fib-news
CEB-FIP

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March 2009

London 2009: The future of concrete structures

"Concrete: 21st Century Superhero", the 2009 *fib* symposium, jointly organised by the UK *fib* group and JCI, will be held in London from 22 to 24 June 2009.

Event overview

This major event will be a forum for all persons involved in concrete design and construction. Leading engineers, designers and researchers will examine the evolution of concrete into a cost-effective, sustainable structural material, solutions to meet design needs, and the future of concrete structures.

With over 200 papers submitted to the review process, the symposium organisers are confident of a highly successful event. The topics addressed will fall within the symposium's main themes: sustainability, durability, materials, structures & construction, design & analysis. The complete programme can be downloaded from www.fiblondon09.com.

Technical tours will take advantage of the current construction boom in London, allowing visitors access to some of the most pioneering projects in the city.

Keynote speakers

Dr Ahmad Rahimian is President of WSP Cantor Seinuk, Structural Engineers, New York Division of WSP Group. An expert in the behaviour of structures under seismic and wind loading, he has written widely on designing towering structures, and has been involved in the design and engineering of buildings, stadiums, and bridges around the world.

Dr Koji Sakai is a Professor at Kagawa University in Japan. He is Chairman of *fib* Commission 3 (Environmental Aspects of Design and Construction), of the JCI Committee on Minimization of Global Warming Substances and Wastes in the Concrete Sector, and of ISO/TC71/SC8, Environmental Management for Concrete and Concrete Structures.

Prof Odd E. Gjørv is a Professor Emeritus of Structural Engineering at the Norwegian University of Science and Technology in Trondheim. His research includes advanced concrete materials and concrete technology as well as durability of concrete structures in severe environments.

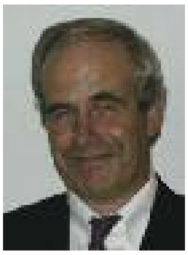
Registration

Register at www.fiblondon09.com and be part of this important international event. Special rates are available for students; for more information, contact the symposium organisers at: fiblondon09@emap.com.

London city hall against a backdrop of construction activity.

The new *fib* Model Code

An interview with Joost Walraven



Special Activity Group 5 (SAG 5), *New Model Code*, held their latest meeting in Lausanne in January 2009. We took the opportunity to ask the group's chair, **Prof Joost Walraven**, a few questions about the progress of the work.

What is the current state of the work, and when do you expect the Model Code will be published?

JW: We will meet in June of this year to see if the drafts are really complete and evaluate what we're missing; if the group members agree on that draft, then we can start to to harmonize and finalize it, and then send it to the commissions. The commissions will have maybe half a year to give their comments and suggestions for improvements. And then we are in 2010 and we should be able to present the document as it is to the General Assembly of *fib* in Washington.

IN THIS ISSUE

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It's been a long process to finally reach this stage.

JW: I remember in the early days of *fib*, we said we should look to a new Model Code, and at first people were speaking about the Model Code 2000, because that a nice number, but very quickly it became 2005. So we started to work in 2002, deliberating on the table of contents, the strategy, identifying the new things. Now there's a bit of panic that we might not meet 2010 … but I do think we will make it, I have a good feeling.

For those who may not be familiar with the Model Code, could you explain what it is and what it's intended to do?

JW: The Model Code is a future-oriented code, with no legal obligations; it is free to be used by people. It can be used as an orientation code for future developments. When we were writing the Eurocode, we often consulted the 1990 Model Code, because there people had made ideas about how things should be in the future, improvements, and we could just take over big parts. So the Model Code contributed to the Eurocode quite substantially; that was a great help. The Model Code was well-prepared, with background documents; it made life much easier. It contains mature knowledge, but it is also future-oriented. Now for instance we contribute to all codes, we have a concept which is life-cycle oriented, so you do not only build a structure, but you think about what will be. You have to follow the structure, and predict when to do repair, and even when to demolish it. Maintenance is now a very important subject, it costs a lot of money. So if you deliver an important building, you have to make a plan for maintenance, a cost estimation, you have to develop a monitoring system, you have to check if you're on schedule, and if you have repairs you have to decide what to do. The most important thing is the introduction of time.

