

Commission 5 Reinforcements

Chair:

Neff PTI - Post Tensioning Institute USA

Deputy Chair:

Krauser General Technologies, Inc. USA

Secretary:

Ramírez VSL International Switzerland

Members:

Almeida	Escola Politecnica da USP	Brazil
Bowsher	CARES	United Kingdom
Brand	DYWIDAG-Systems International	Germany
Caballero	BBR VT international Ltd.	Switzerland
Chandoga	Projstar PK, s.r.o.	Slovakia
Ciccione	Tensacciai S.R.L	Italy
Clark	Ramboll	United Kingdom
Creton	ATS/BN Acier	France
Elices	Universidad Politécnica de Madrid	Spain
Forsström	Sweco VBB AB	Sweden
Gálvez Ruiz	Universidad Politécnica de Madrid	Spain
Ganz	Ganz Consulting	Switzerland
Glaeser	DYWIDAG-Systems International	Germany
Grujic		Serbia
Gutsch	TU Braunschweig	Germany
Hagberg	Standard Norge	Norway
Hayek	CCL International Inc.	USA
Helland	Skanska Norge AS	Norway
Hosoi	Shinko Wire Company Ltd.	Japan
Kasuga	Sumitomo Mitsui Construction Co.Ltd.	Japan
Kido	Sumitomo (SEI) Steel Wire Corp.	Japan
Kuilboer	Consulting	Netherlands
Löffler	Stahlwerk Annahütte	Germany
Matthys	Ghent University	Belgium
Mellier	Freyssinet International	France
Mutsuyoshi	Saitama University	Japan
Neff	PTI - Post Tensioning Institute	USA
Nürnbergger	University of Stuttgart	Germany
Piekarski	BBR Polska Sp. z o. o.	Poland
Piron	Ministry of Equip. and Transport	Belgium
Poser	BBR VT international Ltd.	Switzerland
Poston	Pivots Engineers	USA
Prevedini	Protende SA	Brazil
Schaaf	TNO	Netherlands
Sruma	Czech Concrete Society CBS	Czech Republic
Theryo	Parsons Brinckerhoff	USA
Valentini	Siderurgica Latina Martin S.p.A.	Italy
Weiher	matrics engineering GmbH	Germany
Xu;	Tongji University	China

Corr. Members:

Bagg		Argentina
Katergarakis	Scaw Wire and Strand	South Africa
Della Vedova	Italferr SpA	Italy
Leivestad	Norconsult AS	Norway
Winkler	Nik Engineering	Switzerland

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

Recent meetings:

Lausanne (May 2015)

Terms of reference

Background and scope

fib Commission 5 (COM5) gathers a balanced mix of experts coming from various fields (academics, owners, suppliers, government agencies and testing laboratories) who are volunteering their work into several Task Groups aiming to provide knowledge and information to students and the professional workforce for the best use of concrete.

The scope of COM5 is to promote the technology for reinforcing and prestressing materials and systems and to improve their quality. This includes aspects from design, production, testing, up to the installation and final use of these materials and systems. The scope also includes maintaining and improving dialogue between producers, specifiers, and users of these materials and systems.

Finally, COM5 encourages new research and developments within its scope.

Areas of interest:

- reinforcing and prestressing steels;
- reinforcing and prestressing systems;
- non-metallic reinforcement, tendons, and systems;
- quality and protection systems for materials and systems;
- testing of materials and systems;
- stay cable systems;
- ground anchor systems;
- execution/installation of the above mentioned materials and systems (in co-operation with other *fib* Commissions).

Description of workflow and timeline

COM5 is currently comprised of nine task groups that operate in an autonomous way.

- Task Group 5.1 - FRP (Fibre Reinforced Polymer)
- Task Group 5.2 - Reinforcing steels and systems
- Task Group 5.3 - Manual for prestressing materials and systems
- Task Group 5.4 - Recommendations for Ground anchor systems
- Task Group 5.5 - Cables for cable-supported bridges
- Task Group 5.6 - Behaviour under cryogenic conditions
- Task Group 5.7 - Dismantlement and re-use of reinforced and prestressed concrete structures
- Task Group 5.8 - External tendons for bridges
- Task Group 5.9 - Plastic ducts

COM5 has a plenary meeting once per year, at which time the Task Groups are also able to meet.

