ACI Italy Chapter

✓ Activity Report 2004-2008
✓ Contributions to Worldwide Harmonization of Codes

Mario Alberto Chiorino
ACI International Committee
H. President of ACI Italy Chapter
Politecnico di Torino
Turin, Italy
Activity Report 2004-2008

Quoting from the mission of ACI Italy Chapter:

“…favor the dialogue and promote harmonization between ACI and other standard and pre-standard international organizations, like e.g. CEN (Eurocodes), fib and RILEM, in consideration of the traditional well-established links between large sectors of the Italian community of scholars and these organizations.”

The parts of this report evidenced in yellow represent the activities of the Chapter pursuing the goal of favoring harmonization, in connection with the second item of this presentation “Harmonization of Codes”
Foundation of ACI Italy Chapter

- Chapter established in December 2003
- Organizing Committee chaired by Antonio Nanni, ACI Member and University of Missouri
- Headquarters and secretary office at the University of Naples Federico II
- At date, the number of members of the Chapter is equal to 115; about 25% have also applied to become members of ACI
Chapter Officers
2004-2008

President
Mario Alberto Chiorino  Politecnico di Torino

Vice President
Maria Rosaria Pecce  University of Sannio

Secretary
Gennaro Magliulo  University of Naples

Chapter Board of Directors

Raffaele Cioffi  University of Basilicata
Mario De Stefano  University of Florence
Ciro Faella  University of Salerno
Antonio Grimaldi  University of Rome
Giuseppe Marchese  Calcestruzzi SPA
Giacomo Moriconi  University of Ancona
Alberto Pavese  University of Pavia
Michele Valente  General Admixtures SPA
2004


• September Publication of 2 papers “Concrete in Italy” on Concrete International celebrating the foundation of the Chapter and ACI Centennial

• October University of Salerno Seminar: “Research Projects and New Guidelines for External Reinforcement of R.C. and Masonry Structures with FRP”
  • Research Projects
  • Industrial Perspectives
  • Public Agencies
  • Guidelines
  Chair: Roberto Realfonzo
2004

• December  Visit to the Chapter in Torino by ACI President Anthony E. Fiorato and Executive Vice President William R. Tolley on the occasion of ACI Centenary:

**Meeting:**
- ACI mission and objectives: a century of innovation
- Scopes and objectives of local chapters
- Annual meeting of the Chapter

**Seminar:**
“International associations and harmonization of standards for structural concrete in the global economy: the role of an international ACI Chapter”

**Chair:** Mario A. Chiorino  President ACI Italy Chapter
**Panel:** Franco Levi  Honorary President of CEB and FIP, Honorary Member of ACI
Giuseppe Mancini  President of fib
Anthony E. Fiorato  President of ACI
Giorgio Macchi  Honorary Member of CEB, Italian representative in CEN TC250
Edoardo Cosenza  Chairman Org. Comm. fib 2006 Congress
Italian Edition of **ACI 440.2R-02** Document:

“**Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures**”
An outline of a century of history and heritage of concrete in Italy

Concrete in Italy
Part I: Technique and Architecture

Reviewing a century of concrete progress in Italy

BY FRANCO LEVI AND MARIO A. CHIORINO

ACI Honorary Member
G. Matte-Trucco 1920

P. L. Nervi 1935

P. L. Nervi 1949

P. L. Nervi 1959

F. Levi and P.L. Nervi†
are Honorary Members of ACI

F. Levi † and P.L. Nervi†

F. Levi and N. Esquillan 1961

R. Morandi 1958
F. Levi and P.L. Nervi† are Honorary Members of ACI
Outlines the role played by Italian specialists:
- in developing theories,
- in promoting the activity of international associations,
- in the establishment of international model codes for concrete structures.

Concrete in Italy
Part 2: Contributions to Theory and Codes

Reviewing of a century of concrete progress in Italy

BY FRANCO LEVI AND MARIO A. CHIORINO
Visit in Torino of ACI President Anthony E. Fiorato and Vice President William R. Tolley

Seminar “International associations and harmonization of standards for structural concrete in the global economy: the role of an international ACI Chapter”

December 2004

Seminar on harmonization of standards
fib President Giuseppe Mancini (first row), ACI Hon. Member Franco Levi (2nd row right) and CEB Hon. Member Giorgio Macchi (3rd row left) assist to the presentation of ACI President Anthony E. Fiorato. Politecnico of Torino, Valentino Castle.