Is this a significant difference between this edition and the 1990 edition?

JW: Yes, according to the 1990 edition, when you deliver the building it's finished; you have done your job. So that means serviceability, limit states – it should be safe and it should be serviceable, but there is nothing on making amends. Now you see durability as a very important aspect, and also sustainability, because a structure should be acceptable for its environment. It should meet demands with regard to CO_2 emissions, and all these types of things play a much larger role. But the Model Code is also a code where you find things that are not in actual codes. It can also be used by people who have a conflict and don't know the interpretation of their own codes. I did this myself: I worked for a tunnel link for instance, and I found solutions in the Model Code that were not in the other codes. Because it's in the Model Code, you can say that experts have written that, so you can agree on it. In the past, the Model Code was the orientation code for countries. The National codes will disappear in 2010 and there will only be the Eurocode. So we have the current Eurocode, which is in large part the Model Code of the past, and we expect that in ten years, when they make a new Eurocode, they will select many things from this new edition of the Model Code. It's much easier to bring the Model Code to a book form, because if you look at the Eurocode, you have a commission, 25 people are there, representing every country, everybody is there with a message, defending their position, fighting over one little diagram. So it is technical, scientific, but also very much political – because it has an immediate impact. In our case, it's free, people discuss and bring in their newest knowledge – it's a guidance document, you can say.

You mentioned life-cycle and the environment as being new aspects; are there other new topics that have developed since the 1990 edition?

JW: Yes, in that framework we have design for durability, repair, but also the introduction of new types of concrete. The last Model Code was until C80, and now it goes to I think C120, but it also makes an opening for high performance fibre concrete of 200, and we also introduce fibre concrete with new standards methods. The most important is that we try to make what we call a "defined performance" design. In the past, if you made a calculation you just said everything is related to the strength. And now people say: we don't need the strength, but we need a concrete which has a large fire safety, or in certain conditions we a need a concrete with a great resistance against sulfate attack, but we don't care about the strength. So much technological development has been achieved now that people are able to design special concretes, all types of special concretes. For instance we now have green concrete, which is a concrete with much less cement… you have a totally different composition from what you had in the past; that's intended to reduce CO_2 emissions. So you can design a concrete; which we never thought you could do, you designed the structure. But now you can design the concrete, but this concrete is not the standard concrete like in the past. So we have hundreds of types of concrete and we have then to show that they are good for special applications. In the new Model Code we try to open the door to that type of development.

Today we have internet, document sharing, conference calling, which didn't exist 20 years ago. Has this changed the way the group works?

JW: I think the setup is about the same; of course it helps quite a lot that you can communicate better, but the basis is the same I think, because you have experts from everywhere, they give free information to each other, they discuss, and that was the same in the past. The basis of the success, we hope, is the experts coming together. You could say, we have so many computers now, why not make extended use of computers [in the new edition], but we think that the most important is to have a calculation code that is understandable. It can be a little bit more simple, and maybe less accurate, but the designer should understand what he is doing. With many calculation programmes you just put something in and something comes out, and you don't know anymore what you are doing. And this is so important. It should be transparent.

How long do you think it will be until the next edition of the Model Code?

JW: When I see how much work it is, I think it will take another 20 years for the next Model Code to come. It's more difficult than in the past, because all of these people, they are committed to many tasks and they have projects. If you work for a university, you have to register what you are doing. If your activities are not financed, people raise questions: you're wasting our time, wasting our money; so the pressure on people is larger and larger. In the past, Prof. Tassios had an employee who was available full-time for one year to work for the Model Code – this is a luxury that we do not have anymore. We're very happy that we have a paid secretary for the group.

So the main difference compared to the 1990 edition is not the available new technologies, but the time pressure on the people involved.

