

Expected outcome and delivery dates

State-of-the-art report "Safety and performance concepts; Reliability assessment of concrete structures"

Other activities

IABMAS2014: Bridge performance assessment and prediction using monitoring (mini symposium)

Task Group 2.9: Fastenings to structural concrete and masonry

Convener:

Eligehausen IWB, Universität Stuttgart Germany

Members:

Akiyama	Tokyo Soil Research CO., LTD	Japan
Asmus	IEA GmbH & Co. KG	Germany
Bergmeister	Universität für Bodenkultur	Austria
Block	Technische Universität Dortmund	Germany
Bucher	fischerwerke GmbH & Co. KG	Germany
Buhler	Adolf Würth GmbH & Co KG	Germany
Cook	University of Florida	USA
Elfgren	Luleå University of Technology	Sweden
Genesio	IEA GmbH & Co. KG	Germany
Grosser	Hilti AG	Liechtenstein
Guillet	Centre Scientifique et Technique du Batiment	France
Hofmann	IWB, Universität Stuttgart	Germany
Lange	Deutsches Institut für Bautechnik	Germany
Li	Dr. Li Anchor Profi GmbH	Germany
Lotze	MPA Uni Stuttgart, Otto-Graf-Institut	Germany
Mallee	Consultant	Germany
Matsuzaki	Science University of Tokyo	Japan
Mattis	CEL Consulting	USA
Muciaccia	Politecnico di Milano	Italy
Nakano	University of Tokyo	Japan
Randi	Carinthia Univ. of Applied Sciences	Austria
Rutz	MKT Metall-Kunststoff-Technik GmbH	Germany
Schätzle	fischerwerke GmbH & Co. KG	Germany
Sharma	IWB, Universität Stuttgart	Germany
Silva	Hilti Inc.	USA
Sippel	Verein zur Förderung und Entwicklung der Befestigungs-, Bewehrungs- und Fassadentechnik	Germany
Stochlia	ICC Evaluation Service	USA
Stork	Private	Germany
Vintzileou	National Technical University Athens	Greece
Wall	Hilti AG	Liechtenstein
Yamamoto	GAL Building Consultant Office	Japan

Corresponding Members:

Bergkivist	Vattenfall	Sweden
Davis	Milwaukee School of Engineering	USA
Fletcher	LiteSteel Technologies	Australia
Fuchs	IWB, Universität Stuttgart	Germany
Gerber	IAPMO	USA
Häusler	Halfen GmbH	Germany
Hoehler	National Institute of Standards and Technology	USA
Hordijk	Adviesbureau Hageman	Netherlands
Hosokawa	The Tokyo University	Japan
Julier	Jordahl GmbH	Germany

Kinnunen	Peikko Group	Finland
Kolden	Element Materials Technology	USA
Kuhn	Adolf Würth GmbH & Co KG	Germany
Kummerow	Deutsches Institut für Bautechnik	Germany
Mahrenholtz, C.	Jordahl GmbH	Germany
Mahrenholtz, P.	Stanley Black & Decker Deutschland GmbH	Germany
Michler	Technische Universität Dresden	Germany
Olsen	Powers Fasteners Inc.	USA
Pimienta	Centre Scientifique et Technique du Batiment	France
Pinoteau	Centre Scientifique et Technique du Batiment	France
Rieder	Brenner Base Tunnel BBT SE	Austria
Roistand	Spit	France
Silverman	ICC-Evaluation Service	USA
Spieth	Private	Germany
Strater	Chemofast Anchoring	Germany
Takahashi	Hilti Japan	Japan
Thiele	Technische Universität Kaiserslautern	Germany
Turley	Simpson Strong Tie Company, Inc.	USA
Wendt	Simpson Strong Tie Company, Inc.	Germany
Wiewel	Consultant	USA
Zhao	University of Wisconsin-Milwaukee	USA
Ziegler	Powers Fasteners Inc.	USA

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

Terms of reference

Motivation/background (in brief)

Modern fastening technique is employed extensively for the transfer of concentrated loads into concrete and masonry structures. Cast-in-place anchors, placed in the formwork before casting of the concrete, as well as post-installed anchors and reinforcing bars, which are installed in hardened structural concrete or masonry, are equally common. Loads are transferred into the concrete or masonry by mechanical interlock, friction, bond or a combination of these mechanisms. However, independent of the load-transfer mechanism, all anchorages rely on the tensile strength of the concrete or masonry, a fact which must be taken into account in both assessment and design. Despite the widespread use of cast-in-place as well as post-installed anchors and reinforcing bars in construction, the overall level of understanding in the engineering community regarding their behaviour remains quite limited.

Scope and objective of technical work

In order to improve the general state of knowledge in this field, Task Group 2.9 *Fastenings to Structural Concrete and Masonry* (the former Special Activity Group 4) was formed.

The aim of T2.9 is to collect and discuss the latest research results in the field of fastening technology, to identify new areas of research and to synthesize the research results in harmonized provisions for the design of fastenings.

Description of workflow and timeline

T2.9 meets annually to discuss the latest research results as well as to present the activities of the working parties. The working parties have usually additional meetings once or twice a year.

Collaboration with other groups

fib Task Group 2.5 Bond and material models

ACI Commissions 318, 349 and 355

CEN, TC250/SC2/WG 2 "Design of fastenings in concrete"

EOTA, Working Group "Anchors"

Target audience

Researchers, consultants, approval bodies, manufacturers, designers

Expected outcome and delivery dates

Continuous revision of the *fib* Bulletin 58 "Design of anchorages in concrete" with regular output every two to three years based on the work of the working parties. Single topics will be treated in specific *fib* documents. A new general "Design Guide" will be issued in approximately five to six years.

