Commission 6 – Prefabrication

Chair:

Maas	FEBE (Belgian Precast Association)	Belgium

Deputy Chair:

Derkowski	Krakow Technical University	Poland

Secretary:

Ronchetti	ASSOBETON	Italy

Members:

Albert	Hochschule Bochum	Germany
Bernardi	Lafarge	France
Bronin	Patriot Engineering	Russia
Calavera	INTEMAC	Spain
Chastre Rodrigues	Universidade Nova de Lisboa	Portugal
Cholewicki	Building Research Institute (ITB)	Poland
Crisp	Crisp Consultants PTY Ltd	Australia
Da Guia Lucio	Universidade Nova de Lisboa	Portugal
De Chefdebien	LB7	France
Della Bella	Gruppo Centro Nord	Italy
Doniak	ABCIC - Associação Brasileira da	Brazil
Engström	Chalmers University of Technology	Sweden
Falger	BAM Advies & Engineering	Netherlands
Fernández Gómez	INTEMAC	Spain
Ferreira	UFSCAR Federal University of Sao Carlos	Brazil
Gasperi	Consulting Engineer	Italy
Ghosh	S.K. Ghosh Associates, Inc.	USA
Hughes	Westkon Precast Pty. Ltd	Australia
Jones	CDC Ltd	Ireland
Kanappan	Larsen & Toubro Ltd ECC Division	India
Karutz	ad-media GmbH	Germany
Klein-Holte	VBI Ontwikkeling BV	Netherlands
Korander		Finland
Krohn	PCI - Precast/Prestressed Concrete Institute	USA
Laliberte	BPDL Precast Concrete International	Canada
Lindström	AB Strängbetong	Sweden
Mary	Rector Lesage	France
Menegotto	Sapienza University of Rome	Italy
Murayama	Spancrete Corporation	Japan
Newby	Holmes Consulting Group	New Zealand
Ozden	OTS INSAAT Engineering & Design Co.	Turkey
Rajala	Finnmap Consulting Oy	Finland
Saha	Larsen & Toubro Ltd, ECC Division	India
Sasek	Mott MacDonald Praha s.r.o.	Czech Republic
Scalliet	CERIB	France
Sennour	The Consulting Engineers Gr., Inc.	USA
Seshappa	Thermomass	USA
Skjelle	Construction Products Association	Norway
Suikka	Confed. of Finnish Construction Industries	Finland
Tillmann	FDB	Germany
Tsoukantas	National. Technical University Athens	Greece

Vambersky	Corsmit Raadgevend Ingenieurs	Netherlands
van Acker		Belgium
van der Zee	Ergon	Belgium
Zhao	Tongji University	China

Corr. Members:

D'Arcy	The Consulting Engineers Group, Inc.	USA
El Debs	University of São Paulo at São Carlos	Brazil
Elliott		UK
Kourajian	Molin Concrete Products Company	USA
Markić	University of Mostar	Bosnia and Herzegovina

(*fib* members are listed in **bold**)

Recent meetings:

Perugia (March 2015), Melbourne (Sep 2015), Ireland (April 2016)

Recent publications:

fib Bulletin 74: ***Planning and design handbook on precast building structures*** (Manual – textbook prepared by former T6.12, published September 2014)

Terms of reference

Motivation and background (in brief)

Commission 6, *Prefabrication* (COM6) is the continuation of the commission on prefabrication under the former FIP organization, one of the founding organizations of the *fib*. As an *fib* commission, COM6 was formed and has operated under the leadership of past commission chairs Arnold van Acker (1998-2002), who was also the last commission chair of the FIP commission, Gunnar Rise (2003-2004) and Marco Menegotto (2005-2014).

Prefabrication plays an important role in the construction of concrete structures worldwide and is evolving continuously to cope with current society's habits and needs related to housing, commercial buildings and civil engineering works. In fact, industrialized construction may bring cost efficiency, good quality and environmentally friendly solutions, able to adapt to market demands.