Collaboration with other groups

Liaison with ACI 440 Fiber-Reinforced Polymer Reinforcement

Liaison with International Institute for FRP in Construction (IIFC)

Eurocode CEN technical commissions

COST Action TU1207

Japan Geotechnical Society

PTI (Post Tensioning Institute)

JPCI (Japan Prestressed Concrete Institute)

fib Commission 1, *Concrete structures*

fib Commission 2, *Analysis and design*

fib Commission 6, *Prefabrication*

fib Commission 7, *Sustainability*

fib Commission 8, *Durability*

fib Commission 9, *Dissemination of knowledge*

Liaison with national code/design commissions through COM5 members.

Target audience

Producers, users and specifiers of reinforcing and prestressing materials and systems

Expected outcome and delivery dates

T5.2 is expected to publish a guide in late 2015.

T5.4 has a goal to obtain a draft of a new document by in 2017.

T5.5 is expected to publish a new bulletin in 2017.

T5.6 is expected to publish a new bulletin in 2016.

T5.7 may write an article dealing with dismantlement and re-use of reinforced and prestressed structures, to be published in *fib*'s *Structural Concrete* journal.

T5.8 is expected to complete a technical report on external tendons for bridges in the first half of 2015.

T5.9 is finalizing an *fib* recommendation on plastic ducts, aiming to replace the successful *fib* Bulletin 7, to be published towards the end of 2014/early 2015.

Task Group 5.1: FRP (Fibre Reinforced Polymer) reinforcement for concrete structures

Convener:

Matthys Ghent University Belgium

Secretary:

Guadagnini University of Sheffield United Kingdom

Members:

Balazs	Technical University Budapest	Hungary
Barris	University of Girona	Spain
Berset	Sika	Switzerland
Bilotta	Universita di Napoli Federico II	Italy
Borosnyoi	Technical University Budapest	Hungary
Bournas	University of Nottingham	United Kingdom
Buchin	Freyssinet	France
Carvelli	Politecnico di Milano	Italy
Ceroni	University of Sannio	Italy
Cholostiakow	The university of Sheffield	United Kingdom
Czaderski	EMPA	Switzerland
D'Antino	University of Patras	Greece
de Barros	University of Minho	Portugal
Di Benedetti	University of Sheffield	United Kingdom
Donchev	Kingston University	United Kingdom
Ferrier	Université Lyon 1	France
Gallego	EMPA	Switzerland
Garcia Lopez	University of Sheffield	United Kingdom
Gribniak	Vilnius Gediminas Technical University	Lithuania
Haffke	TU Kaiserslautern	Germany
Kisicek	University of Zagreb	Croatia
Kotynia	University of Lodz	Poland
Kriekemans	Fortius	Belgium
Mias	University of Girona	Spain
Monti	Universita La Sapienza di Roma	Italy
Nigro	Universita di Napoli Federico II	Italy
Nistico	Universita La Sapienza di Roma	Italy
Oller	TU Catalonia	Spain
Pahn	TU Kaiserslautern	Germany
Pecce	University of Sannio	Italy
Proia	Ghent University	Belgium
Prota	Universita di Napoli Federico II	Italy
Raicic	University of Bath	United Kingdom
Rousakis	Democritus University of Thrace	Greece
Scharfenberg	FIREP	Germany
Schmitt	TU Kaiserslautern	Germany
Sena-Cruz	University of Minho	Portugal
Serbescu	Amey Consulting / Univ of Sheffield	United Kingdom
Sólyom	Budapest University of Technology and Economics	Hungary
Tamuzs	Institute of Polymer Mechanics	Latvia
Taranu	Technical University of Iasi	Romania
Thermou	Aristotle University of Thessaloniki	Greece
Thorhallsson	Reykjavik University	Iceland
Torres	University of Girona	Spain
Triantafillou	University of Patras	Greece
Veljković	Politecnico di Milano	Italy