Working Party 2.9.1: Review of current *fib* model with a view to Model Code 2010 and model for anchor reinforcement

Convener:

Hofmann	IWB, Universität Stuttgart	Germany
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Members:

Asmus	IEA GmbH & Co. KG	Germany
Elfgren	Luleå University of Technology	Sweden
Eligehausen	IWB, Universität Stuttgart	Germany
Genesio	IEA GmbH & Co. KG	Germany
Silva	Hilti Inc.	USA
Sippel	European Engineered Construction Systems Association	Germany
Zhao	University of Wisconsin-Milwaukee	USA

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

Revision of the design model for anchorage reinforcement in respect to bond provisions of the *fib* MC 2010

Working Party 2.9.2: Open topics in the current design guide

Convener:

Wall	Hilti AG	Liechtenstein
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Members:

Bucher	fischerwerke GmbH & Co. KG	Germany
Buhler	Adolf Würth GmbH & Co. KG	Germany
Li	Dr. Li Anchor Profi GmbH	Germany
Mallée	Consultant	Germany
Pregartner	Stanley Black & Decker Deutschland GmbH	Germany
Stork	Private	Germany
Wendt	Simpson Strong Tie Company, Inc.	Germany

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

Review of the design provisions for anchorages in respect to inconsistencies and new research results and development of improved design provisions

Working Party 2.9.3: Shear lugs

Convener:

Cook	University of Florida	USA
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Members:

Eligehausen	IWB, Universität Stuttgart	Germany
Michler	Technische Universität Dresden	Germany
Silva	Hilti Inc.	USA
Stork	Private	Germany

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

Development of provisions for the design of shear lugs

Working Party 2.9.4: Fatigue loading

Convener:

Block	Technische Universität Dortmund	Germany
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Members:

Bucher	fischerwerke GmbH & Co. KG	Germany
Hofmann	IWB, Universität Stuttgart	Germany
Li	Dr. Li Anchor Profi GmbH	Germany
Lotze	MPA Uni Stuttgart, Otto-Graf-Institut	Germany
Sippel	European Engineered Construction Systems Association	Germany
Wall	Hilti AG	Liechtenstein

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

Review of the existing simplified design provisions for anchorages under fatigue loading and development of less conservative design provisions

Working Party 2.9.5: Bonded anchors under sustained load

Convener:

Cook	University of Florida	USA
Hofmann	IWB, Universität Stuttgart	Germany

Members:

Eligehausen	IWB, Universität Stuttgart	Germany
Guillet	Centre Scientifique et Technique du Batiment	France
Schätzle	fischerwerke GmbH & Co. KG	Germany
Wall	Hilti AG	Liechtenstein

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

Review of research results on bonded anchors under sustained load and development of provisions for the design of anchorages with bonded anchors and connections with post-installed reinforcement to take into account the negative influence of sustained load

Working Party 2.9.6: Post-installed reinforcement - Harmonization of rules for reinforced concrete and anchorages with bonded anchors and post-installed reinforcement

Convener:

Silva	Hilti Inc.	USA
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Members:

Eligehausen	IWB, Universität Stuttgart	Germany
Mahrenholtz	Jordahl GmbH	Germany

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

Development of a harmonized design concept for connections with bonded anchors and post-installed reinforcement under static and seismic loading

Working Party 2.9.7: Splitting of bonded anchors

Convener:

Asmus	IEA GmbH & Co. KG	Germany
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Members:

Bucher	fischerwerke GmbH & Co. KG	Germany
Cook	University of Florida	USA
Guillet	Centre Scientifique et Technique du Batiment	France
Kummerow	Deutsche Institut für Bautechnik	Germany

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

Development of design provision for bonded anchors to prevent splitting of the concrete member during pretensioning and loading which shall replace the currently required approval tests

Working Party 2.9.8: Required stiffness of baseplates

Convener:

Li	Dr. Li Anchor Profi GmbH	Germany
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Members:

Cook	University of Florida	USA
Eligehausen	IWB, Universität Stuttgart	Germany
Kummerow	Deutsche Institut für Bautechnik	Germany
Mallee	Consultant	Germany
Stork	Private	Germany
Thiele	Technische Universität Kaiserslautern	Germany
Wall	Hilti AG	Liechtenstein

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

In general anchorages are designed under the assumption that the baseplate is stiff. However, no criteria are given in the *fib* Design Guide to assure a stiff baseplate. These provisions will be developed.

Working Party 2.9.9: Fire Resistance of anchors and post-installed reinforcement

Convener:

Guillet Centre Scientifique et Technique du Batiment France

Members:

Eligehausen	IWB, Universität Stuttgart	Germany
Hofmann	IWB, Universität Stuttgart	Germany
Lange	Deutsches Institut für Bautechnik	Germany
Pimienta	Centre Scientifique et Technique du Batiment	France
Pinoteau	Centre Scientifique et Technique du Batiment	France
Silva	Hilti Inc.	USA
Stochlia	ICC Evaluation Service	USA
Takahashi	Hilti Japan	Japan

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

Development of more refined provisions for the design of anchorages with all types of anchors and of connections with post-installed reinforcement under fire exposure