Scope

The basic goal of COM6 is to enhance the progress of precast concrete, linked to the state-of-the-art. The general scope is to promote the understanding of design concepts, technology and use of precast concrete, not only by the specialists but also by a broader audience. The implied objectives are:

- to stimulate and coordinate R&D internationally;
- to transfer the output into planning, practical design and construction, by means of technical reports, state–of-the-art reports, guides to good practice, handbooks;
- to disseminate knowledge through seminars, courses, educational material;
- to contribute to recommendations, pre-normative documents and codes within standardization bodies.

Subjects dealt with include items directly related to precast concrete, such as systems, elements, connections, production, handling, assembling, demounting, etc., as well as indirectly related items such as structural analysis, materials technology, building physics, equipment, environmental issues, sustainable development, terminology. The areas considered in the scope of the technical work are all those of interest for structures in their application to precast concrete, namely:

- *Structural efficiency:* Structures that occupy less volume inside the building and can easily accommodate equipment are increasingly requested. Structural efficiency helps also to save material, weight and consequent savings in the whole resisting system, down to foundations.

- *Flexibility in use:* Buildings are frequently required to meet variable needs of users, achieved by creating large structure-free internal spaces, without restrictions for possible subdivisions. Also, the elements typology must be open to variations.
- *Adaptability:* Less demolition of entire buildings and more adaptation of older buildings to new requirements will be increasingly required. The design concept should facilitate such renovations and modifications, e.g. changing partitions and closures without demolishing the main structure.
- *Best use of materials:* Each construction material possesses specific properties and optimal applications. The trend is to use a combination of different materials suited for the particular function among the structural and the architectural components.
- *Speed of construction:* Construction sites disturb the surrounding space, by increasing noise, generating dust and disturbing traffic; their duration must be as short as possible. The economic advantages of reduced construction time are obvious.
- *Quality consciousness:* Structural safety, robustness and durability, quality of materials and execution as well as user-friendliness, comfort, aesthetics are considered. Also, the quality within production, starting from the work conditions, continuing with the working effectiveness, and up to the end results.
- *Sustainability:* Preserving the environment is of paramount importance on global scale, by a conscious life-cycle design. In addition to encouraging the reuse of structures for adaptability, further issues are the use of raw materials, reduction of emissions, recycling elements and/or materials, waste dumping, etc.

Description of workflow and timeline

COM6 work is performed within task groups, activated and disbanded as topics are defined and addressed. The relevant fields, possibly with the involvement of other groups, are:

Basic research:

- performance of elements, connections, assemblies, by experimental testing and analytical modelling
- overall structural behaviour, durability, robustness
- resistance to fire, fatigue and accidental actions, repair and retrofit

Application of new materials:

- high-performance concrete
- high-strength lightweight concrete
- self-compacting concrete
- fibre-reinforced concrete
- non-metallic reinforcements

Production technologies and products:

- connections
- optimization of processes
- hollow-core floors
- bridge components
- railway track systems
- cladding panels
- towers for wind power generation
- seismic construction
- affordable cost construction

Normative and pre-normative work:

- pre- and post-normative studies, aimed at supporting the development of codes and standards
- interaction with *fib* commissions and contribution to the *fib* Model Code for Concrete Structures 2010
- elaboration of recommendations and guides to good practice on production, handling, erection and maintenance of precast elements and structures

Dissemination of knowledge:

- publications
- organization of short courses
- seminars and workshops for professionals
- dedicated sessions at congresses and symposia

COM6 meets regularly twice a year, holding two or three day meetings that normally consist of individual TG meetings, a plenary session of the commission and a technical visit. Often, a seminar open to local professionals is held, too.

Each active task group (see below) has planned and is currently working on the publication of a bulletin. Among them, new editions of important documents, which are planned to be published in 2015:

- The "Recommendations on Precast Prestressed Hollow-Core floors", which updates the previous ones by FIP in 1988 and the *fib* "Special Considerations for Precast Prestressed HC Floors" (2000), which were the used as sole design documents available and formed the basis for codes' provisions.
- The "Precast concrete buildings in seismic areas – Practical aspects", that is a set of guidelines by means of concepts, some design rules, and mainly construction details that are helpful to consultants and construction companies involved in prefabrication. It will be a joint document with PCI.
- The "Precast insulated sandwich panels" that is a document that is able to draw together and consolidate the knowledge held within the precast industry along with the benefits that can be achieved with proper consideration of this system of precast insulated sandwich panels.