ACI Italy Chapter welcome party
From left to right: ACI Exec. Vice President Wiliam R. Tolley, Italy Chapter President Mario A. Chiorino, ACI President Anthony E. Fiorato and fib President Giuseppe Mancini.

ACI Italy Chapter – OICE, Rome, October 27, 2009
2005

• March  
  University of Appl. Sciences of Southern Switzerland (SUPSI)  
  International Course: “Design of FRP Structural Reinforcements”  
  In cooperation with ACI Italy Chapter

• April  
  ACI Spring 2005 Convention New York City

  ✓ International Luncheon – Keynote Lecture:  
    “Worldwide Harmonization of Standards for Structural Concrete:  
    Strategies in the Cooperation between fib and ACI”  
    G. Mancini, President of fib and Member of ACI Italy Chapter  
  Hosted by the International Committee  
  Sponsored by ACI Italy Chapter

  ✓ International Session:  
    “Seismic Engineering for Concrete Structures – Italian Perspective”  
  Sponsored by ACI Italy Chapter  
  Publication of the Proceedings

• April  
  University of Florence  
  Workshop: “Reinforcement of R.C. and Masonry Structures with FRP”  
  Chair: Mario De Stefano

ACI Italy Chapter – OICE, Rome, October 27, 2009
March 2005

University of Applied Sciences of Southern Switzerland (SUPSI)
International Course: “Design of FRP Structural Reinforcements”

Corso DACD 013
Progettazione di rinforzi strutturali in FRP

responsabile: Prof. Ezio Cadoni

Promosso da:
SUPSI
American Concrete Institute, Italy Chapter

From left to right: R. Suter and E. Cadoni (SUPSI), G. Manfredi and A. Prota (University of Naples and ACI Italy Chapter).

ACI Italy Chapter – OICE, Rome, October 27, 2009
• It is the feeling of ACI Italy Chapter that, in spite of widespread contacts and liaison efforts among engineering associations around the world in the past decades, there is still a need for a more intense harmonization of principles and guidelines for codes and standards in the field of structural concrete.

• Mancini’s lecture, promoted by Italy Chapter, sets the tone for this auspicious future of tighter conceptual integration between the nodes of an international network gathering professional, research and academic institutions.
International Session:
“Seismic Engineering for Concrete Structures – Italian Perspective”

- ACI Italy Chapter, in organizing this session for the celebration of ACI centennial, considered that the presentation of selected examples of research developed in Italy could positively contribute to enhance the international debate in a crucial field of concrete engineering still open to further progress.

- The topics of the sessions included:
  - probabilistic studies,
  - analysis and design criteria for irregular buildings,
  - experimental analysis of shear elements,
  - isolation and damping strategies,
  - assessment of RC existing buildings, and the related retrofitting strategies.

Includes:
International Luncheon Keynote Lecture:
Worldwide Harmonization of Standards for Structural Concrete:
Strategies in the Cooperation between fib and ACI
by fib president Giuseppe Mancini

ACI Italy Chapter members in New York City, with at center:
Antonio Nanni, Editor and Founder of Chapter
Mario A. Chiorino, Editor and Chapter President
Marisa Pecce, Chapter Vice President
On the occasion of the Second Congress of fib in Naples ACI Italy Chapter hosted a welcome reception honoring:

- **ACI Officials:** Past President J. Cagley and Executive Vice President W. Tolley
- **fib President:** G. Mancini
- **the Chair of the Congress Organizing Committee:** E. Cosenza.

The meeting offered the chance for continuing the discussion on the themes of worldwide harmonization of standards for structural concrete and of the cooperation between fib and ACI that formed the subject of the previous initiatives of ACI Italy Chapter.

A consensus was expressed on the need to extend this cooperation and to accelerate the harmonization process, as imposed by the increasingly global character of the market of the concrete construction industry, and an appreciation was expressed for the role that may be played by ISO in this context.

Following the reception, ACI Italy Chapter Officers presented to ACI Past President Cagley the volume of the proceedings of the New York Session on Seismic Engineering.
• June

2006

On the occasion of the Second Congress of *fib* in Naples
ACI Italy Chapter hosted a welcome reception honoring:

- **ACI Officials:** Past President J. Cagley and Executive Vice President W. Tolley
- **fib President:** G. Mancini
- **the Chair of the Congress Organizing Committee:** E. Cosenza.

