

Seismic Protection of Monuments

DURATION: 2012 – 2013

TARGET COUNTRIES: Greece, Italy, Armenia

PARTNERS INVOLVED:

Coordinating centre : ECPFE Athens, Greece

Other centres: CUEBC Ravello, Italy , ECRM Yerevan, Armenia

Other partners: European council of civil engineers

OBJECTIVES OF THE PROJECT

Global objective for 2012-2013 :

The main objective of the proposal will be the preparation of a "Regulatory document for the design of structural interventions in monuments in earthquake prone areas". The proposed action is aiming at: a) a better understanding of the main issues in selecting the level of seismic actions used in the design of structural interventions of monuments, and b) demonstrating the necessity and elaborating the contents of a Regulatory Document on aseismic design of structural interventions in monuments. The preparation of this document will be based on relevant documents already developed in Greece (by EPPO and ECPFE in collaboration with the Ministry of Culture) and in Italy (by the Ministry of Cultural Heritage and Activities). To this end an international working committee composed by experts from selected European Centres specialized in the above topic will be established with the aim to prepare the relevant document. The present action is proposed in the framework of the issues of special concern "Cultural Heritage and Risk" of the Committee of Permanent Correspondents for 2012-2013 biennium.

Specific yearly objectives :

2012:

A first Draft of the document in English language will be prepared

2013:

Finalization of the draft, including case studies (one case study per partner), to better illustrate its application. Dissemination of the goals achieved.

EXPECTED RESULTS

2012:

A workshop of the Committee members will be held in one of the three capitals of the members (Athens, Ravello, Yerevan) to initiate the preparation of the document.

2013:

A Seminar will be held at the end of 2013 including Case Studies concerning the applicability of the Document in one of the three capitals of the members (Athens, Ravello, Yerevan) to disseminate the goals achieved.

RESULTS OBTAINED PREVIOUSLY (if any)

The preparation of this document will be based on relevant documents already developed in Greece, in the framework of 2011 ECPFE' s Activities (by EPPO and ECPFE in collaboration with the Ministry of Culture) and in Italy (by the Ministry of Cultural Heritage and Activities). Results obtained by ECPFE and EPPO:

1. A two-day international meeting was organized in Athens by EPPO and ECPFE in 2006 and in 2009, concerning the Seismic protection of Monuments.
2. Two Seminars on the same topic were also organized by EPPO and ECPFE in Athens and in Thessaloniki in 2010 and in 2011 respectively.
3. A first document was elaborated on the proposed topic by EPPO - ECPFE in collaboration with the Hellenic Ministry of Culture and Tourism. This document constitutes a basis for further development by the Committee proposed to be established with the participation of experts from the CUEBC, ECRM and EUROPEAN COUNCIL OF CIVIL ENGINEERS.

RESULTS OBTAINED IN 2012

Work package 1 (prepared by ECPFE Athens, Greece, ECRM Yerevan, Armenia, CUEBC Ravello, Italy)

Description:

The formation of a scientific committee deployed by distinguished scientists nominated by the European

Centers (ECPFE, CUEBC, ECRM) and other Competent Authorities with main goal the syntax of a first draft of a Regulatory document for the design of structural interventions in monuments in Earthquake prone areas.

The document will include the following :

Definition of the main issues affecting the selection of seismic actions: contradicting Principles (monumental and social values as well as performance requirements), need for classification of monuments in various categories and definition of the importance level of each category, definition of visibility levels and acceptable damage levels. Elaboration of specific proposals for the selection of the value of seismic actions, which will be based on an optimization process taking into account also its eventual consequences on monumental values, as well as on human lives, costs and technical performances. Brief elaboration of the contents of the Regulatory Document on aseismic design of structural interventions on monuments.

The members of the Scientific Committee will communicate via internet facilities

At the end of 2012 , a Workshop will be held in Athens, Ravello or Yerevan so as to present the relevant work

Associated deliverables:

A draft of the document in English

ECPFE

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CUEBC

The research was based on the recovery of data which emphasize the level of studies on local seismic cultures, and in particular the new methodological approach for this type of study. We did a thematic bibliographical review, through which most significant elements for the advancement of studies on the subject were collected. Theoretical knowledge were crossed with case studies conducted over the years with this new methodology.

In order to assess the need to implement protocols for identifying elements of the Local Seismic Culture and to disseminate knowledge in areas with minor seismic intensity, but with similar elements relating to old buildings, the study of the urban structure of Atrani (Amalfi Coast) was done. Data relating to the historical centre was collected. We started from the bottom of the valley to move first on the east side and then to the West side, trying to make, where possible, horizontally following the curves of altitude. From each copy was recovered photographic documentation and the cartographical positioning was performed.

The findings highlight the need to apply in priority to seismic zones the protocols already prepared following the "Ravello" approach and accompanying this activity with training for technicians.

ECRM

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ACTIVITIES PLANNED IN 2013 (split by partner)

Working package 1 (prepared by ECPFE, CUEBC, ECRM):

Description:

Elaboration of Case studies so as to check the applicability of the Document. Finalization of the Document

The members of the Scientific Committee will communicate via internet facilities.

At the end of 2013, a Seminar will be held in Athens, Ravello or Yerevan so as to present the relevant work.

Associated deliverables:

The final Document