International Federation for Structural Concrete
Fédération internationale du béton

fib Introduction.

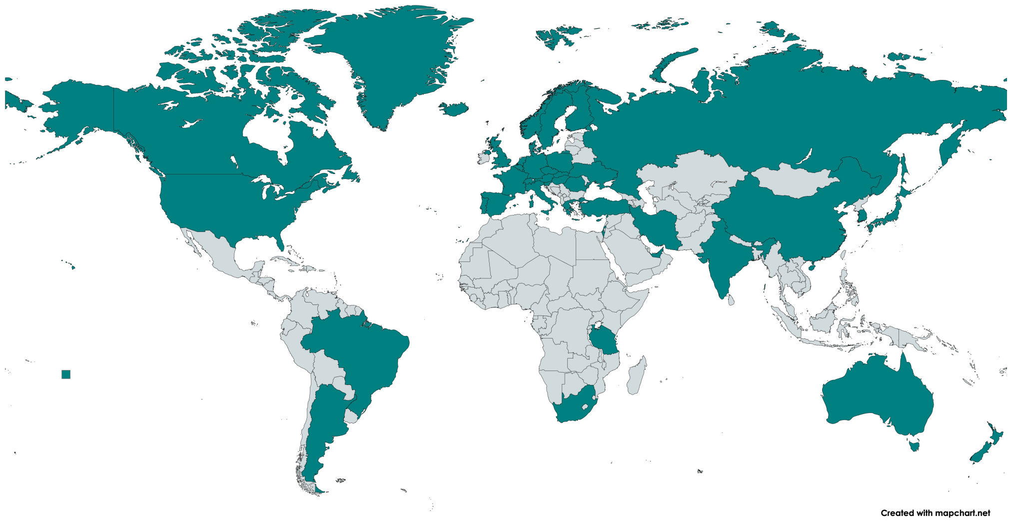

Photo ©Loic Gardiol

David Fernández-Ordóñez
fib Secretary General
August 2024

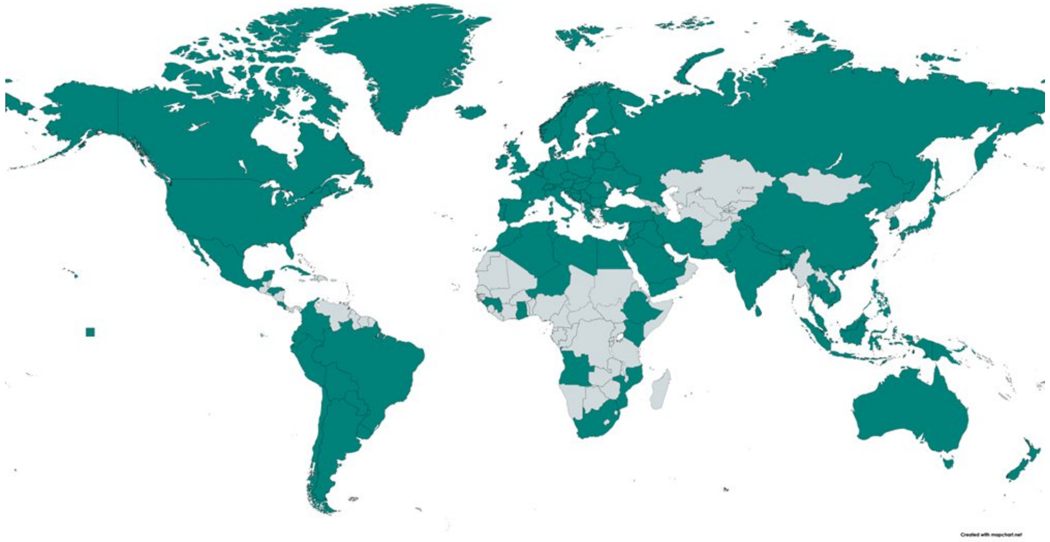
Creation of the *fib*

