

**EURO-MEDITERRANEAN MAJOR
HAZARDS AGREEMENT (EUR-OPA)**

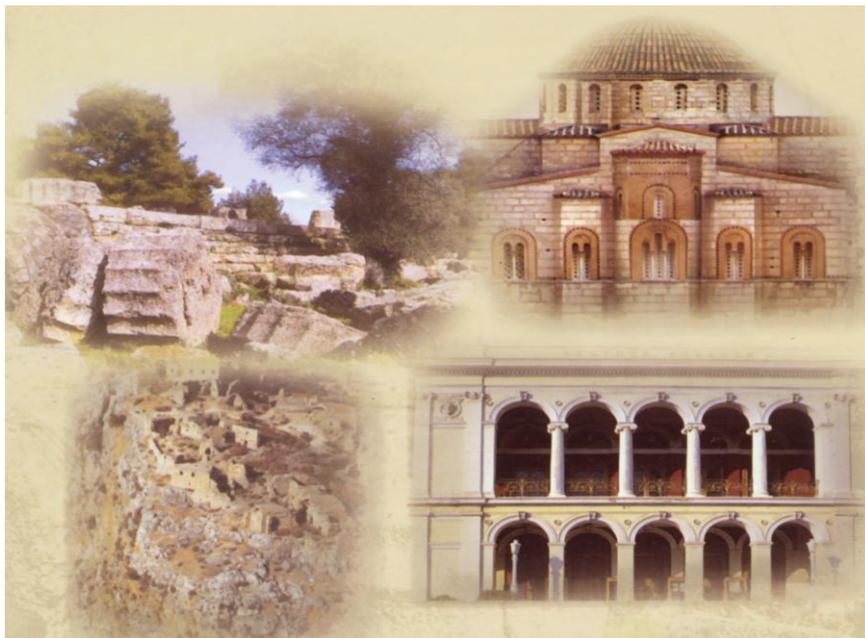


Athens, 26 June 2006

OPEN PARTIAL AGREEMENT ON THE PREVENTION OF, PROTECTION AGAINST, AND ORGANISATION OF RELIEF IN MAJOR NATURAL AND TECHNOLOGICAL DISASTERS

**EUROPEAN CENTRE ON PREVENTION AND FORECASTING OF EARTHQUAKES
(E.C.P.F.E.)**

Earthquake Protection and Monuments





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Earthquake Protection and Monuments

E.C.P.F.E. operates in a close co-operation with Earthquake Planning and Protection Organization (E.P.P.O.) sharing the same targets in Antiseismic Policy as well as is supported by E.P.P.O. Financially and administratively.

One of the priorities of this policy is the Earthquake Protection of Cultural Heritage, which is of great importance for a Country like Greece.

E.C.P.F.E. in cooperation with E.P.P.O. has organized Congresses and Seminars targeting in exchanging opinions information and experiences in this field such as:

- 1) International Seminar on "Historical and Monumental Structures in Seismic Regions", Santorini 14 – 16 October 1993.
- 2) International Seminar on "Restoration of Historic Buildings in Seismic Areas", Lesbos Island, 24 – 26 May 2001.
- 3) Two – Days Meeting on "seismic Interventions to Monuments and Historic Settlements", Athens 16-17 February 2006.

The later took place in the Framework of E.C.P.F.E.' s activities for the year 2005. The scope of this meeting was to exchange opinions, information and experiences on this very important matter, thus contributing to a better understanding of the main issues in selecting the level of seismic actions used in the design of structural interventions on such buildings and of the procedure to be followed during the various phases of relevant studies and interventions.

During this event, numerous scientists, experts all over Greece and abroad as well as representatives of the Ministries of Culture and Public Works participated and exchanged knowledge and

experience. This meeting was targeting to the awareness of scientific community in the field of the Earthquake protection of monuments and cultural heritage in all European Countries.

E.C.P.F.E. also Financed National Projects related to this topic.

Besides the above activities E.P.P.O. took the initiative to form a task group under the chairmanship of Pr. Tassios with representatives of E.P.P.O. and the Ministry of Culture.

The aim of this group was to prepare an introductory Regulatory Document which will serve as a guideline for the Interministerial Scientific Committee. This Committee will be designated by Specialized Scientists as well as from representatives of E.C.P.F.E., E.P.P.O. and the Ministry of Culture.

The purpose of this Committee is to create a Regulatory Document consisting of Specific Guidelines for interventions to monuments and historic buildings in Earthquake prone areas like Greece.

Existing codes or Standards valid for interventions to new (engineered) structures are not applicable to monuments and historic buildings.

Although this ambitious project will face several difficulties such as:

- The specific characteristics of historic buildings make necessary to tackle each monument as a unique case, requiring a specific approach for its restoration. These monuments, staying for hundred of years are constructed without any seismic design and are subjected to significant alterations and transformations, during their lifetime. These alterations are difficult to be tracked

down or to be categorized in a way that can lead to typical interventions.

- Another problem is that one should take into account codes or guidelines aiming to mitigate risks, as the seismic risk, can have a disastrous effect on historic buildings.

Besides, there are a lot of uncertainties concerning several factors as:

- The selection of the Seismic Action for the design of the interventions taking into account the seismological data (Historical and Instrumental), the values of the Monument in its Current State as well as the Economy, the use, the Protection of Human lives visiting or living in the Monuments.
- The estimation of the bearing Capacity of its Current State.
- The selection of a reliable method for Analysis, according to the existing structural system and materials.
- The choice of Scientifically accepted methods for dimensioning (prediction of the Structural Capacity and physico – chemical behaviour), before and after intervention.
- The level of the importance of the Monument and consequently the acceptable level of Damages under the seismic action taking into account for the design of interventions.

Summing the above difficulties, in issuing general and also specific guidelines or instructions it is necessary to consider the monument in a holistic way. It is important to do a complete and integrated survey and investigation comprising all the historical, architectural, structural, seismological and geotechnical issues, as well as of instrumental long term monitoring of the behaviour of monuments.