Verbaten	ABT bv	Netherlands
Weber	Schöck	Germany
Zilch	TU Munchen	Germany

Corr. Members:

Borchert	ILF Consulting Engineers	Germany
Burgoyne	University of Cambridge	United Kingdom
Cerny	Klokner Institute	Czech Republic
Chen	Edinburgh University	United Kingdom
Curbach	TU Dresden	Germany
De Lorenzis	University of Salento	Italy
Denton	Parsons Brinckerhoff	United Kingdom
Esposito	ATP	Italy
Finckh	TU Munchen	Germany
Fullsack-Koditz	Halfen	Germany
Gremel	Hughes Brothers	USA
Hamelin	University of Lyon	France
Harik	University of Kentucky	USA
Hegger	RWTH Aachen	Germany
Hordijk	Hageman / TU Delft	Netherlands
Ibell	University of Bath	United Kingdom
Jütte	Schöck	Germany
Juvandes	University of Porto	Portugal
Karantzikis	Fyfe Europe	Greece
Koch	Hughes Brothers	USA
Kolyvas	Fyfe Europe S.A.	Greece
Kurth	RWTH Aachen	Germany
Manfredi	Universita di Napoli Frederico II	Italy
Matthews	BRE	United Kingdom
Meier	EMPA	Switzerland
Mellier	Freyssinet	France
Nanni	University of Miami	USA
Niedermeier	LKI/MPA BAU / TU Munchen	Germany
Ospina	ABAM Engineers	USA
Palmieri	Superior Products Europe	Belgium
Pantazopoulou	University of Thrace	Greece
Pilakoutas	University of Sheffield	United Kingdom
Pisani	Politecnico di Milano	Italy
Rizkalla	North Carolina State University	USA
Sas	NORUT / TU Luleå	Sweden
Schürch	FIREP	Switzerland
Shave	Parsons Brinckerhoff	United Kingdom
Shield	University of Minnesota	USA
Smith	Southern Cross University	Australia
Tadros	Speco Engineering / ISIS	Canada
Taerwe	Ghent University	Belgium
Taljsten	Sto Scandinavia /TU Luleå	Sweden
Teng	The Hong Kong Polytechnic University	China
Thorenfeldt	SINTEF	Norway
Ueda	Hokkaido University	Japan
Vago	SIREG	Italy
Vasseur	ECC	Belgium
Vervuurt	TNO	Netherlands
Winistöfer	Carbo Link	Switzerland
Zehetmaier	Bilfinger Berger	Germany

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

Recent meetings:

Dübendorf (June 2015); Barcelona (Oct 2015); Lodz, Poland (April 2016)

Terms of reference

Background and scope

fib Task Group 5.1 (T5.1) comprises over 100 members. These experts represent most European universities, research institutes and industrial companies working in the field of advanced composite reinforcement for concrete structures, as well as members in North America and Asia, for example.

The main objectives of T5.1 are:

1. The elaboration of design guidelines in accordance with the design format of the *fib* Model Code for Concrete Structures 2010 ("*fib* MC2010") and Eurocode 2.
2. Link with other initiatives regarding material testing and characterization & development of standard test methods.
3. Participation in the international forum in the field of advanced composite reinforcement, stimulating the use of FRP for concrete structures.
4. Guidance on practical execution of concrete structures reinforced/prestressed/strengthened by FRP.

The work is organized in two working parties: 'Internal FRP reinforcement' (chaired by M. Guadagnini and L. Torres) and 'strengthening by FRP' (chaired by T. Triantafillou and S. Matthys).

Description of workflow and timeline

The work realized by T5.1 will be published as *fib* bulletins. Meetings are held one or twice a year.