CEB 1953 + FIP 1952 → 1998 → *fib* CEB-FIP

42 ***fib*** statutory members

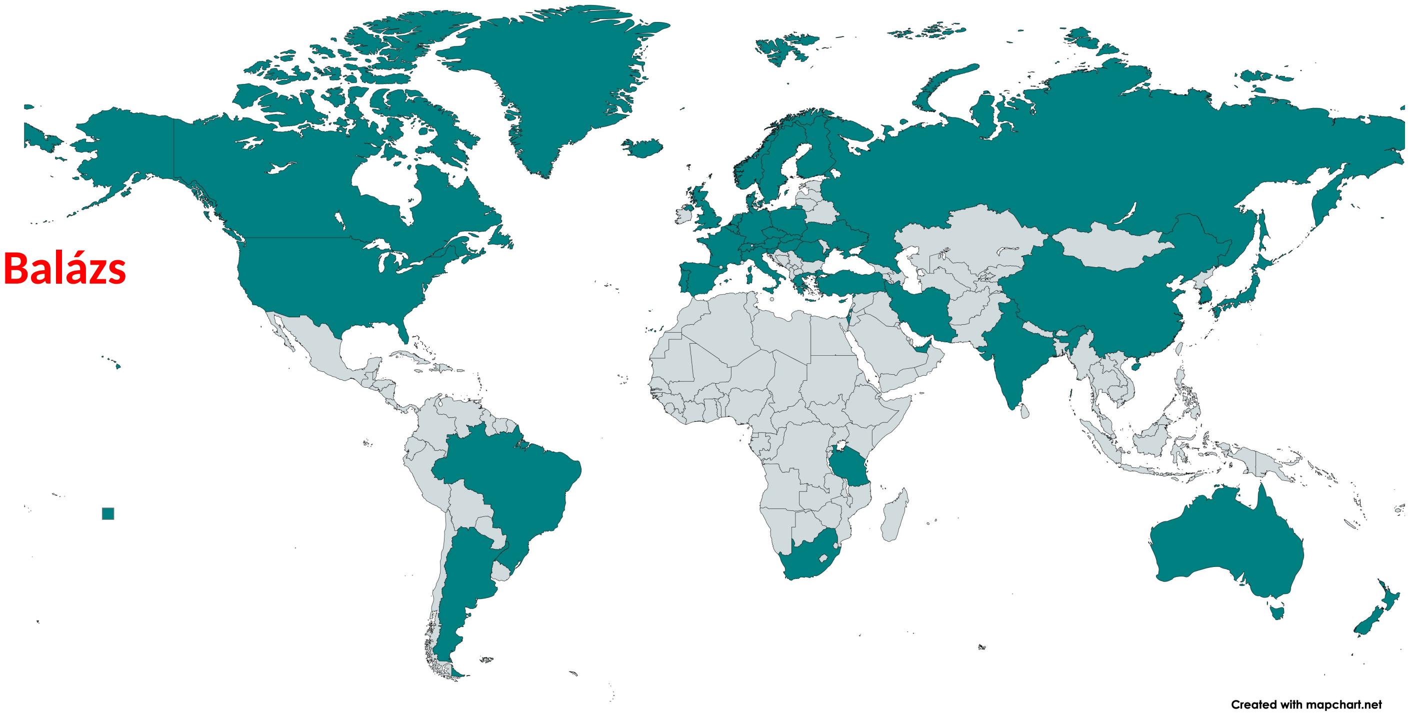


fib members in 104 countries



2024 Statutory member countries

Hungary *fib* NMG: 2 votes
Head of Delegation. György Balázs
Delegate: Sólyom
Deputies: Kovács, Magyar
38 Additional Subscribers



