

**SECRETARIAT OF THE SESSION**

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**REGISTRATION FEES**

- **ATC Members**                                **250 €**
- **No members:**                                **325 €**

VAT included

Registration will be made by completing the attached registration form (in capital letters) and sending it by mail, fax or e-mail to the Secretariat or through the website [www.atc-piarc.com](http://www.atc-piarc.com)

- Cancellations must be notified in writing and sent to the Secretariat :
- Cancellations requested at least 15 calendar days prior to the beginning; Refund 100% of the registration fee.
  - Cancellations requested 7 calendar days prior to the beginning; Refund 50% of the registration fee.
  - Cancellations requested less than 7 calendar days prior to the beginning are Non-refundable.

ATTENDANT TO THE SEMINAR

Name:..... Surname:.....

E-mail address:.....

ATC Members     No members

INVOICING DETAILS

Fiscal number:..... Company / Organization:.....

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Payment of the registration fee will be made by one of the following systems (select the way of payment):

- By Bank transfer to BANCO CAMINOS:  
 IBAN: ES53 0234 0001 07 9010287200 C.C.C. 0234-0001-07-9010287200                                BIC: CCOCESMM  
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- By Credit Card via website [www.atc-piarc.com](http://www.atc-piarc.com)



# REINFORCEMENT OF CONCRETE BRIDGES WITH COMPOSITE MATERIALS

**Madrid, April 6<sup>th</sup> 2017**

**Professional Association of Civil Engineers (Calle Almagro nr. 42)**

Organized by:



asociación técnica  
 de carreteras  
 comité nacional español de la  
 asociación mundial de la carretera



We can say that Spain is a leading country in the construction of bridges. Both from the first factories, at the time of Cayo Julio Lacer in the time of the emperor Trajano, making famous the inscription that left us in the bridge of Alcántara "PONTEM PERPETUI MANSVRVM IN SECVLA MVNDI", as more recent.

At the end of the S. XVIII with the appearance of iron and at the end of the XIX with the appearance of concrete there was a spectacular development in the way of conceiving and building the bridges, with important teachers and achievements in this country.

We are currently in a period of transition, from heterodoxy in the art of building bridges, "between the heyday of pre-stressed concrete construction and mixed construction and that in which even new materials and forms derived from their use have not opened The road of the new," as Mr. Javier Manterola said.

Spain must join the path of the new, to remain pioneers in the construction and especially in the conservation of the bridges we have.

The acceptance of a new material requires the existence of references, guides and rules concerning the mechanical characteristics, checks and calculations, conditions of execution and operation of the new material.

The ATC-PIARC Bridges committee working group set up to deal with "reinforcement with composite concrete bridges" began work 5 years ago. As a result of the effort made have prepared the document that is presented today in the day. It is the result of a work of reflection and synthesis, based on the different international guidelines and recommendations, in the definition and characterization of so-called "composite" materials, as well as in the proposal of recommendations for design, implementation and quality control ; Specifically dedicated to the reinforcement of concrete bridges. In the day will also be exhibited recent achievements.

The opening speech will be in charge of the current president of the fib, D. Hugo Corres, and will deal with the treatment of existing bridges in the new model code.

The day, moreover, has a marked international character, motivated by the meeting in Madrid of the international committee of bridges of PIARC. Experiences will be presented in the use of this type of materials in countries such as Chile, USA, France, Japan, Romania and Switzerland.

*It is well known by all that today science has no boundaries, and our field, can not be an exception.*

Participants will receive a free copy of the book  
"REINFORCEMENT OF CONCRETE BRIDGES  
WITH COMPOSITE MATERIALS"

Session will be held in English and Spanish  
(Simultaneous translation available)

## TECHNICAL DIRECTION OF THE TECHNICAL CONFERENCE

**Mr. Álvaro Navareño Rojo**  
President of the ATC Bridge Committee  
National Road Directorate. Ministry of Public Works. Spain

**Mr. Imai Kiyohiro**  
President International Bridge Committee

### 08:30-09:00 RECEPTION OF THE ASSISTANTS AND DELIVERY OF DOCUMENTATION

**09:00-09:15 OPENING SESSION**  
Mr. Jesús Santamaría, Technical Director DGC  
Mr. Imai Kiyohiro, President of the International Bridge Committee. PIARC  
Mr. Álvaro Navareño, President of the ATC Bridge Committee  
Mr. Alberto Bardesi, ATC Director

**9:15-9:40 OPENING SPEECH: EXISTING BRIDGES IN FIB MODEL CODE 2020**  
Mr. Hugo Corres, President of fib (International Federation for Structural Concrete). Fhecor Ingenieros Consultores

