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DEPT. OF CIVIL ENGINEERING - DIVISION OF STRUCTURAL ENGINEERING  
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To the attention of the Executive Committee of the EAEE

**Subject: “Workplan of the EAEE TG11 Seismic Design, Assessment, and Retrofit of Bridges (for the period 2010 – 2014)”**

The Task Group was launched in January 2007, following the approval by the EAEE Executive Committee of a proposal submitted in October 2006 by the Coordinator of the TG (Kappos). The term of the TG was provisionally renewed for another 4 years in 2010, following the approval of its activities report by the EAEE Executive Committee; this decision will be confirmed at the EC meeting in May 2011.

The **membership** of the TG is mainly drawn from the European academic and professional groups active in the field, but some distinguished researchers from other countries (not members of the EAEE) are also included either as full members (if they can attend meetings in Europe) or as corresponding members. The membership of the TG has a strong international flavour as (practically) all European countries active in research on seismic assessment, design, and retrofit of bridges are represented, along with some leading academics from the US (with strong links with Europe). The membership of the TG for the 2011-2014 term is as follows:

1. Kappos, Andreas <[ajkap@civil.auth.gr](mailto:ajkap@civil.auth.gr)> (Aristotle University of Thessaloniki, Greece), TG *coordinator*
2. Arede, Antonio <[aarede@fe.up.pt](mailto:aarede@fe.up.pt)> (University of Porto, Portugal)
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5. Delgado, Pedro <[pdelgado@estg.ipv.pt](mailto:pdelgado@estg.ipv.pt)> (Polyt. of Viana do Castelo, Portugal)
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14. Saiidi, Mehdi (Saiid) <[saiidi@unr.edu](mailto:saiidi@unr.edu)> (University of Nevada Reno, USA)

15. Sextos, Anastasios <[asextos@civil.auth.gr](mailto:asextos@civil.auth.gr)> (Aristotle University of Thessaloniki, Greece)

### Corresponding members

1. Crewe, Adam <[A.J.Crewe@bristol.ac.uk](mailto:A.J.Crewe@bristol.ac.uk)> (University of Bristol, UK)
2. Dolce, Mauro <[dolcerom@libero.it](mailto:dolcerom@libero.it)> (University of Naples, Italy)
3. Flesch, Rainer <[rainer.flesch@arsenal.ac.at](mailto:rainer.flesch@arsenal.ac.at)> (Arsenal research, Austria)
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6. Papadimitriou, Costas <[costasp@mie.uth.gr](mailto:costasp@mie.uth.gr)> (University of Thessaly, Greece)
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**Topics** to be covered by the group include:

- Performance-based design of bridges (concrete and steel bridges).
- Calibration of code procedures for seismic design of bridges - Comparative assessment of European (Eurocode 8 - Part 2) and international (US, Japan, other) standards and design practice for bridges; calibration studies might be analytically and/or experimentally oriented.
- Improved analytical procedures for assessment of seismic performance of bridges, with emphasis on pushover methods accounting for higher mode effects.
- Fragility curves for bridges (methodologies and case studies).
- Application of passive systems (seismic isolation and energy dissipation devices) to existing bridges – development and application of new technologies.
- Seismic retrofit of bridge columns and foundations – Innovative retrofit methods.
- Analytical and experimental investigation of critical bridge components (with a view to improved design or effective retrofit).
- Instrumentation of bridges and structural health monitoring (with emphasis on seismic aspects); assessment of bridges based on instrumentation data.
- Displacement-based and performance-based assessment methods; deterministic and probabilistic approaches.
- Improved procedures for the optimal selection of earthquake loading (also including the effects of spatial variation of ground motion), and analysis of soil - structure interaction effects.

In addition to meetings, which are held at least once a year (typically combined with major conferences on earthquake engineering), the foreseen **activities** of the TG are (in a non-exclusive way):

- **Dissemination** of the research results produced by the TG members among them, as well as among the engineering community at large. A key point in this respect is the **website** <http://nisida.civil.auth.gr/tg11/> launched three years ago, which includes

valuable material on seismic design, assessment, and retrofit of bridges, with ability to upload and download material from it.

During the 2<sup>nd</sup> term of the TG, this activity will not only continue, but will also be enhanced by adding additional material and options for the visitors of the site.

- Organization (every 1-3 years) of **workshops and/or special sessions** in conferences on earthquake engineering, bearing essentially the same title as the TG, with oral presentations, round table discussions and other similar activities.

During its 2<sup>nd</sup> term, the TG has already started organising the special session [http://www.compdyn2011.org/index.php?option=com\\_content&view=category&layout=blog&id=41&Itemid=63](http://www.compdyn2011.org/index.php?option=com_content&view=category&layout=blog&id=41&Itemid=63) “*Analysis Methods for the Seismic Design and Assessment of Bridges*” during the COMPDYN 2011 Conference (Corfu, 25-28 May 2011) . Further special sessions are envisaged for the 15<sup>th</sup> World Conf. on Earthquake Engineering (Lisbon 2012) and other future conferences.

- Compilation of **books, state of the art reports, and special issues of the Bulletin of Earthquake Engineering** (the official EAAE journal) on topics falling within the scope of the TG. Production of **design-oriented documents** is also envisaged.

During its 2<sup>nd</sup> term, the TG will focus with top priority on finalising the book “*Inelastic methods for seismic design and assessment of bridges*” to be published by Springer, which is approximately 90% ready at this stage.

- Promotion of closer relationships and strong international outreach to both international groups working on seismic aspects of bridges and research programmes on bridges, such as that at the PEER Centre and the emerging US-Japan programme on bridge research.

During its 2<sup>nd</sup> term, the TG will focus on establishing close contacts (including memoranda of agreement or similar documents) with leading international groups in the field such as the *ACI 341 Committee* (Earthquake-Resistant Concrete Bridges) and the *IABSE Working Group 7* (Earthquake-Resistant Structures). The joint activities will include (in a non-exclusive way) the organisation of joint workshops and the establishment of international awards for research papers in the field of seismic design, assessment, and retrofit of bridges.

- Finally, a *new activity* that is envisaged is the coordination of focussed research of the teams represented in TG11 (but also open to other groups) on a specific case-study, applying different analytical methodologies to an experimentally tested bridge, and comparing in a systematic way the results. A candidate structure is that recently tested at the University of Nevada, Reno by the group of Prof. M. Saiidi (member of TG11).