fib Statutory Member Countries

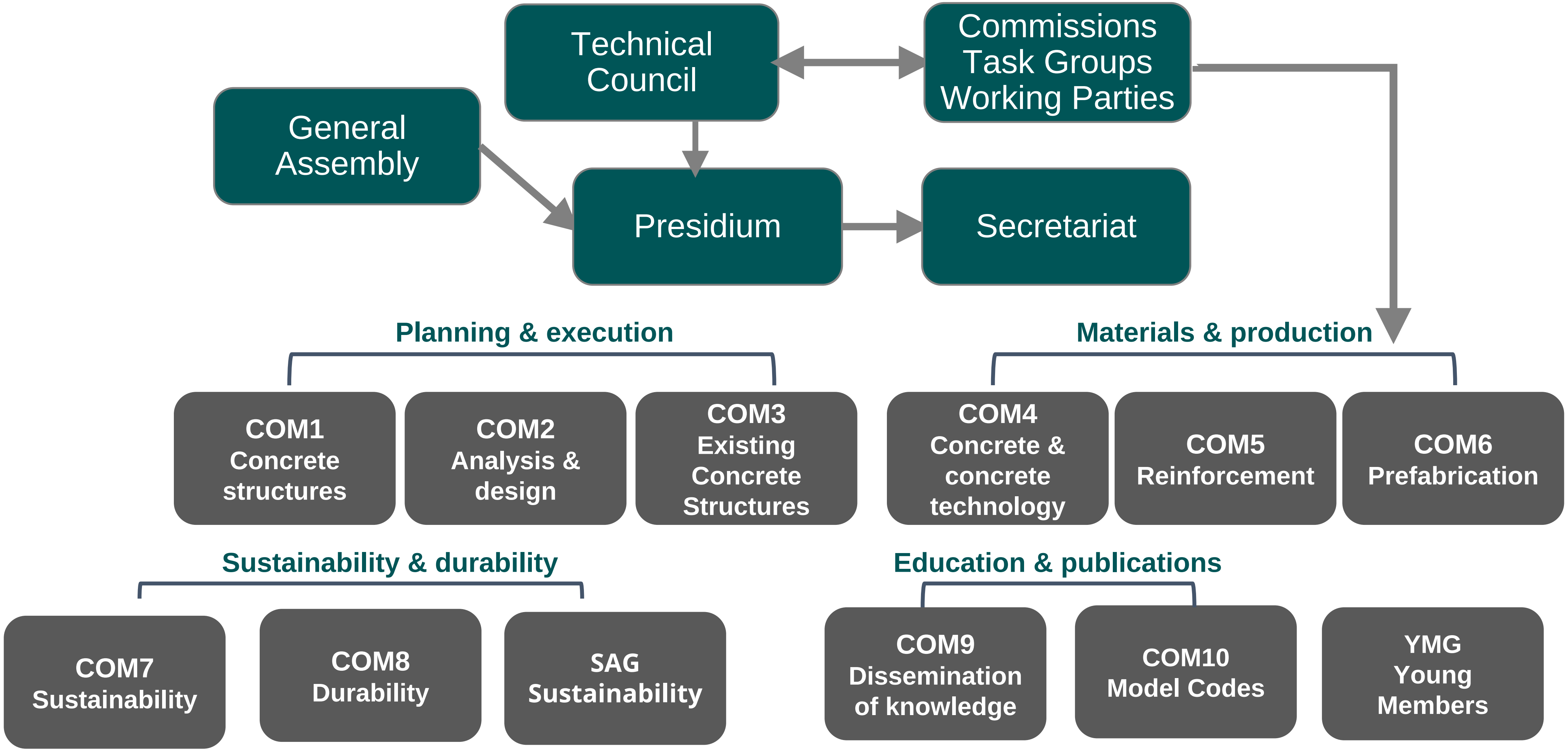
42 *fib* Statutory Member Countries

Argentina – Australia – Austria – Belgium – Brazil – Canada – China – Cyprus – Czech Republic– Denmark – Finland – France – Germany – Greece – **Hungary** – **Iceland-** India – Iran – Israel – Italy – Japan – Luxembourg – Netherlands – New Zealand – Norway – Poland – Portugal – Romania – Russia – Slovakia – Slovenia – South Africa – South Korea – Spain – Sweden – Switzerland – **Tanzania** - Turkey – UAE – Ukraine – United Kingdom – United States

Mission and Objectives of the *fib*

"To develop at an international level the study of scientific and practical matters capable of advancing the technical, economic, aesthetic and environmental performance of concrete construction." *Statutes of the fib*

The *fib's* structure



2023-24 *fib* Presidium members

Stephen Foster
Australia
President

Iria Doniak
Brazil
Deputy President

Akio Kasuga
Japan
Past President

Agnieszka Bigaj
Netherlands

Marco di Prisco
Italy

Larbi Sennour
USA

Jean Michel Torrenti
France

Alberto Meda
Italy

Alfred Strauss
Austria

Sylvia Keßler
Germany

Steve Denton
UK

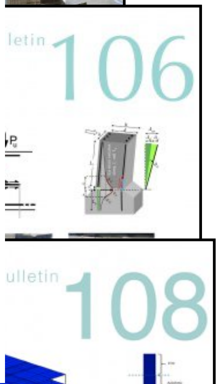
David Fernández-Ordóñez
Secretary General