The *fib* Technical Council has approved the creation of a new task group, T6.5, *Precast Concrete Bridges*, which will collaborate with Commission 1.

COM6 is also working on establishing its own website to facilitate its internal exchanges and distribution of work.

Collaboration with other groups

Current collaborations within *fib*: Commission 1 (with TG 6.5), Task Group 1.3, Buildings, Commission 2 (with TG 6.10), Commission 7, Sustainability, (with TG 6.3).

Since 2008, COM6 has a close cooperation with PCI, which started with joint meetings to compare approaches to some issues of prefabrication. This led to joint seminars and joint publications on comparisons, then to actual collaborations on new topics, as for instance those within TG 6.1, 6.10, 6.11 and 6.3 (later on, 6.5). Joint reports are being proposed on that work, to be published by *fib* and PCI.

COM6 members have had long-standing collaboration with CEN, where COM6 documents were used as the basis for several product standards and Eurocodes' Parts. (EN 13369 General rules - EN 1168 Hollow core slabs, EN 15050 Bridge elements, sections of EN 1992-1-1, etc.)

Target audience

Anyone interested in dealing with prefabrication, such as producers, consultants, contractors, architects, academia, students, and institutions.

Expected outcome and delivery dates

The output of the work is a series of *fib* Bulletins; the next bulletins to be published, expected in 2015, are being finished by T6.1, T6.10, and T6.11.

Bulletins under preparation by the other task groups will have their target dates set within 2016 and 2017.

Other activities of this group

- seminars on precast structures, organized in connection with most commission meetings;
- short courses held or supported by the commission;
- dedicated sessions at *fib* congresses.

Task Group 6.1: Prestressed hollow core floors

Convener:

Maas	FEBE (Belgian Precast Association)	Belgium

Members:

Cholewicki	Building Research Institute (ITB)	Poland
Della Bella	Gruppo Centro Nord - Unitá Produtt.	Italy
Derkowski	Cracow Technical University	Poland
Elliott		United Kingdom
Ferreira	UFSCAR Federal University of Sao Carlos	Brazil
Lindström	AB Strängbetong	Sweden
Mary	Rector Lesage	France
Scalliet	CERIB	France
Suikka	Confed. of Finnish Construction Industries	Finland
Tsoukantas		Greece
van Acker		Belgium
van Paassen	VBI Ontwikkeling BV	Netherlands

Corr. Members:

Crisp	Crisp Consultants PTY Ltd	Australia

(*fib* members are listed in **bold**)

Recent meetings:

Perugia (March 2015), Melbourne (Sep 2015), Ireland (April 2016)

Terms of reference

Background and scope

For decades, prestressed hollowcore (HC) slabs have been amongst the most used and investigated precast elements. In 1988 the FIP Commission on Prefabrication published design recommendations for 'Precast prestressed hollow core floors'. In 1998 complementary guidelines for the design were published as FIP/*fib* guide to good practice Composite floor structures and in 2000 as *fib* Bulletin 6 (Guide to Good Practice) "Special design considerations for precast prestressed hollow core floors".

During the last decade, the prestressed hollowcore slab itself, the use of the HC slab, the functions of the HC floor and the knowledge on the performances of prestressed hollow core floors in various applications have evolved a great deal, which justifies a complete revision of the design recommendations.

The objective of T6.1 is to revise the design recommendations for precast pre-stressed hollow core floors according to today's state of the art.

New subjects will be added to the recommendations, based on practical needs of the stakeholders and experiences gained in several projects in which members of the task group were involved.

The areas covered by the work of TG 6.1 are:

- general aspects
- description of hollow core units and floor systems
- design of the cross-section
- design of hollow core floor
- building physics
- environmental issues
- hollow core in seismic regions
- design considerations in connection with manufacture
- design considerations regarding manufacture
- design considerations with regard to transport and erection

Description of workflow and timeline

Work started in mid-2011 and is expected to be completed in 2015

Collaboration with other groups

fib Task Group 6.2, *Quality control for precast concrete*

fib Task Group 6.10, *Precast concrete buildings in seismic areas - practical aspects*

fib Task Group 6.11, *Precast concrete sandwich panels*

PCI – Precast/Prestressed Concrete Institute (USA) – Hollowcore Committee

IPHA – International Prestressed hollowcore Association

BIBM – European Federation for Precast Concrete

Target audience

Building designers (architects, engineers), contractors (designers, contractors); HC producers (floor designers, production staff, machine suppliers); associations (HC related).