ACI Italy Chapter Board with at center:
Antonio Nanni, Founder of Chapter; William R. Tolley, ACI Executive Vice President;
James R. Cagley, ACI President 2005-06; Marisa Pecce, Chapter Vice President;
Mario A. Chiorino, Chapter President

ACI Italy Chapter – OICE, Rome, October 27, 2009
2007

• April  Mario Collepardi, Member of the Chapter, nominated Honorary member of ACI

• June  Politecnico di Torino, Turin
Seminars: “Technical and Architectural Evolution of High Rise Construction In Brazil”
Mario Franco, School of Architecture, University of São Paulo,
JKMF Julio Kassoy & Mario Franco Associates

• July  University of Rome
University of Florence
Politecnico di Torino, Turin
Seminars:
  • Prestressed Concrete Beams Retrofitted with FRP Reinforcement
  • Engineered Structures under Extreme Loading
  • Damage to Concrete Structures due to Storm Surge during Hurricane Katrina
  • Shrinkage and Creep Predictions Evaluated using 10-Year Monitoring of the North Halawa Valley Viaduct

Ian Robertson, University of Hawaii at Manoa, Honolulu
Member of ACI Committees 209, 352
2007

• October **ACI Fall 2007 Convention, Puerto Rico, October 14-18, 2007**
  Mario A. Chiorino, President of the Chapter, co-chairs the three technical sessions *Structural Implications of Shrinkage and Creep of Concrete*, and is editor of the volume:

• October **ACI International Chapter Roundtable Athens, October 28-29, 2007**
  Luigi Di Sarno attends the meeting, representing the President of the Chapter, and presents a Chapter Activity Report.
Evoluzione tecnologica e architettonica dei grattacieli in Brasile

Castello del Valentino
Sala Feste e Fasti
11 Giugno, ore 15

Mario Franco

Dipartimento di Ingegneria Strutturale, Facoltà di Architettura
Corso di Teoria e Progetto di Strutture, Prof. Mario A. Chiorino

ACI Italy Chapter – OICE, Rome, October 27, 2009
Damage to Concrete Structures due to Storm Surge during Hurricane Katrina

Funded by NSF SGER grant and NSF-NEESR grant

Ian Robertson
University of Hawaii
Rome, Florence, Turin, Italy
July 2007

Shrinkage and Creep Predictions Evaluated using 10-Year Monitoring of the North Halawa Valley Viaduc

Ian Robertson
University of Hawaii
Rome, Florence, Turin, Italy
July 2007

2007

Politecnico di Torino, Turin, July 4, 2007
First row from left: Mario Sassone, Politecnico di Torino; Mario A. Chiorino, Politecnico di Torinino, President ACI Italy Chapter; Ian Robertson, University of Hawaii

ACI Italy Chapter – OICE, Rome, October 27, 2009
Technical sessions:
“Structural Implications of Shrinkage and Creep of Concrete”

2008

- January  University of Naples
  - Meeting of the Board of Directors of the Chapter

- March  Mario A. Chiorino, President of the Chapter, nominated Fellow of ACI

- May  University of Naples
  - Meeting of the Board of Directors of the Chapter
  - Annual meeting of the Chapter

- November  ACI Fall Convention, St. Louis, MO

  International Luncheon – Keynote Lecture:
  “The repair and maintenance of aging R. C. bridges”
  K. Bergmeister (Italy), Wien University, Chair fib Task Group 5.1 Monitoring and safety Evaluation of Existing Structures
  Hosted by the International Committee
  Sponsored by ACI Italy Chapter


  Mario A. Chiorino, President of the Chapter, nominated member of ACI International Committee
International Luncheon – Keynote Lecture:
“The repair and maintenance of aging R. C. bridges”
K. Bergmeister (Italy), Wien University Chair fib Task Group 5.1 Monitoring and safety Evaluation of Existing Structures
ACI Co-sponsorship for P. L. Nervi International Exhibit
“Pier Luigi Nervi: Art and Science of Building”

November 2008

ACI Italy Chapter – OICE, Rome, October 27, 2009
ACTIVITIES of ITALIAN MEMBERS in ACI Committees