A *B*ridge between *R*esearch and *P*ractice

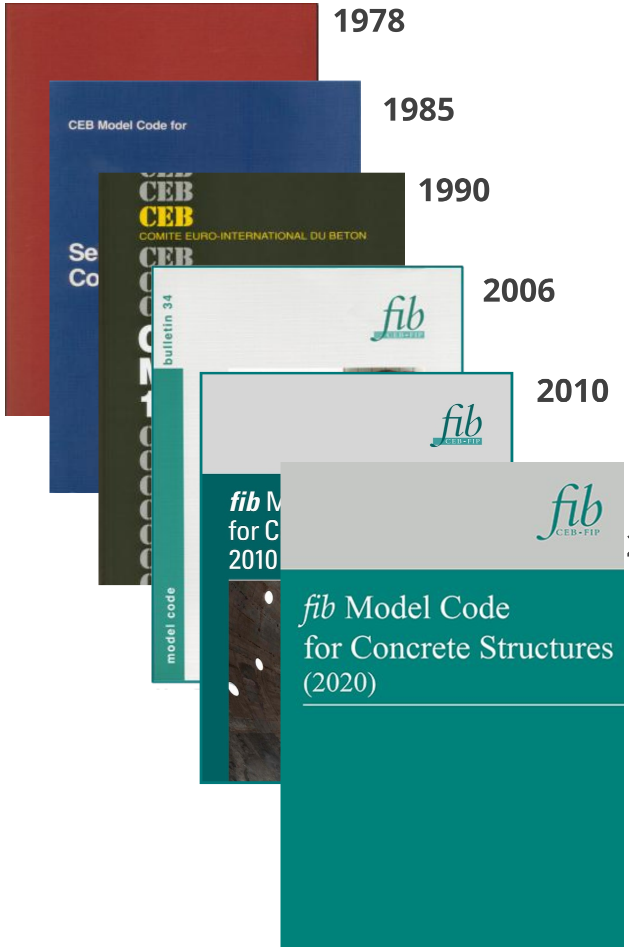
International Federation for Structural Concrete

fib Bulletins

- Technical reports
- State-of-the-art reports
- Textbooks
- Manuals or guides
- Recommendations



Model Codes



1978

1985

1990

2006

2010

2020

The *fib*'s journal *Structural Concrete*

- Current impact factor: **3.2**
- 6 issues per year

The *fib's* Structural Concrete journal

Impact factor 2022: 3.2

6 issues starting from 2016

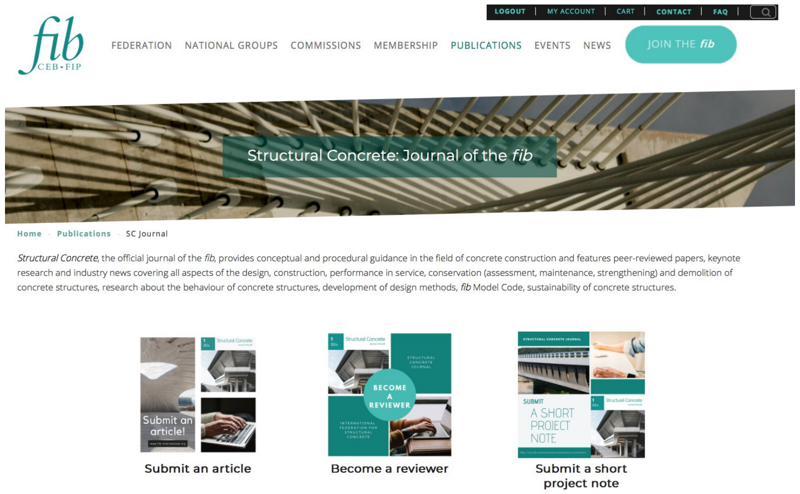
More than 7.700 pages and 444 papers in 2023

Ranked 32/91 in Construction & Building Technology and 65/182 in Civil Engineering

The *fib's* Structural Concrete journal

Online Access

- Access to the SC Journal online after logging to the *fib* website !