Expected outcome and delivery dates

Completion of the revised recommendations in 2015.

Other activities of this group

Presentations/lectures during seminars such as ICCX, IPHA technical seminar, by invitation

Task Group 6.2: Quality control for precast concrete

Conveners:

Fernández Gómez	INTEMAC	Spain
Frank	PCI Precast/Prestressed Concrete Institute	USA

Members:

Doniak	ABCIC - Associação Brasileira da	Brazil
Fernández-Ordóñez	The *fib*	Switzerland
Karutz	ad-media GmbH	Germany
Lopez-Agüi	IECA	Spain
Lopez-Vidal	ANDECE	Spain
Maas	FEBE (Belgian Precast Association)	Belgium
Ronchetti	ASSOBETON	Italy
Suikka	Confed. of Finnish Construction Industries	Finland

(*fib* members are listed in **bold**)

Recent meetings:

Ireland (April 2016)

Terms of reference

Background and scope

The goal of Task Group 6.2 (T6.2) is to prepare a technical report describing the steps, procedures and rules for the quality control of precast concrete, with respect to both production and product quality, to improve the quality of prefabricated construction.

The report produced will be intended to serve as a basic specification guide for plants and produced precast concrete elements, defining a program of quality control to monitor the production by measurement or by comparison to acceptable standards. The following topics will be included:

- plant quality assurance program;
- material and accessories;
- production;
- transport and erection;
- equipment;
- quality control operations;
- maintenance;
- statistical data analysis.

Description of workflow and timeline

T6.2 has planned its work over a three-year term. The intention is to have a final draft for discussion in 2015, and to produce the final document the following year.

Collaboration with other groups

Due to the topic, only collaboration within COM6 is foreseen.

PCI is collaborating very actively in the groups, with two members. A possible *fib*-PCI common publication will be studied.

Target audience

Precasters, academia, consultants, contractors, governmental institutions.

Expected outcome and delivery dates

Final draft at the end of 2014, and final document at the end of 2015.

Other activities of this group

Oral presentations at congresses and symposiums, mainly in which precasters are involved.

Task Group 6.3: Sustainability of structures with precast elements

Convener:

Fernández-Ordóñez	The *fib*	Switzerland

Members:

Bernardi	Lafarge	France
de la Fuente Antequera	Universidad Polytecnica de Catalunya	Spain
Crisp	Crisp Consultants PTY Ltd	Australia
Derkowski	Cracow Technical University	Poland
Doniak	ABCIC - Associação Brasileira da	Brazil
Frank	PCI Precast/Prestressed Concrete Inst	USA
Hajek	CVUT - Czech Techn. Univ. in Prague	Czech Republic
Lindström	AB Strängbetong	Sweden
Lorenz	SevGen Consulting	USA
Ozden	OTS INSAAT Engineering & Design Co.	Turkey
Rodriguez Garcia	FHECOR Ingenieros Consultores	Spain
Roik	Halfen GmbH & Co. KG	Germany
Sakai	Kagawa University	Japan

Corr. Members:

Aguado de Cea	Universitat Politecnica de Catalunya	Spain
Galvez Ruiz	Universidad Politecnica de Madrid	Spain
Gasperi	Consulting Engineer	Italy
Helene	PhD Engenharia e Consultoria	Brazil
Menegotto	Sapienza, University of Rome	Italy
Pons Valladares	Universitat Politecnica de Catalunya	Spain
Seshappa	Thermomass	USA

(*fib* members are listed in **bold**)

Recent meetings:

Perugia (March 2015), Melbourne (Sept 2015), Ireland (April 2016)

Terms of reference

Background and scope

Sustainability is considered a main aspect for the future of constructions, therefore for prefabrication, as well. COM6 and PCI have had a close cooperation since 2008 on issues of mutual interest, with the comparison of respective approaches and the development of common publications. PCI has produced various works dealing with sustainability of precast structures and is currently developing a large investigation program on this subject. *fib* has also developed a large amount of work on sustainability. Presently, the work regarding sustainability is being developed in COM7.