The following activities are ongoing:

1. Bulletin on externally bonded reinforcement: A bulletin (technical report) is under preparation, aiming to update/improve/refine *fib* Bulletin 14. It covers behavioural aspects more broadly, and NSM (near surface mounted) reinforcement has been added. It will also update the design equations based on the current state-of-the-art. The current work is planned for publication in 2015.
2. Bulletin on FRP reinforcement: Following the publication of Bulletin 40, preparations are underway for the publication of a complementary bulletin. While Bulletin 40 was written as the state-of-the-art, the new bulletin will be more similar in style to the *fib* MC2010. Work is ongoing and will continue for at least another three years.
3. Round Robin Testing Initiative: An international RRT was initiated in 2008 by the EN-CORE network together with T5.1 (previously known as TG9.3). It comprises tensile testing of FRP (bars & strips) and FRP-concrete bond testing (EBR & NSM), eight FRP suppliers and ten laboratories. Testing reports are under review and an analysis of the results is ongoing. Results of the RRT are disseminated through scientific publications. The work has been disseminated in a number of conference papers and will be finally disseminated by means of two joint journal papers (submission 2015).
4. Further to the work of T5.1 (previously known as T9.3) in introducing FRP reinforcement in the *fib* MC2010, this work will also be extended towards Eurocode CEN technical commissions.
5. A training school on 'FRP reinforcement in construction' will take place in January 2015.
6. Bulletin on design examples: following the publication of the afore-mentioned bulletins, a bulletin will be started with a comprehensive set of design examples for engineering practitioners. This work is intended to start at the end of 2014.
7. A joint ACI440/*fib*T5.1 workshop is under due consideration to take place in 2016.

Collaboration with other groups

fib COM3, Existing concrete structures

fib Task Group 8.1, Model technical specifications for repairs and interventions

fib COM9, Dissemination of knowledge

Liaison with ACI 440 Fiber-Reinforced Polymer Reinforcement

Liaison with International Institute for FRP in Construction (IIFC)

Eurocode CEN technical commissions

COST action TU1207

Target audience

Concrete construction sector, both in terms of new structures and the repair sector. All stakeholders in the field of advanced composite reinforcement for concrete structures (contractors, material suppliers, engineering and architectural offices, building owners, governments).

Expected outcome and delivery dates

See section 'description of workflow and timeline'.

Other activities of this group

In the framework of EU funded networks strongly affiliated to the work of T5.1, workshops, courses, etc., are taking place.

- COST action TU1207 'Next generation design guidelines for composites in construction', 2013-2017
- ENDURE Marie Curie network 'European Network for Durable Reinforcement and Rehabilitation Solutions', 2013-2017

Task Group 5.2: Reinforcing steels and systems

Convener:

Bowsher CARES United Kingdom

Members:

Bastien	Université Laval	Canada
Breedijk		Netherlands
Creton	ATS/BN Acier	France
Dyken	DYKEN AS	Norway
Elices	Universidad Politécnica de Madrid	Spain
Ganz	Ganz Consulting	Switzerland
Guitonneau	SAM	France
Hagberg	Standard Norge	Norway
Hollebecq	AFCAB	France
Kenel	Hochschule Rapperswil	Switzerland
Krauser	General Technologies, Inc.	USA
Lu	Tongji University	China
Madatjan	Open Joint Stock Company	Russia
Mccabe	Nat. Inst. of Standards & Technologies	USA
Nürnbergger	University of Stuttgart	Germany
Piron	Ministry of Equip. and Transport	Belgium
Pompeu Santos		Portugal
Turner	M. D. Turner Consulting Pty. Ltd.	Australia

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

Terms of reference

Background and scope

fib Task Group 5.2 (T5.2) will consider all aspects related to reinforcing steels and systems from design to manufacturing, testing and final installation, use and maintenance. It will initially address several topics considered high priority. T5.2 will create sub-groups to work on particular subjects.

Areas of interest:

- review of the reinforcing steel grades available on the market (strength, ductility, bond, fatigue, durability properties) and relevant concrete structure design codes;
- manual for reinforcing materials and systems;
- technical report on fabrication of reinforcement;
- state of the knowledge on the bond properties of reinforcing steels;
- state of the knowledge on the fatigue resistance properties of reinforcing steels.