### SESSION 1

**Moderador: Mr. Emilio Criado.**  
National Road Directorate. Ministry of Public Works. Spain

**9:40-10:00 PRESENTATION OF THE DOCUMENT: REINFORCEMENT OF CONCRETE BRIDGES WITH COMPOSITE MATERIALS**  
Mr. Alfonso Garcia, Task Group Coordinator. 1504 Consulting

**10:00-10:15 COMPOSITE MATERIALS. DESIGN SPECIFICATIONS**  
Mrs. Elena Diaz, INTEMAC

**10:15-10:30 FLEXION REINFORCEMENT**  
Mr. Carles Cots, VSL

**10:30-10:45 SHEAR REINFORCEMENT**  
Mr. José Luis Sanchez, TYPESA

**10:45-11:00 REINFORCEMENT BY CONFINEMENT**  
Mrs. Ana de Diego, Instituto Eduardo Torroja

**11:00-11:30 Tea/Coffee Break**

**11:30-11:45 SERVICE LIMIT STATES**  
Mr. Miguel Ángel Vicente, Universidad de Burgos

**11:45-12:00 CONSTRUCTION RECOMMENDATIONS AND QUALITY CONTROL OF THE WORKS**  
Mr. Miguel Antonio Arranz, AECOM

**12:00-12:20 COLLOQUIUM**

### SESSION 2

**Moderador: Mr. Pablo Díaz**  
Laboratorio Central de Estructuras. Cedex

**12:20-12:45 SUMMARY OF ACTIVITIES OF THE INTERNATIONAL BRIDGES COMMITTEE - PIARC**  
Mr. Imai Kiyohiro, President of the International Bridge Committee PIARC

**12:45-13:10 PRACTICE ON STRENGTHENING EXISTING BRIDGES WITH COMPOSITE MATERIALS (SWITZERLAND)**  
Mr. Manuel Álvarez, Head of Civil Engineering Structures. Federal Roads Office FEDRO, Switzerland

**13:10-13:30 EXPERIENCE IN FRP STRENGTHENING METHOD APPLIED TO EXISTING BRIDGES (ROMANIA)**  
Mr. Adrian BOTA, PhD Politehnica University Timisoara

**13:30-14:00 COLLOQUIUM**

**14:00-15:30 Lunch**

### SESSION 3

**Moderador: Mr. Gonzalo Arias**  
Ines Ingenieros

**15:30-15:50 REPAIRING THE SAC'H QUEVIN BRIDGE (FRANCE)**  
Mr. Laurent LLOP, Responsable de la Division Gestion du Patrimoine (Head of the Division of Bridge Management)

**15:50-16:10 EXECUTION PROJECTS OF FRP REINFORCEMENTS (WEBS AND NSM) IN MAJOR WORKS: PUENTE DE LAS AMÉRICAS (PANAMÁ)**  
Mr. Ángel Rozas, Freyssinet Technical Department - FRP Specialist

**16:10-16:30 EXAMPLES OF FRP REINFORCEMENTS IN SPAIN. THE EXPERIENCE FROM THE POINT OF VIEW OF THE DESIGNER**  
Mr. Tomas Ripa, LRA Consultoria de Infraestructuras

**16:30-16:50 SEISMIC RETROFIT OF THE CHAMAGAWA BRIDGE WITH COMPOSITE MATERIALS (JAPAN)**  
Mr. Naoki Toyama, Manager of planning division of Honshu Shikoku Bridge Expressway Co., Ltd.

**16:50-17:10 THE EVOLUTION OF FRP USAGE FOR BRIDGES IN WISCONSIN "GUIDELINES FOR STRENGTHENING CONCRETE IN SERVICE BRIDGES. (EEUU)**  
Mr. Scott Becker, Bureau of Structures Director. Wisconsin DOT State Bridge Engineer

**17:10-17:30 FIBER CARBON STRENGTHENING: APPLICATION ON CHILEAN BRIDGE**  
Mr. Marcelo Márquez, Ministerio de Obras Públicas

**17:30-17:50 DISCUSSION FORUM. LIMITATIONS AND ADVANTAGES OF THIS TYPE OF BRIDGE REINFORCEMENT**

**Moderador: Mr. Tomas Ripa**

Mr. Laurent LLOP  
Mr. Naoki Toyama  
Mr. Angel Rozas  
Mr. Marcelo Márquez

**17:50-18:05 CLOSING CEREMONY**  
Mr. Álvaro Navareño, President of the ATC Bridge Committee. National Road Directorate. Ministry of Public Works. Spain  
Mr. Alfonso Garcia, Task Group Coordinator. 1504 Consulting