Description of workflow and timeline

The first activity of T6.3 will be the study of the most recent work developed on sustainability; in particular, Life Cycle Assessment regarding structures where precast concrete elements are used. The developments by PCI and *fib*, as well as by other organizations, will be shared.

The final objective will be the drafting of recommendations regarding the study and assessment of precast concrete elements and structures, with respect to sustainability. They will cover all aspects regarding this kind of structures, from planning, design, execution, use, maintenance and remedial activities, up to dismantling, reuse and recycling.

Collaboration with other groups

fib COM7, *Sustainability*

fib T7.2*, Application of environmental design to concrete structures*

PCI – Precast/Prestressed Concrete Institute

Target audience

Producers, consultants, contractors, architects, academia, students, institutions.

Expected outcome and delivery dates

fib bulletin (state-of-the-art-report) on the sustainability of precast concrete elements and structures.

Task Group 6.4: Precast concrete towers for wind power generators

Convener:

Arroyo	Calter Ingenieria	Spain

Members:

Almeida	VSL Sistemas	Portugal
Alvarez Cabal	INTEMAC	Spain
Batista	RES Group Engineering	United Kingdom
Brughuis	MECAL BV	Netherlands
Chastre Rodrigues	Universidade Nova de Lisboa	Portugal
de la Fuente	Universidad Polytecnica de Catalunya	Spain
Antequera		
Jones	CDC Ltd	Ireland
Kuchma	University of Illinois	USA
Tricklebank	Consultant	United Kingdom
van Keulen	Ingenieursstudio DCK	Netherlands

Corr. Members:

Becker	PCI - Precast/Prestressed Concrete Institute	USA
Grünberg	Universität Hannover	Germany
Haugerud	Dr.techn. Olav Olsen a.s.	Norway
Shehata	Universidade Federal Fluminense	Brazil

(*fib* members are listed in **bold**)

Recent meetings:

Perugia (March 2015)

Terms of reference

Background and scope

Wind energy production is a growing industry. The energy produced is renewable and environmentally cleaner than most production means.

Supports for the wind energy generators may be built with precast concrete elements, which can be a competitive solution, compared to other structural systems.

The evolution of technology for wind energy production shows a clear need for larger wind turbines and, consequently, taller towers. Experience also shows that precast solutions are even more competitive with higher towers.

Offshore wind farms have some advantages over onshore wind farms, which explain recent investments in the area. In this case, the durability of concrete in the marine environment, compared to steel gives greater advantages to precast concrete solutions.

The TG will produce a state-of-the-art report analyzing and discussing the main issues related to conception, design, detailing, construction and environmental aspects of precast structural solutions. The issues to be addressed are:

- types of concrete towers for wind energy
- equipment
- safety
- actions
- analysis
- connections and detailing
- construction
- environmental aspects
- recent developments.

Description of workflow and timeline

Work began in late 2012; completion is expected in 2015.

Collaboration with other groups

The TG has one member from PCI.

Target audience

Engineers in the precast industry, structural designers, researchers and students.

Expected outcome and delivery dates

The state-of-the-art report is expected by the end of 2015.

Other activities of this group

A seminar entitled “PrecastWind 2012 - Precast Towers for Wind Energy Generators” took place in the library of the Faculdade de Ciências e Tecnologia of the Universidade NOVA de Lisboa, 6th July 2012, in Lisbon, Portugal. The seminar had the institutional support of the Department of Civil Engineering of NOVA, the GPBE - Portuguese *fib* group, the ANIPB - Portuguese Association of Precasters and APREN - Portuguese Association of Renewable Energies, and the sponsorship of VSL Sistemas Portugal SA.

