



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 EXISTING 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 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