JW: Of course the best people have the most work. What you see very often is that there is no time to write the paper or the draft; it just doesn't fit into the daily schedule. But now we see that everyone believes in it, so they will produce it in their evenings and weekends. And this is the special thing of it: that it is for a large part voluntary work, which is very unusual nowadays. It's very unique that you have such a group of people.

Task Group 8.8: Structural design with flowable concrete

New Task Group (TG) in *fib* Commission 8

Scope

Flowable concretes (self-compacting or highly flowable) have evolved to become a commonly applied building material. Despite significant experience with flowable concrete, problems still occur during casting and the service life of concrete structures. The flow (initiated by vibration and/or the weight of concrete) can affect the structural behaviour of hardening or hardened concrete. In order to obtain a high flowability, the mixture composition has to be adjusted and optimised. The effect of fibres on the characteristics of flowable concrete will be considered in a subgroup of *fib* TG 8.8.

The main objectives of TG 8.8 are to produce a state-of-the-art report and a recommendation on the structural design with flowable concretes. The performance of a structure with flowable concrete depends not only on material characteristics, but also on the production method and the structure itself. Areas of structural design where flowable concretes differ from traditional vibrated concrete have to be identified. Four aspects will be considered in order to describe structural behaviour:

- mechanical characteristics
- local effects (i.e. close to the concrete surface or reinforcement bars)
- effects of orientation/segregation due to the flow/vibration
- how to optimise the mixture composition of and production techniques for flowable concrete

Working programme

The Task Group consists of two Working Parties: WP 1 (plain concrete) and WP 2 (fibre reinforced concrete); both groups meet together. WP 2 will focus on the effect of orientation and distribution of fibres on the characteristics of flowable concrete, whereas other relevant aspects will be considered by WP 1. The duration of the group is four years (the first meeting will be held in Ghent, Belgium, on 24 April 2009). The work is divided into three phases:

1) orientation,
2) compilation and comparison (output: State-of-art report), and
3) translation (output: Recommendation).

Participation in the work

Task Group 8.8 is looking for interested contributors. Further information can be obtained from either of the Task Group Conveners, Dr. Steffen Grünewald (s.grunewald@tudelft.nl) or Dr. Liberato Ferrara (liberato.ferrara@polimi.it); or from the Chairman of *fib* Commission 8, Prof. Frank Dehn (dehn@mfpa-leipzig.de).

An important feature of fib-news is the regular reporting on the work of the Commissions and Task Groups: new groups formed, new publications, and any issues or questions connected with the Commission's and Task Group's terms of reference. Contributions from Commission chairmen or Task Group Conveners are therefore particularly appreciated, and all involved are invited to contact the secretariat whenever they wish to use fib-news to disseminate information.

Formwork and falsework: A new *fib* Guide to Good Practice

Introduction

The realization process of civil engineering structures is complicated: a wide variety of disciplines is involved, each has a specific contribution, and each is involved somewhere between initial concept and completion. It is a challenge to structure the process in such a way that a balanced and optimized participation of the many disciplines involved is achieved. One of the critical success factors is knowledge management: each discipline should bring professional knowledge, but disciplines should realize interactions at interfaces as well. And that is where the gap in practice often appears.

Temporary structures for civil engineering projects are an example of this phenomenon: they are right in the middle of a complex system of interactions between structural engineering, site engineering, work preparation, procurement, and execution. They have a significant impact on cost, construction time, construction methodology and through-life performance of the actual, permanent structure.

Formwork and falsework are among the most important elements of temporary structures for civil engineering projects, and so is the interaction with the many disciplines mentioned before. Knowledge management with respect to formwork and falsework requires engineers to share knowledge and experience in the broadest sense, as actual performance of formwork and falsework can only be noted at a late stage in the realization process, when some disciplines (although in strong interaction with formwork and falsework) are no longer present: the learning circle can only be closed by feeding back.