Members of the Italian technical and scientific community and of ACI Italy Chapter have served in the following ACI Technical Committees:

- Committee 209 – Creep and Shrinkage in Concrete
- Committee 236 – Material Science of Concrete
- Committee 237 – Self-Consolidating Concrete
- Committee 238 – Workability of Fresh Concrete
- Committee 342 – Evaluation of Concrete Bridges and Bridge Elements
- Committee 374 – Performance-Based Seismic Design of Concrete Buildings
- Committee 423 – Prestressed Concrete – Joint ACI-ASCE
- Committee 437 – Strength Evaluation of Existing Concrete Structures
- Committee 440 – FRP Reinforcement
- Committee 444 – Experimental Analysis for Concrete Structures
- Committee 446 – Mechanics of Concrete
- Committee 447 – FEM Analysis of Reinforced Concrete Structures – Joint ACI-ASCE
- Committee 530 – Masonry Standards Joint Committee – Joint ACI-ASCE-ASTM
- Committee 544 – Fiber Reinforced Concrete
- Committee 549 – Thin Reinforced Cementitious Products and Ferrocement

They have contributed with technical and research information to the development of committee activities. In a few cases they have carried chair or editing responsibilities, with particular regard to the fields of Time Dependent Analysis of Concrete Structures (ACI 209, M. A. Chiorino), Strength Evaluation of Existing Structures (ACI 437, A. Nanni), FRP Reinforcement (ACI 440, A. Nanni, A. Prota).

Members of ACI Italy Chapter participate also in the activities of some of ACI Standing Board Committees, like IC (International Committee) and ICC (International Conferences/Conventions Committee) (M. A. Chiorino), TAC (Technical Activities Committee) (A. Nanni).
CONCLUSIONS

✓ ACI Italy Chapter is a new-born chapter: it has been created in a country and with people of longstanding traditions of international cooperation in the field of structural concrete.

✓ The feeling of the initiating group was that in the development of a mature science for concrete construction, at worldwide level, there is still a need for more intense contacts among specialists to achieve a deeper harmonization.

✓ ACI Italy Chapter’s mission has been consequently defined as follows:
  1. disseminate knowledge and information originating from ACI scientific, technical and regulatory activities,
  2. foster deeper collaboration and exchanges between the Italian community of scholars and the ACI ambient,
  3. favor the dialogue and promote harmonization of ange of experiences between ACI and other standard and pre-standard international organizations, like e.g. CEN (Eurocodes), fib and RILEM, in consideration of the traditional well-established links between large sectors of the Italian community of scholars and these organizations.

✓ The Chapter believes that these goals have been at least partially achieved in this first period of its life.

✓ The Chapter intends to concentrate its future activity in developing item 1, and in promoting a more extended active participation of its expert members in the activities of ACI Technical Committees and in the life of the Institute, in the frame of item 2.
Contributions to Worldwide Harmonization of Codes

Mario Alberto Chiorino
ACI International Committee
H. President of ACI Italy Chapter
Politecnico di Torino
Turin, Italy
Structural Concrete Worldwide

ISO TC 71
Concrete, reinforced concrete, and pre-stressed concrete

ISO 19338-2003
Performance and assessment requirements for design standards on structural concrete

ACI 318
Structural Concrete Building Code

Eurocode 2
EU Countries National codes

CEB FIP Model Code 1990
International Federation for Concrete Structures

fib Model Code 2010

Other countries National codes

CEN
Fédération Internationale du Béton

Liason Committee CIB, ECCS, IABSE, IASS, RILEM

Meets requirements

2010

Meet requirements

Meet requirements

*21 countries worldwide base their national codes on ACI 318
This scenario can be improved
Structural Concrete Worldwide

Pre-standard ambient

1. Enhance integrated action of fib and ISO

Standard ambient

CEN Eurocode 2
Design of concrete structures

EU Countries National codes

Other countries National codes

aci ACI 318
Structural Concrete Building Code

fib
Fédération internationale du béton
International federation for concrete structures
CEB FIP Model Code 1990 → fib Model Code 2010

ISO TC 71
Concrete, reinforced concrete, and pre-stressed concrete

Liason Committee
CIB, ECCS, IABSE, IASS, RILEM

2. Increase collaboration and exchanges between fib and ACI

ISO 19338-2003
Performance and assessment requirements for design standards on structural concrete