Task Group 5.3: Manual for prestressing materials and systems

Conveners:

Bastien	Université Laval	Canada
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Members:

Boitel	Freyssinet	France
Bringer	Freyssinet	France
Neff	PTI - Post Tensioning Institute	USA
Poston	Whitlock Dalrymple Poston & Assoc.	USA
Ramírez	VSL International	Switzerland
West	University of Waterloo	Canada

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

Terms of reference

Task Group 5.3 is preparing a compact manual for prestressing materials and systems. It may contain, but is not limited to, items such as specifications, recommendations for prestressing tendons for post-tensioning, analysis and design of post-tensioned structures, and possibly helpful suggestions to overcome specific problems in installation and use. However, the document is not intended to be a textbook on basic principles and theory of prestressed concrete. Where appropriate, the user will be referred to available textbooks. Because of the rapidly changing technology it might become necessary to review and up-date this manual from time to time (every four to eight years)

Task Group 5.4: Recommendations for ground anchor systems

Conveners:

Kido	Sumitomo (SEI) Steel Wire Corp.	Japan
Weiher	matrix engineering GmbH	Germany

Secretary:

Ripoll	Ripoll Consulting de Ingenieria S.L.	Spain
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Members:

Bastien	Université Laval	Canada
Bruce	Geosystems L. P.	USA
Ericson	Sweco VBB AB	Sweden
Glassl	DYWIDAG-Systems Int.	Germany

Gaucherand	Freyssinet	France
Löffler	Stahlwerk Annahütte	Germany
Nürnbergger	Univ. of Stuttgart	Germany
Schulz	matrics engineering GmbH	Germany
Sinclair	Structural Systems	Australia

Corr. Members:

Aschenbroich	Con-Tech Systems Ltd	Canada
Barley	SBMA Ltd	UK
Cartney	H.M. Nuclear Installations Insp.	UK
Chabert	A.C. Consulting	France
Mothersille	Geoserve Global Ltd.	UK
Neff	Post Tensioning Institute	USA
Yamada	Nittoc Construction Co. Ltd	Japan

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

Terms of reference

Background and scope

The overall motivation of Task Group 5.4 (T5.4) is to establish a modern recommendation for the qualification of ground anchor systems.

The main objective of T5.4 is to prepare a bulletin entitled “Recommendation for ground anchor systems” based on and updating earlier documents such as the “Recommendations for the design and construction of ground anchors”, 1996. The recommendations will include significant content for qualification of ground anchor systems covering prestressed permanent and temporary anchors.

Description of workflow and timeline

The goal is to obtain a complete draft of the new document at the end of the year 2015.

Collaboration with other groups

Japan Geotechnical Society

Target audience

Governmental authorities/institutions, system supplier, producer, contractor, academia, consultants

Expected outcome and delivery dates

Publishing the bulletin: 2015

Task Group 5.5: Cables for cable-supported bridges

Convener:

Mutsuyoshi	Saitama University	Japan
Poser	Tectus Group	Switzerland

Secretary:

Brand	DYWIDAG-Systems International GmbH	Germany
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Members:

Almeida	Escola Politecnica da USP	Brazil
Annan	VSL Switzerland AG	Switzerland
Bastien	Université Laval	Canada

Caballero	BBR VT international Ltd.	Switzerland
Chandoga	Projstar PK, s.r.o.	Slovakia
Cicccone	Tensacciai S.R.L	Italy
Fischer	Technical University of Denmark	Denmark
Georgakis	Technical University of Denmark	Denmark
Glaeser	DYWIDAG-Systems Int. GmbH	Germany
Gutsch	TU Braunschweig	Germany
Hosoi	Shinko Wire Company Ltd.	Japan
Kasuga	Sumitomo Mitsui Construction Co.Ltd.	Japan
Kido	Sumitomo (SEI) Steel Wire Corp.	Japan
Kuilboer	Consulting	Netherlands
Meiss	Hochschule für Technik Stuttgart	Germany
Mellier	Freyssinet International & Cie	France
Neff	Post Tensioning Institute	USA
Ohashi	Central Nippon Expressway Company Ltd	Japan
Piekarski	BBR Polska Sp. z o. o.	Poland
Tejera	Tycsa PSC Spain	Spain
Theryo	Parsons Brinckerhoff	USA
Weiher	matrics engineering GmbH	Germany
Wild	TU München	Germany
Winkler	Atkins Danmark A/S	Denmark