And that is where also a gap appears in practice: as experienced site managers generally know what kind of problems they will face and how to solve them, and as most site engineers have their lessons learned, it is not common to prepare documents which address practical construction issues in relation to design and application of formwork and falsework, although these documents are a vital link in the learning cycle. Moreover, it is uncommon to include the participation of technical commissions and/or scientific associations in these issues

Underslung traveller for span-by-span construction process (movable shuttering system), Anchuelo viaduct high-speed railway Madrid-Barcelona (Spain).

The new *fib* Guide to Good Practice, *fib* Bulletin 48, intends to effectively feed back state of the art knowledge and experience with regard to formwork and falsework. As such its aim is to bridge the gap that is often experienced in practice and to make a larger group of engineers familiar with the important issues related to design and application of formwork and falsework, with the objective of achieving better interaction between engineering disciplines involved, resulting in safe, effective and efficient temporary structures.

Although commonly applied definitions for formwork and falsework have been used, authors are aware that in practice a clear distinction between the two elements (form and support) may be difficult as both functions are sometimes integrated.

The bulletin addresses some fundamental issues related to formwork and falsework:

- The appearance of the finished concrete which is closely related with the quality of the formwork. Owners/ clients tend to be more demanding in this respect.

- The performance of the finished concrete in related to durability and as part of Life Cycle Management. A stronger focus on reliability of (life cycle) performance is noticeable.

- The need to support the concrete while it acquires enough strength and stiffness to support itself. In this context the most important issue is structural safety. Around the world, serious accidents of important civil structures and buildings under construction happened with catastrophic consequences caused by temporary work failure. Accidents during construction are too frequent and society does not accept that exposure anymore. Unfortunately there is a lack of documentation about these events.

The bulletin gives guidance for the design and use of formwork and falsework on construction sites. The guidelines are based on the experience of site and design engineers; and most of the advices have been given as a consequence of real problems in the past. Any warnings based on sole theoretical judgement have been avoided; only recommendations based on experience have been included.

The document focuses on principles only, and therefore does not address detailed design issues as local design codes should be applied. As construction habits and details sometimes differ from country to country, some advices or recommendations included in this document may be affected by local circumstances.

Scope

The new Guide presents an overview of formwork and falsework techniques and addresses issues related to the design and application thereof. As such it is the objective to provide both structural engineers as well as site engineers with information to design and apply formwork and falsework in a safe, reliable, and economic way.

Chapter 2 presents definitions. It is appreciated that different definitions may be in use around the globe; it was felt necessary to start with definitions as used to draft this report and to present the contents thereof. As a basis for definitions British Standards were used. In addition, a list of definitions as used by the authors is included.

Chapter 3 addresses General Requirements with due attention to Safety, Durability and Quality of the finished surface. Specific requirements for formwork, falsework, centring, and scaffolding are presented in separate sections of chapter 3

Chapter 4 covers design considerations in a broader context. Management and Control addresses issues related to coordination between disciplines, safety aspects, and classification of temporary structures. The design criteria section addresses fundamental issues related to structural scheme, load path analysis, design strategies, including design by testing, eccentricities, deflections, connections, foundations and settlements, redundancy and the striking of formwork and falsework.

Chapter 5 briefly addresses control issues related to design, erection, and the foundation.

Chapter 6 gives a general overview of different types of formwork: traditional formwork, panels, climbing formwork and slipforming. Apart from the descriptions, also recommendations have been given for design, site works, and disassembly.

Chapter 7 is an extensive part of the report and deals with specialized formwork, falsework and centrings. Both fixed structures as well as travellers are presented. Although a strong focus is on bridges, also tunnel vault formwork and apartment formwork has been included. Each section contains specific definitions and recommendations for design, site works, and striking.

Appendix 1 deals with fresh concrete pressures and gives an overview of governing factors, theories and codes

Publication

The Guide to Good Practice was published in January 2009 as *fib* Bulletin 48.