Task Group 6.5: Precast concrete bridges

Convener:

Corres Peiretti	FHECOR Ingenieros Consultores	Spain

Members:

Ariñez Fernández	Universidad Politécnica de Madrid	Spain
de Chefdebien	LB7	France
Fernández-Ordóñez	The *fib*	Switzerland
Garcia Gonzalez	Pacadar	Spain
Kata	Sumitomo Mitsui	Japan
Matute Rubio	IDEAM	Spain
Nickas	PCI – Precast/Prestressed Concrete Institute	USA
Petrangeli	Mario Petrangeli & Associati	Italy
Sim	Hanyang University	South Korea
Stucchi	EGT Engenharia	Brazil
Tadros	PCI – Precast/Prestressed Concrete Institute	USA
van der Zee	Ergon	Belgium
Waimberg	EGT Engenharia	Brazil

Corr. Members:

Kalny	Pontex s.r.o.	Czech Republic

(*fib* members are listed in **bold**)

Recent meetings:

Copenhagen (May 2015), Paris (Dec 2015)

Terms of reference

Background and scope

Precast concrete bridges are frequently used in almost every country. Nevertheless, while it would appear that similar practices are generally followed, the reality is that different places and cultures follow different traditions and conventions.

The group will connect the work of both the Precast Concrete Institute (PCI) and the *fib*. PCI has developed a large amount of information and publications regarding precast bridges.

The group will also connect the work of both Commission 1 “Concrete Structures” and Commission 6 “Prefabrication”. Both Commissions have been working on the subject of bridges, Commission 1 has an active task group regarding bridges and has recently published Bulletin 32 “Guidelines for the design of footbridges”. On the other hand, Commission 6 has published a Bulletin regarding precast bridges, Bulletin 23 “State of Art of Precast Concrete Bridges”.

The scope of the activity of the group will be the study of the most recent work that has been developed regarding bridges with precast elements and to provide design recommendations for owners, designers, contractors and precasters. The recommendations will cover all possible aspects, including planning, design, execution, use, maintenance and remedial activities and finally, demolition, reuse and recycling.

Description of workflow and timeline

Work began in May 2014 and the completion is expected in 2016

Collaboration with other groups

fib Commission 1, Concrete structures

PCI – Precast/Prestressed Concrete Institute

Target audience

Engineers of the precast industry, structural designers, researchers

Expected outcome and delivery dates

It is expected to deliver a design recommendations document in 2016

Task Group 6.6: Retrofitting of precast seismic structures

Convener:

Pampanin	University of Canterbury	New Zealand

Co-Convener:

Tsoukantas	National Technical University Athens	Greece

Members:

Toniolo	Politecnico di Milano	Italy
Gosh	President of S.K.Ghosh Associates Inc.	U.S.A.
Fernández-Ordóñez	fib	Switzerland
Psycharis	National Technical University of Athens (NTUA)	Greece
Topintzis	Consulting Engineer, MECS Ltd	Greece
Kremmyda	Laboratory associate. School of Pedagogical and Technological education of Athens	Greece
Dritsos	University of Patras,	Greece
Ozden	OTS INSAAT Engineering & Design Co.	Turkey
Lampropoulos	University of Brighton,	U.K.
Magliulo	University of Naples Federico II	Italy
Savoia		Italy

Corr. Members:

Menegotto	Sapienza Università di Roma	Italy
Crisp	Crisp Consultants PTY Ltd.	Australia

(*fib* members are listed in **bold**)

Recent meetings:

Perugia (March 2015)

Terms of reference

Scope and objective of technical work

Topics to be covered within the bulletin could be:

- lessons learned and damage observation or better damage mechanisms observed in previous earthquake and associated performance of precast buildings
- list of typical critical or less critical vulnerabilities of this class of buildings
- simplified assessment methodology based on different level of complexity, from quick screening (pre- or post-damage) without drawings to quick evaluation with some drawings, to more detailed analysis and ultimately numerical analysis (computer based)
- overarching retrofit strategies (e.g. drift control or local ductility, thus implying a combination of global vs. local intervention)
- scenario/flowcharts of possible techniques (presented only conceptually but with practical aspects) to fulfil/achieve the targeted retrofitted performance
- high-level (schematic) discussion on pros and cons of each retrofit solution including cost, invasiveness, downtime and other indirect but important parameters for the owner, tenants, insurer etc.

