ICOSADOS 2016

7th INTERNATIONAL CONFERENCE ON SAFETY AND DURABILITY OF STRUCTURES

10th - 12th May 2016

Universidade de Trás-os-Montes e Alto Douro
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Book of Abstracts

Editors:

Jorge Tiago Pinto
Andrzej Pawłowski
Anabela Paiva
Ulvis Skadin

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PREFACE

This book contains the abstracts of the papers presented in the 7th lnternational Conference on Safety and Durability of Structures (ICOSADOS 2016), held in the University of Trás-os-Montes e Alto Douro (UTAD), city of Vila Real, Portugal, from 10th to 12th of May 2016.

A contribution in the internationalisation goal of ICOSADOS was achieved with this event taking into account that authors or members of the Scientific Committee of eight countries collaborated. These countries are Poland, Latvia, Portugal, UK, Italy, Mexico, France and Brazil.

There was also a significant participation of the industry which sponsored the conference and gave an important contribution for its success. The Civil Engineering students of UTAD also gave a relevant help in the organization of this conference.

In this conference there were four lectures presented by keynote speakers who are international references in the topics of safety and durability of structures. These keynote speakers are Professors Pawel Sniady (Wrocław University of Environmental and Life Sciences, Poland), Ulvis Skadins (Latvia University of Agriculture, Latvia), Jitendra Agarwal (University of Bristol, United Kingdom) and António Arêde (Engineering Faculty of University of Porto, Portugal).

The conference scope includes a wide range of safety and durability of structures topics such as:
S1 - Degradation: diagnostics and evaluation methods
S2 - Structural, physical and material characterisation
S3 - Numerical modelling
S4 - Natural and man-made risks
S5 - Requirements and code provisions
S6 - Assessment, conservation, repair and strengthening
S7 - Case studies

The Editors are grateful to all authors, members of the scientific committee and other colleagues that make possible the publication of this book.

The Editors
Vila Real
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STABILITY OF PARTIALLY ENCASED COLUMNS UNDER FIRE

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ABSTRACT

The stability of partially encased columns under fire is evaluated, based on two different methods. The simple calculation method is presented and depends on new simple formulae, safer than the current method proposed in EN1994-1-2. This document establishes a designing method that considers the contours of temperature within the cross section after 30, 60, 90 and 120 minutes under fire exposure. The cross section is divided into four components in which the mechanical property of the material changes with the average temperature and part of the material is also neglected.

The advanced calculation method is used to fit the best curve to define the axial buckling reduction factor, which also takes part of the simple calculation method.

This work is going to verify which best curve fits the stability design of partially encased columns under fire.

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