Aad van der Horst
Chair of *fib* Commission 10

- *fib Bulletin 48, "Formwork and falsework for heavy construction". Format approx. A4 (210 x 297 mm), 96 pages, ISBN 978-2-88394-88-8.*
- *Non-member price 130 CHF, surface mail included.*

New bulletins

The series of *fib* Bulletins for the subscription year 2009 began with number 48, *Formwork and falsework for heavy construction* (see preceding article), and continued with number 49, *Corrosion protection for reinforcing steels*, summarised below. Both were dispatched to *fib* members in March 2009. To order these or any other publications, visit: www.fib-international.org/publications.

Corrosion protection of reinforcing steels

- *fib* Bulletin 49, Format approx. A4 (210 x 297 mm), 122 pages, ISBN 978-2-88394-89-5
- Non-member price 90 CHF, surface mail included.

It has long been recognised that corrosion of steel is extremely costly and affects many industry sectors, including concrete construction. The cost of corrosion of steel reinforcement within concrete is estimated at many billions of dollars worldwide.

The corrosion of steel reinforcement represents a deterioration of the steel which in turn detrimentally affects its performance and therefore that of the concrete element within which it has been cast. There has been a great amount of work undertaken over the years in relation to the prevention of corrosion of steel, including the application of coatings, which has included the study of the process of corrosion itself, the properties of reinforcing steels and their resistance to corrosion as well as the design of structures and the construction process.

The objective of *fib* Bulletin 49 is to provide readers with an appreciation of the principles of corrosion of reinforcing steel embedded in concrete and to describe the behaviour of particular steels and their coatings as used to combat the effects of such corrosion. These include:

- galvanised reinforcement,
- epoxy coated reinforcement,
- stainless reinforcing steel.

Bulletin 49 also provides some information on the relative costs of the materials and products which it covers.

It does not deal with structure design or the process of construction or with the post-construction phase of structure management including repair. It is hoped that it will nevertheless increase the understanding of readers in the process of corrosion of reinforcing steels and the ability of key materials and processes to reduce its harmful effects.

Obituary

Franco Levi
1914 - 2009

Franco Levi, Prof. Em. Dr. Ing., died on 10 January 2009 at the age of 94.

Born in Torino, he studied in Italy and France, where he graduated with a degree in Chemical Engineering, and later reconfirmed his graduation at the Politecnico di Milano in 1936.

He began work in 1938 as Assistant to Prof. Colonnetti in the Institute of Structural Analysis, at the Politecnico di Torino, but after a few months, he was obliged to leave Italy due to racial persecution laws. After several vicissitudes in Italy and France, he reached Lausanne, Switzerland, at the end of 1943, where taught structural analysis until 1945. Finally in 1947 he restarted his career at the Politecnico di Torino as substitute for Prof. Colonnetti, at that time President of National Council of Research. In 1961 Franco Levi won a national competition for full professorship in structural analysis and taught for 7 years (1962 -1968) at the Istituto Universitatrio di Architettura di Venezia (IUAV). From 1968 to 1989, he was full professor of structural analysis at the Politecnico di Torino; after his retirement, he was named Emeritus Professor and continued to participate to the scientific activity of the Department of Structural Enginnering and Geotechnics up until his death. Since 1974 he was Corrisponding Member, and later, since 1986, Resident Member of the Accademia delle Scienze di Torino, participating actively its scientific work.

The international activity of Franco Levi began in 1955 when he joined CEB (Comité Euro-International du Béton) and later FIP (Fédération Internationale de la Précontrainte); he became President of CEB from 1957 to 1968 (the longest serving President), and President of FIP from 1966 to 1970. For two years, 1966-1968, he was simultaneously President of both international organizations, at that time independent, but future parents of *fib*. After his presidency, both CEB end FIP conferred on him the title of Honorary President. From the end of 70's up to the end of 80's, for about ten years, he chaired the editorial group of the European Pre-standard for the Design of Concrete Structures, Eurocode 2, ENV 1992-1-1.