Corr. Members:

Curran	Ramboll	United Kingdom
Goodyear	T.Y. Lin International	USA
Soule	International Bridge Technologies, Inc	USA

(fib members are listed in bold)

Recent meetings:

Lausanne (May 2015)

Terms of reference

Background and scope

fib Bulletin 30, "Acceptance of stay cable systems using prestressing steels", was published in 2005. Since then, extradosed bridges, a bridge typology that is placed between cable-stayed bridges and ordinary girder bridges, became more and more popular. While extradosed bridges were already known at the time of publication of Bulletin 30, the knowledge was not enough to include this typology into the document.

Additionally, after more than seven years, there is a general request from system suppliers, designers and authorities to update the current document so new stay cable system/solutions, applications, acquired knowledge, installation methods, etc. are discussed and included in a new document version.

The goal of Task Group 5.5 (T5.5) is to update the current recommendation document so extradosed bridges are fully included (e.g. loading over SLS design, loading over ULS design, design & detailing, construction, initial type testing, etc.).

Description of workflow and timeline

T5.5 consists of the following subgroups:

- 1) Design and detailing
- 2) Functional requirements for stay cable
- 3) Material: properties, requirements and testing
- 4) Testing stayed cable systems
- 5) Installation

6) Inspection and monitoring

Collaboration with other groups

fib Task Group 1.1, *Bridges*

fib Task Group 5.8, *External tendons for bridges*

PTI (Post Tensioning Institute in USA), JPCI (Japan Prestressed Concrete Institute)

Target audience

Academia, consultants, authorities/governmental institutions, producers (prestressing tendons, stay cable system), contractors

Expected outcome and delivery dates

A new bulletin is expected to be published in 2017.

Task Group 5.6: Behaviour under cryogenic conditions

Conveners:

Caballero	BBR VT international Ltd.	Switzerland
Gutsch	TU Braunschweig	Germany

Members:

Bastien	Université Laval	Canada
Elices	Universidad Politécnica de Madrid	Spain
Glaeser	DYWIDAG-Systems Int. GmbH	Germany
Gnägi	VSL Switzerland Ltd.	Switzerland
Kaminski	Freyssinet International & Cie	Hong Kong (China)
Kido	Sumitomo (SEI) Steel Wire Corp.	Japan
Krauser	General Technologies, Inc.	USA
Mellier	Freyssinet International & Cie	France
Nishizaki	Osaka Gas Company	Japan
Poser	Tectus Group	Switzerland
Rötzer	DYWIDAG-Systems International GmbH	Germany
Tejera	Tycsa PSC Spain	Spain
Traute	DYWIDAG-Systems International GmbH	Germany
Vandewalle	Katholieke Universiteit Leuven	Belgium
Wild	TU München	Germany

Corr. Members:

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

Recent meetings:

Lausanne (May 2015)

Terms of reference

Background and scope

The growing worldwide use of liquefied natural gas (LNG) has seen the development of significant LNG storage tank facilities for LNG exporters and importers. These massive storage tanks are essential for receiving and safe storage of the liquid gas. Despite this, the last FIP publication on

prestressed concrete under cryogenic conditions dates back to 1988 (draft state-of-the-art report – Cryogenic behavior of materials for prestressed concrete).

The main goal of *fib* Task Group 5.6 (T5.6) is the development of a new *fib* recommendation document where key aspects in concrete prestressed LNG tanks such as design recommendations, execution, system and material testing, control/monitoring, etc., are covered.