Latest issues of the SC Journal

FEBRUARY 2020 VOL21 ISSUE 1 | DECEMBER 2019 VOL20 ISSUE 6 | OCTOBER 2019 VOL20 ISSUE 5 | AUGUST 2019 VOL20 ISSUE 4 | JUNE 2019 VOL20 ISSUE 3 | APRIL 2019 VOL20 ISSUE 2

February 2020 Vol21 Issue 1

To order this issue, please visit the **Wiley Online Library**

Journal Article

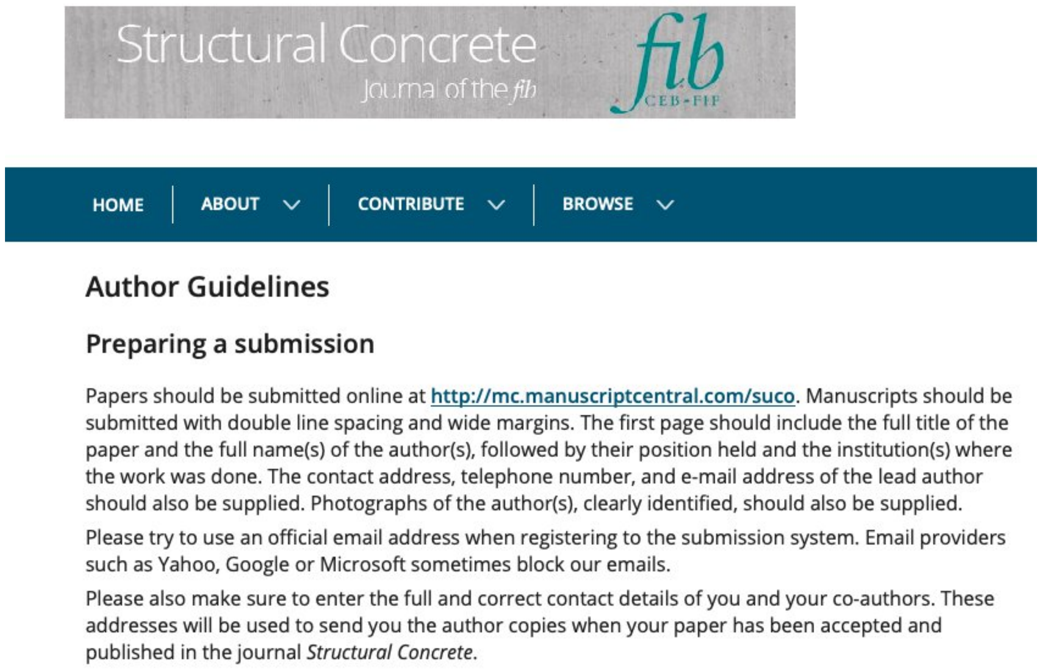
The main part of the journal contains peer-reviewed papers. The table of contents and abstracts for issues from 2002 to 2011 are freely available via **Wiley Online Library**.

For *fib* members only: PDF files of articles published since 2011 are available from the Wiley Online Library.

The *fib's* Structural Concrete journal

Short Project Notes

- Short Project Notes are intended to provide a description of a relevant project that has been built or is in the process of execution. The original or novel aspects in design or execution should be clearly indicated.
- Short Project Notes should be submitted online at: https://mc.manuscriptcentral.com/suco
- The guidelines for authors here: https://onlinelibrary.wiley.com/page/journal/17517648/homepage/forauthors.html



Author Guidelines

Preparing a submission

Papers should be submitted online at http://mc.manuscriptcentral.com/suco. Manuscripts should be submitted with double line spacing and wide margins. The first page should include the full title of the paper and the full name(s) of the author(s), followed by their position held and the institution(s) where the work was done. The contact address, telephone number, and e-mail address of the lead author should also be supplied. Photographs of the author(s), clearly identified, should also be supplied.

Please try to use an official email address when registering to the submission system. Email providers such as Yahoo, Google or Microsoft sometimes block our emails.

