8th. World Congress on Computational Mechanics (WCCM8)
5th. European Congress on Computational Methods in Applied Sciences and Engineering (ECCOMAS 2008)
June 30 – July 5, 2008
Venice, Italy

PERFORMANCE-BASED STRUCTURAL DESIGN OPTIMIZATION

NIKOS D. LAGAROS [*], CHRISTOPHER FOLEY [†] AND HONGBING FANG[‡]

[*] National Technical University of Athens,
Zografou Campus, Athens 15780, Greece
nlagaros@central.ntua.gr, http://users.ntua.gr/nlagaros/

[†] Marquette University,
1515 W. Wisconsin Ave., Milwaukee, WI 53233, U.S.A.
chris.foley@marquatte.edu, http://www.eng.mu.edu/foleyc/

[‡] University of North Carolina, Charlotte, U.S.A.,
9201 University City Blvd., Charlotte, NC 28223-0001, U.S.A.
hfang@uncc.edu, http://www.coe.uncc.edu/~hfang/

Key words: Performance Based Design, Structural Optimization, Seismic Design.

ABSTRACT

Performance-Based Design (PBD) has been introduced to increase the structural safety against natural hazards, and in the case of earthquakes, to make structures have a predictable and reliable performance. In other words, the structures should be able to resist earthquakes in a quantifiable manner and to present levels of desired possible damage. Therefore, the modern conceptual approach of seismic structural design is that the structure should meet performance-based objectives for a number of different of hazard levels ranging form earthquakes with a small intensity but also with a small return period to more destructive events with large return periods.

The performance-based design methodology allows a different approach to formulating the structural optimization problem. The performance criteria established are at a much higher level than design specification equations and therefore, the designer can convey the design to building owners in terms that can be more easily comprehended. This, after all, was the goal of performance-based engineering. A number of studies have been published in the past where the PBD concept has been implemented in a structural optimization environment.

In this minisymposium we intend to invite active researcher in this field to contribute with the latest research findings within this subject area to the 8th WCCM/ECCOMAS 2008 conference.

For any further request, please contact: nlagaros@central.ntua.gr