Description of workflow and timeline

T5.6 consists of the following subgroups:

WG.1: Cryogenic structures and load

WG.2: Material behaviour at low temperatures and testing at cryogenic conditions

WG.3: Construction and inspection and monitoring

Collaboration with other groups

fib Task Group 1.1, *Bridges*

fib Task Group 5.2, Reinforcing Steels and Systems

Target audience

Academia, consultants, designers, authorities/governmental institutions, PT system suppliers, contractors

Expected outcome and delivery dates

A new bulletin is expected to be published in 2015.

Task Group 5.7: An owner's guide to demolition of concrete structures

Convener:

Forsström	Sweco Civil AB	Sweden
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Members:

Jansson	ASK3 Engineering	Sweden
Theryo	Parsons Brinckerhoff	USA
Dawczynski	Silesian University of Technology	Poland

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

Terms of reference

There is general agreement that the 1982 FIP report, "Demolition of reinforced and prestressed concrete structures" should be reviewed and updated. The convener is of the opinion that the most important issues to be addressed are relevant principally to owners of buildings and not a presentation of various demolition techniques.

Task Group 5.8: External tendons for bridges

Convener:

Theryo Parsons Brinckerhoff USA

Secretary:

Weiher matrices engineering GmbH Germany

Members:

Chandoga	Projstar PK, s.r.o.	Slovakia
Ganz	Ganz Consulting	Switzerland
Gläser	DYWIDAG-Systems Int.	Germany
Kasuga	Sumitomo Mitsui Construction Co.Ltd.	Japan
Krauser	General Technologies, Inc.	USA
Kuilboer	Consulting	Netherlands
Piekarski	BBR Polska Sp. z o. o.	Poland
Ramírez	VSL International	Switzerland
Xu	Tongji University	China

Corr. Members:

Bastien	Université Laval	Canada
Boitel	Freyssinet	France
Kido	Sumitomo (SEI) Steel Wire Corp.	Japan
Matt	Peter Matt Engineering Consulting	Switzerland
Turmo	Universitat Politècnica de Catalunya	Spain
Zhu	Liuzhou OVM Machinery Co. Ltd.	China

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

Recent meetings:

Lausanne (May 2015)

Terms of reference

Background and scope

As a result of durability issues with bonded internal tendons, external tendons in bridge construction have become more popular in several countries. External tendons are now widely used throughout the world. While many of the technological aspects of external tendons look similar to internal bonded tendons, there are significant differences between the two, e.g. in terms of corrosion protection, tendon deviation blocks, tendon curvature and lay out, tendon replaceability, tendon force transfer to the structure, and ultimate strength. These differences merit the amendment of existing specifications, or the preparation of new specifications for external tendon design, testing, installation, duct durability, corrosion protection, maintenance and eventual replacement.

The goal of Task Group 5.8 (T5.8) is to prepare a technical report on the applications of external tendons in bridges from different countries and focusing on system related topics with minor implementation of design aspects of the structure using external tendons.

The document will cover the following topics:

1. Introduction
2. Primary components of external tendons
3. Corrosion protection
4. Design approach
5. Fabrication and installation
6. Replacement of external tendons

7. Testing
8. Quality control, inspection and monitoring of external tendons
9. Application in bridge construction and repair
10. Future research
11. References

Description of workflow and timeline

The first meeting was conducted in Shizuoka, Japan in 2007. T5.8 holds an annual meeting in conjunction with the COM5 meeting. The most recent meeting was conducted in Lausanne in May 2015. The final draft was discussed at the May 2015 meeting; the plan for final product for review is May 2016 2015.

Collaboration with other groups

One member who is handling the design approach section is also a member of *fib* Commission 1, Concrete structures. No official collaboration with other *fib* commissions.

Target audience

Academia, consultants, authorities/governmental institutions, post-tensioning systems suppliers, and contractors

Expected outcome and delivery dates

Technical report, expected for review in May 2016.