Meets requirements
1. Enhance integrated action of fib and ISO

Integrated efforts in fib and ISO are under way in the following fields, representing the new horizons of modern structural codes:

- **life-cycle oriented codes, service life design, durability**
  - the basic principles established by fib in its *fib Model Code for Service Life Design (2006)* have inspired the recent ISO 13823 *General principles on the Design of Structures for Durability (2008)*

- **sustainable concrete structures, environmental aspects of design and construction**
  - *fib Commission 3 Environmental aspects of design and construction* has developed activities in this field (*fib Bulletins Environmental issues in prefabrication 2003, Environmental effects of concrete 2003, Environmental design 2004*)
  - ISO TC 71 has established Subcommittee SC8 *Environmental management for concrete and concrete structures* (2008)
  - Koji Sakai (Japan) is Chair of both these fib and ISO committees
2. Increase collaboration and exchanges between fib and ACI

ACI Italy Chapter has been very active in promoting initiatives to favor this enhancement of cooperation between fib and ACI, with ample support by ACI Board of Direction, as evidenced in the Chapter Activity Report 2004-2008.

The main actions have been:

- **April 2005** ACI Spring Convention N.Y. - International Luncheon - Keynote Lecture: “Worldwide Harmonization of Standards for Structural Concrete: Strategies in the Cooperation between fib and ACI” by Mancini, President of fib and Member of ACI Italy Chapter.
- **June 2006** - Meeting in Naples at Second fib Congress with participation of fib President Mancini and ACI Past President Cagley and Executive Vice President Tolley.
- **November 2008** ACI Fall Convention St. Louis - International Luncheon - Keynote Lecture: “The repair and maintenance of aging R. C. bridges” by K. Bergmeister (Italy) fib expert.
2. Increase collaboration and exchanges between fib and ACI

Strategic plan for potential collaboration between ACI and fib proposed by G. Mancini fib (Past) President in the N.Y. lecture:

- agree on code role in relation to the designer freedom and creativity: codes helping the designer without introduce excessive limitations to his fantasy

- common effort to define new physical models, able to describe some controversial aspects of concrete structures with particular attention to the service life and residual life evaluation

- proposal of thematic areas for cooperation between fib and ACI:
  - Design with F.E.M.
  - Safety format for Non Linear Analysis
  - Crack opening evaluation in skew direction with respect to the reinforcement
  - Durability, Service Life Design and Residual Life Evaluation
2. Increase collaboration and exchanges between fib and ACI

An important occasion for exchange of opinions and construction of a common strategy for the new codes in the globalized world is:

IABSE – fib Conference

CODES IN STRUCTURAL ENGINEERING
Developments and Needs for International Practice

Dubrovnik     May 3-5, 2010

A paper will be presented by M. A. Chiorino (Editor of ACI 209.3R Guide on Time Dependent Analysis of Concrete Structures) on common strategies between fib and ACI to deal with this theme.
The Codes of tomorrow in the globalized world

Worldwide Harmonized Standards for Structural Concrete
**fib** and ACI are in the process of renovating their Codes

- **fib** is finalizing the new *fib* Model Code for 2010
- ACI Committee 318 has started work on a total overhaul of the document in presentation, organization and content, with the goal of being completed for 2014
Basic principles of the new fib Model Code 2010

The new fib Model Code is:

- **a future-oriented code**: it introduces innovation in a path of continuity (evolution not revolution)
- **life-cycle oriented**: service life design, durability, plans for maintenance
- **sustainability oriented**: special emphasis to sustainability aspects in all stages of design, construction, and maintenance

The last two items in agreement with the common platform established between fib and ISO
ACI is at present in the initial phase of renovating ACI 318

- ACI 2008 Strategic Plan places sustainability at the forefront
- ACI Board has requested that over 120 ACI Committee Review their documents to incorporate the sustainability perspective as appropriate
It is the opinion of the author that in this moment a tighter exchange of opinions and debate between fib and ACI can set the grounds for better future harmonized codes responding to the requests of society concerning above all durability and sustainability.

In his new position as a member of ACI International Committee, the author will orient his activity to favor this goal, as he did when tracing the mission of ACI Italy Chapter.
Thank you