The scientific activity of Franco Levi, who published more than 250 scientific and technical papers, was focused mainly on reinforced and prestressed concrete structures, in which field he can be considered a leading figure of the last 50 years. After his return to Italy in 1947, he started work on the structural effects of imposed deformations and very soon proposed the first three theorems of linear viscoelasticity, which showed a very large application field. Later his scientific activity focused on the main aspects of behaviour and design of structural concrete, namely:

- probabilistic approach to structural safety and consideration of model uncertainties;
- effect of imposed deformation with respect to plastic structural behaviour;
- structural effects of shrinkage and creep;
- non-linear analysis of concrete structures, both for geometrical and mechanical reasons;
- prestressing effect, both at serviceability and ultimate limit state;
- non linear behaviour of flat slabs due to cracking.

Franco Levi made a very fundamental contribution to the preparation of codes on concrete structures, such as the "Recommandations internationales pour le calcul et l'exécution des ouvrages en béton" (CEB, 1963 and CEB-FIP, 1970) and the "Model Code for Concrete Structures" (CEB-FIP 1978 and 1990); such codes exerted a large influence on the national codes of more and more countries, also outside the Europe, and strongly inspired the final version of Eurocode 2, EN 1992, that is widely used today in countries in five continents.

He had also an important activity as a consultant for the design of large concrete structures, such as the Palazzo a Vela in Turin (130 m span), the Floating Drydock of Genoa (with a lifting capacity of 100.000 t), the Palazzetto dello Sport in Teramo (62x45 m elliptical shall dome), the repair of Termoli hospital, and the FIAT factory affected by alkali-silica reaction phenomena in the main structural elements.

The scientific and technical achievements of Franco Levi have been recognised with many honours, including the Freyssinet medal (1978).

The leadership of Franco Levi in both academic and scientific work, as well as in the engineering profession, together with his great wisdom and moral integrity, rendered his students, collaborators, and successors, proud to have worked with him. He was a protagonist in the development of structural concrete, lighting the way for the engineers and researchers continuing in this field.

Giuseppe Mancini

Obituary

Photo: courtesy IStructE

Roy E. Rowe 1929 - 2008

Born and brought up in Southampton, United Kingdom, Roy did his national service in the Royal Navy, and subsequently studied Mechanical Sciences at Pembroke College, Cambridge. In 1952 he joined the Cement & Concrete Association where he eventually spent his entire career. Starting in its Structures Research Department in Wexham Springs, he became its head in 1958. In 1966 he was appointed Director of Research, and in the end was its last Director-General, from 1977 to 1987 when this prestigious association ended its activities. The secretariat of FIP, the International Federation for Prestressing, was hosted by the C&CA since 1954 and it is without doubt during that time that Roy had his first contacts with this association's work.

Simultaneously, CEB, the European Committee for Concrete, with its secretariat in Paris, began work on its future 'International Recommendations'. In subsequent versions these were published as 'Model Codes', a name still in use today. The role C&CA and more precisely Roy had in these international efforts cannot be better described than was recently done by George Somerville, a former colleague of Roy, who wrote: "… there is no doubt that the C&CA had a major influence in raising standards in concrete design and construction. Pioneering research in the 1950s was followed by a major expansion in R&D in the 1960s, the creation of a major training centre at Fulmer Grange etc. Roy was a central figure in this and all was in line with his basic philosophy: good research followed by effective communication with practice. … "

Roy's research output was prolific, and he will be particularly remembered for his work on bridge decks, prestressed concrete and limit state design. He held as a guiding principle that research results should be followed through into practice, while working closely with all sectors of industry.

Against this background Roy's involvement in CEB work started in the 1960s when he co-chaired the Inter-Association Commission on General Security Concepts, chaired CEB Commission VI 'Structural Safety—Practical Recommendations,' and later co-ordinated the Editorial Group for 'Volume I— Common Unified Rules' of the 1978 CEB–FIP Model Code.