Description of workflow and timeline

T6.6 started its work at the end of 2014 and its document will be submitted for publication in 2017.

Collaboration with other groups

fib Task Group 6.1, Prestressed hollow core floors

fib Task Group 6.11, Guide to Good Practice: Precast Insulated Sandwich Panels

PCI - Precast/Prestressed Concrete Institute (USA)

Target audience

Consultants (civil engineers, architects), precast constructors, precast producers.

Expected outcome and delivery dates

Expected delivery in 2017.

Task Group 6.7: Precast concrete in tall buildings

Convener:

Jones	CDC Ltd	Ireland

Members

Chastre Rodrigues	Universidade Nova de Lisboa	Portugal
Cholewicki	Building Research Institute (ITB)	Poland
Cleland	Blue Ridge Design	USA
Corres Peiretti	FHECOR Ingenieros Consultores	Spain
Crisp	Crisp Consultants PTY Ltd	Australia
Doniak	ABCIC	Brazil
Falger	BAM Advies & Engineering	Netherlands
Ferreira	Fed. Univ. of Sao Carlos	Brazil
Gasperi	Consulting	Italy
Ghosh	S.K. Ghosh Associates, Inc.	USA
Hughes	Westkon Precast Pty. Ltd	Australia

Jones	CDC Ltd	Ireland
Pampanin	University of Canterbury	New Zealand
Rajala	Finnmap Consulting Oy	Finland
Stehle	Laing O'Rourke	United Kingdom
Topintzis	NTUA	Greece
Tsoukantas	National Technical University of Athens	Greece
van der Zee	Ergon Belgium	Belgium
van Keulen	Ingenieursstudio DCK	Netherlands
Zhao	Tongji University	China

Corr. Members

Da Guia Lucio	Universidade Nova de Lisboa	Portugal
de Chefdebien	LB7	France
Elliott	Precast Consultant	United Kingdom
Fernandez-Ordonez	Universidad Politecnica de Madrid	Spain
Krohn	PCI Precast/Prestressed Concrete Institute	USA
Menegotto	Sapienza Università di Roma	Italy
Saha	Larsen & Toubro Ltd	India
Seshappa	Thermomass	USA
Truby	Truby Stevenson Ltd	United Kingdom
Vambersky	Corsmit Raadgevend Ingenieurs	Netherlands

(*fib* members are listed in **bold**)

Recent meetings:

Perugia (March 2015), Ireland (April 2016)

Terms of reference

There has been considerable growth in the construction of tall buildings throughout the world over recent years. The variation in use of such buildings is remarkable, from the most highly specified hotels and apartments to social housing. Tall buildings use many materials to form their framework and shell, and generally mix those materials to deliver the building specified by the client. Precast concrete has been used by architects and engineers to good effect, from whole frameworks to façades, and elements mixed with structural steelwork and cast in place concrete. Task Group 6.7 (T6.7) will develop a state of the art bulletin that will show how precast concrete can be effectively integrated into tall buildings using modern materials and techniques, drawing on the experience and expertise that is currently available in the global concrete industry. Topics to be covered are:

Development of the use of precast concrete in tall buildings

- Building frameworks in precast concrete
- Structural precast concrete in mixed construction
- Building facades in precast concrete
- Lift shafts, cores and stairs
- Use of precast concrete in seismic zones
- Case studies

Workflow and Timeline:

A series of draft documents will be produced and tabled at task group meetings that will ideally be arranged to coincide with future COM6 meetings.

Collaboration with other groups:

There will be collaboration with PCI. It is hoped that a joint bulletin will be possible. The task group also hopes to draw on the expertise and findings of Task Group 1.3, Buildings, where there are overlapping topics.

Target Audience:

Professionals, contractors, investors, users, public bodies and producers generally involved in the design, construction and use of tall buildings

Expected Outcome and Delivery Date:

The work of the task group will be presented in a bulletin. Delivery of the bulletin is targeted for publishing within three years after initiation of the task group.

