experimental tests on seismic retrofit of RC columns (P. Delgado, P. Rocha V. Rodrigues, A. Arêde N. V. Pouca, A. Costa & R. Delgado, & M. Santos))	16.1-16.10
Research at the University of Bath into the use of FRP in concrete structures (Tim Ibell)	17.1-17.10
Experimental assessment of the structural behavior of a masonry wall under horizontal cyclic loads (A. Costa, B. Silva, A. Costa, J. Guedes & A. Arêde)	18.1-18.9
Improving the seismic resistance of cultural heritage buildings (P.B. Lourenço, D.V. Oliveira, G. Vasconcelos & L.F. Ramos)	19.1-19.13
Multi-hazard test facilities at the University of California, San Diego (UCSD) (F. Seible, L. Van Den Einde, J.I. Restrepo, J.P. Conte & J.E. Luco)	20.1-20.11

Multi-Axial Subassemblage Testing (MAST) system (Catherine E. French, Carol K. Shield, Jerome F. Hajjar, Arturo E. Schultz, Paul M. Bergson, Drew J. Daugherty, Chen P. Wan, Douglas W. Ernie, David H.-C. Du, & Scott Nesvold)	21.1-21.9
NEES Cyber-infrastructure Center Software and Services (Van Den Einde, L., Whitmore, S., Kamrath, A., Hubbard, P., Deng., W. & Warnock, T)	22.1-22.12
Nonrectangular Concrete Walls under Multi-directional Loads – Analytical simulation and remote participation in experimental research (Sri Sritharan, Jian Zhao, Jonathan Waugh & Manimaran Govindarasu)	23.1-23.10
Open Air Laboratories – a New Challenge in Earthquake Engineering. Potential Research Opportunities at the Rialto Viaduct - Italy (Antonio Nanni, Genda Chen, Pedro F. Silva & Louis Ge)	24.1-24.6
Facing the grand challenge in earthquake engineering research with in-situ testing of real-world bridge structures (Genda Chen, Xiaofei Ying, Pedro Silva, Roger LaBoube & Phillip W. Yen)	25.1-25.12
Experimental and numerical simulations of wave -structure interaction systems using Oregon State’s Wave Basin Facilities (Solomon C. Yim)	26.1-26.8
Feasibility of bridge design for near-fault ground motion (M. Saiidi, H. Choi, J. Anderson, & V. Phan, H. Ghasemi, I. Friedland)	27.1-27.7