Elected in 1977 as a member of the CEB Administrative Council and appointed Vice-President in 1981, Roy took early retirement in 1987 when C&CA activities came to an end. He was elected CEB President in the same year, and – a rare coincidence and a very fortunate situation for the association - he now had the time to put considerable efforts into this function. It was he who convinced me to (re-)join the CEB secretariat as Secretary General. Writing notes of all kinds is part of this job, and I will never forget his outstanding ability to sum-up long and controversial discussions in a few concisely eloquent phrases that could simply be transcribed word-for-word.

Re-elected several times, Roy served as CEB President (its last) until 1998. His work and contributions were also recognized by FIP with the Honorary Membership bestowed on him in 1990. Co-chairing the CEB–FIP Implementation Group he was central to the creation of *fib*, and later served on *fib*'s Presidium from 1998 to 2000 and as President of the newly created CEB Trust Fund until 2004.

During his career Roy received many honours and awards at home and abroad, including the Honorary Membership of the ACI in 1977, Fellow of the Royal Academy of Engineering in 1979, Foreign Associate of the US National Academy of Engineering in 1980, and furthermore was a Commander of the British Empire. He became fellow in the Institute of Structural Engineers in 1966, and served as its president from 1983 to 1984.

Roy E. Rowe passed away unexpectedly on 18 December 2008. The news only reached the *fib* secretariat in January, and came as a shock as we were about to draft a short note in honor of his 80th birthday later that month. Instead we can only express our deepest sympathies to his wife Lillian, his daughter Fiona and son-in-law Simon.

Rüdiger Tewes

We thank the Institution of Structural Engineers and George Sommerville for their contributions to this text.

Congresses and symposia

The calendar lists *fib* congresses and symposia, co-sponsored events and, if space permits, events supported by *fib* or organised by one of its National Groups. It reflects the state of information available to the Secretariat at the time of printing; the information given may be subject to change.

Date and location	Event	Main organiser	Contact
22-24 June 2009 **London, UK**	***fib*** **Symposium:** **Concrete: 21st Century Superhero**	***fib*** **group UK**	**fiblondon09@emap.com** **www.fiblondon09.com**
13-15 July 2009 Sydney, Australia	9th International Symposium on Fiber Reinforcement Polymer Reinforcement for Concrete Structures (FRPRCS-9)	ICE Australia	frprcs9@iceaustralia.com www.iceaustralia.com/frprcs9
15-17 October 2009 Shanghai, China	2nd International Conference on Technology of Architecture and Structure (ICTAS 2009)	China Civil Engineering Society, China Academy of Engineering	cces.china@263.net
17-18 November 2009 Marseille, France	Designing and building with UHPFRC - State of the art and developments	Association Française de Génie Civil	www.afgc.asso.fr afgc@enpc.fr
3-5 May 2010 **Cavtat, Croatia**	**COPRA - Codes of Practice in Structural Engineering**	**Croatian group in IABSE and *fib***	**dubrovnik-2010@grad.hr** **www.iabse.org/dubrovnik2010**
29 May - 1 June 2010 **Washington D.C., USA** **Deadline for abstracts: 15 April 2009**	**Third *fib* Congress and Exhibition**	***fib*** **group USA** **PCI**	**Precast/Prestressed Concrete Institute** **info@fib2010washington.com** **www.fib2010washington.com**
20-23 June 2010 Copenhagen, Denmark **Deadline for abstracts: 30 June 2009**	8th *fib* International PhD Symposium in Civil Engineering	Technical University of Denmark - DTU Byg	Judith Selk Albsertsen, Symposium secretary fib_symposium_2010@byg.dtu.dk http://conferences.dtu.dk/conference Display.py?confId=21

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Correction

The secretariat regrets that *fib* Bulletin 47, *Environmental design of concrete structures - general principles*, was published with erroneous information on the copyright page regarding the name of the Task Group that authored the bulletin, as well as the number and name of the Commission. The text should read: "This report was drafted by Task Group 3.6, *Guidelines for environmental design*, in Commission 3, *Environmental aspects of design and construction*". A corrected version of this page can be downloaded from the *fib* website at www.fib-international.org/publications/fib/47