Task Group 6.8: Terminology for precast concrete

Convener:

Krohn	PCI - Precast/Prestressed Concrete Institute	USA

Members

Crisp	Crisp Consultants PTY Ltd.	Australia
Jones	CDC Ltd	Ireland
Karutz	CPI Concrete Plant International	Germany
Lindström	AB Strangbetong	Sweden
Menegotto	Sapienza Università di Roma	Italy

Corr. Members

Walraven	Delft University of Technology	Netherlands

(*fib* members are listed in **bold**)

Recent meetings:

Perugia (March 2015), Melbourne (Sept 2015)

Terms of reference

Motivation/background (in brief)

In *fib* bulletins, the terminology and language used was not uniformly understood by experts from various countries throughout the world.

Scope and objective of technical work

The objective is to create a technical report which lists the common terminology used in the prefabrication industry along with an explanation describing the terms. There may be multiple terms used with the same definition.

Description of workflow and timeline

The final product will be a technical report approved by COM6.

Collaboration with other groups

Collaboration with all other TGs under COM6 will be attempted

Target Audience

Readers and users of *fib* COM6 bulletins and all others related to prefabrication design and industry.

Expected outcome and delivery dates

It is expected to have the technical report available for purchase within a three-year time frame, approximately, after the initiation of the task group.

Task Group 6.11: Precast insulated sandwich panels

Conveners:

Hughes	Westkon Precast Pty. Ltd	Australia

Secretary:

Ronchetti	ASSOBETON	Italy

Members:

Chastre Rodrigues	Universidade Nova de Lisboa	Portugal
Gasperi	Consulting Engineer	Italy
Jones	CDC Ltd	Ireland
Karutz	ad-media GmbH	Germany
Krohn	PCI - Precast/Prestressed Concrete Institute	USA
Laliberte	BPDL Precast Concrete International	Canada
Lindström	AB Strängbetong	Sweden
Sennour	The Consulting Engineers Gr., Inc.	USA
Seshappa	Thermomass	USA
Suikka	Confed. of Finnish Construction Industries	Finland
Tsoukantas	National Technical University Athens	Greece

Corr. Members:

Saha	Larsen & Toubro Ltd, ECC Division	India
Tillmann	FDB - Fachvereinigung Deutscher Betonfertigteilbau e.V.	Germany
van Acker		Belgium

(*fib* members are listed in **bold**)

Recent meetings:

Perugia (March 2015), Melbourne (Sept 2015)

Terms of reference

Background and scope

While precast concrete sandwich panels are commonly used worldwide, much of the understanding is confined to individual manufacturers and/or engineers. This along with the growing need to build energy efficient structures has highlighted a need to produce a document that is able to draw together and consolidate the knowledge held within the precast industry along with the benefits that can be achieved with proper consideration of this system.

Precast concrete sandwich panels (or sandwich panels) consist of two layers or 'Wythes' of concrete separated by a continuous internal insulating material. The two layers are held together by connectors. The panels can be either structural or non-structural façade elements and typically, but not limited to, applications in apartments, hotels, schools, prisons, cold stores, industrial, commercial and residential projects.

The areas that are to be covered within this document include:

- different sandwich panel types, surface finishes, aesthetics;

- energy efficiency, thermal & acoustic performance;
- panel connectors;
- thermal bridging and dew point considerations (humidity);
- loadbearing and flexural design;
- shear wall considerations;
- connections;
- bowing considerations / deformations / shrinkage;
- fire resistance and behaviour under fire;
- durability;
- manufacture of sandwich panels, methods of casting;
- installation, panel erection and assembly;
- inspection, tolerances, damage and repairs.

Description of workflow and timeline

Work began in late 2009; completion is expected in 2016.

Collaboration with other groups

fib Task Group 6.1: Prestressed hollow core floors

fib Task Group 6.3: Sustainability of structures with precast elements

PCI – Precast/Prestressed Concrete Institute (USA) – Sandwich Panel Committee

Target audience

Building designers (including architects, structural and mechanical engineers), contractors, precast manufacturers, academia, authorities/government institutions and the general public (including home owners & developers).

Expected outcome and delivery dates

Completion of the Guide to Good Practice in 2016.

After publishing the group may be dismantled.