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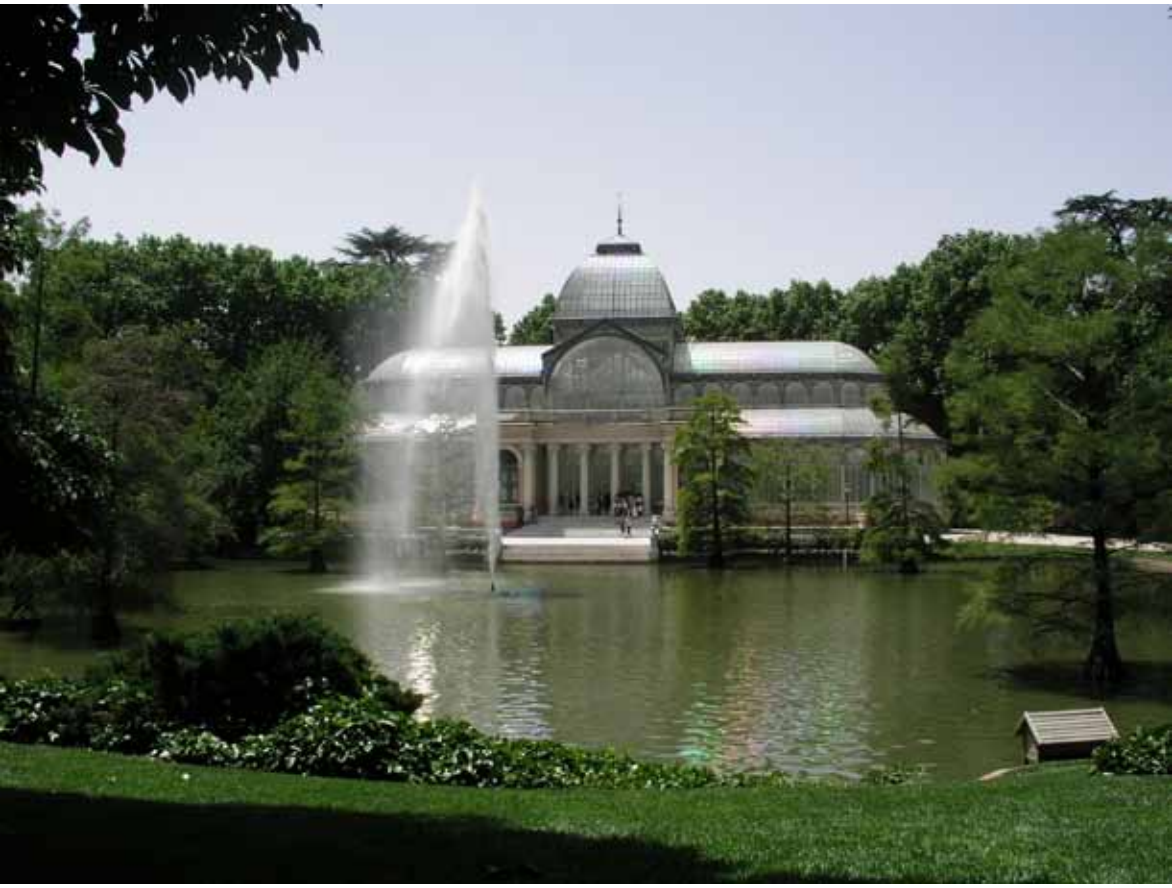
Second International Conference on Concrete Sustainability

13-15 June 2016



Book of Abstracts

Universidad Politécnica de Madrid / Technical University Madrid

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Second International Conference on Concrete Sustainability - ICCS16

13 – 15 June 2016
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ICCS16

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ICCS16 – Concrete Sustainability

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PREFACE

This volume collects the abstracts of all contributions to the Second International Conference on Concrete Sustainability (ICCS 16), held at *Escuela de Ingenieros de Caminos, Canales y Puertos of Universidad Politécnica de Madrid (Civil Engineering School of the Technical University of Madrid).* Madrid, Spain, 13-15 June 2016.

The conference program includes four plenary lectures and 168 contributions articulated in 34 sessions.

Abstracts are presented in the following order:

Plenary lectures (4):

Environmental impact, performance and service lifetime - pillars of sustainable concrete construction
Harald S. Müller
President of fib
Institute of Concrete Structures and Building Materials, Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

Expanding knowledge and resources for modern concrete professionals: innovation, sustainability, and resilience
Mike Schneider
President (2016-2017), American Concrete Institute
Senior Vice President, Baker Concrete Construction, Monroe, OH, USA

Recycling of construction and demolition waste an overview of RILEM achievements and state of the art in the EU
Johan Vyncke
President of RILEM
Director Research & Innovation Belgian Building Research Institute – BBRI, Brussels, Belgium

Sustainability evaluation of the concrete structures
Antonio Aguado[1], Jaime C. Gálvez[2] , David, Fernández-Ordóñez[3], Albert de la Fuente[1]
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Parallel sessions:

- Case Studies (2)
- Construction aspects (4)
- Durability (11)
- Environmental design (6)
- Materials (11)

Full papers are enclosed in the E-book available at the Conference website: www.iccs16.org

ICCS16 is the second international conference on this topic, which is organised by the Technical University of Madrid and co-organised by the Spanish Association for Structural Concrete (ACHE), the American Concrete Institute (ACI), the Latin American Association for Pathology of Constructions (ALCONPAT), the International Federation for Structural Concrete (fib), the Japan Concrete Institute (JCI), and the International Union of Laboratories and Experts in Construction Materials (RILEM).

Madrid, 20 May 2016

The Editors,

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Sustainability Assessment of Concrete with Recycled Concrete Aggregates ICCS16

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ABSTRACT

Concrete is the most widely used construction material. It causes a substantial environmental impact, derived from CO_2 emission, mainly during Portland cement manufacture because of the calcination of the limestone and the fuel consumption. There are several strategies for reducing the amount of Portland cement, e.g. using alternative clinkers, like alkali-activated cements or belite cements, or partial replacement of Portland by secondary cementitious materials, like fly ash, natural pozzolans and/or limestone.

Aggregates, as the largest component of concrete, can also have a significant effect on the environmental cost of the concrete mixture. The choice of aggregate influences a wide range of sustainability attributes and as with most aspects of sustainability there are frequently tradeoffs between one choice and another. Aggregate materials of some kind are usually available locally and making best use of this can be preferable for reducing transport related energy use and carbon emissions as well as keeping expenditures in the local economy.

In many countries recycled concrete aggregates (RCA) have been proven to be practical for low-strength concretes and to a limited extent for some structural grade concrete. When structures made of concrete are demolished or renovated, concrete recycling is an increasingly common method of utilizing the rubble. Using RCA for new concrete reduces the demand for virgin aggregate conserving natural resources, while minimizing the waste stream by diverting demolished material from landfill. However each case should be individually evaluated and transport and recycling process (sorting, crushing and sieving) must be taken into account.

This paper presents a review of the general strategies for reducing concrete environmental impact and a real comparative LCA evaluation of two types of aggregate for precast concrete elements, one natural and one recycled.

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