Please also make sure to enter the full and correct contact details of you and your co-authors. These addresses will be used to send you the author copies when your paper has been accepted and published in the journal *Structural Concrete*.

The *fib's* Structural Concrete journal

Short Project Notes

DOI: 10.1002/suco.20180001

SHORT PROJECT NOTE

fib CEB-FIP WILEY

Takubogawa Bridge

The Tokugawa Bridge (Figure 1) is a 10-span continuous butterfly web box girder highway bridge, whose longest span is 87.5 m. "Butterfly Web Bridge" is a new type of bridge structure and this bridge is the world first application

bridge axis direction. Moreover, this is a simple structure in which the panels are connected to the upper and lower deck slabs linearly using dowels with no need to connect adjacent panels, thus facilitating a rapid construction.

The *fib's* Structural Concrete journal

Short project notes:

2 *fib* CEB-FIP SHORT PROJECT NOTE

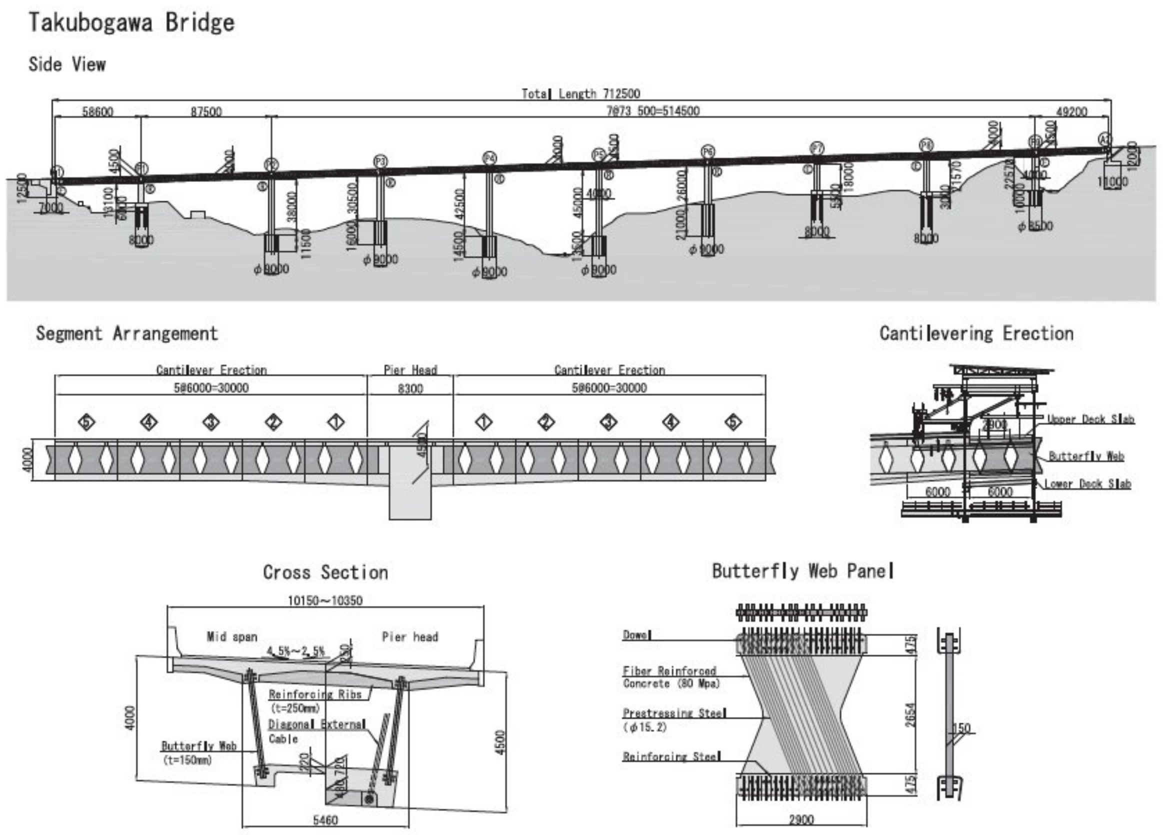
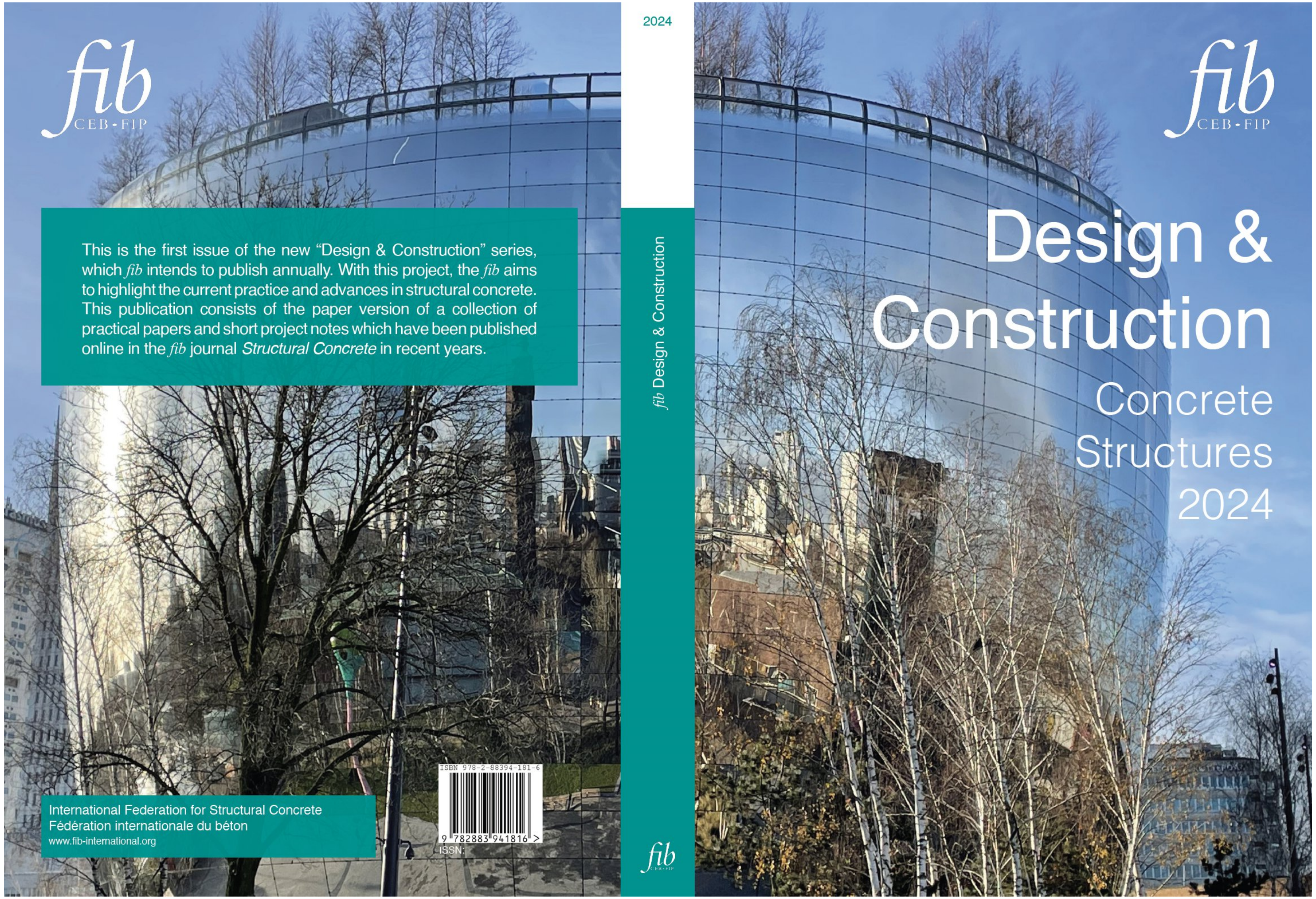


FIGURE 2 Drawings

The *fib's* Structural Concrete journal

fib Design and Construction. Concrete Structures 2024



Results of commissions and task groups are published as *fib* Bulletins

- All bulletins included in Google Books
- Possibility to buy hardcopy and pdf in the *fib* webstore
- DOI per bulletin and per chapter when there are main authors
- Indexing of Bulletins in Scopus data base

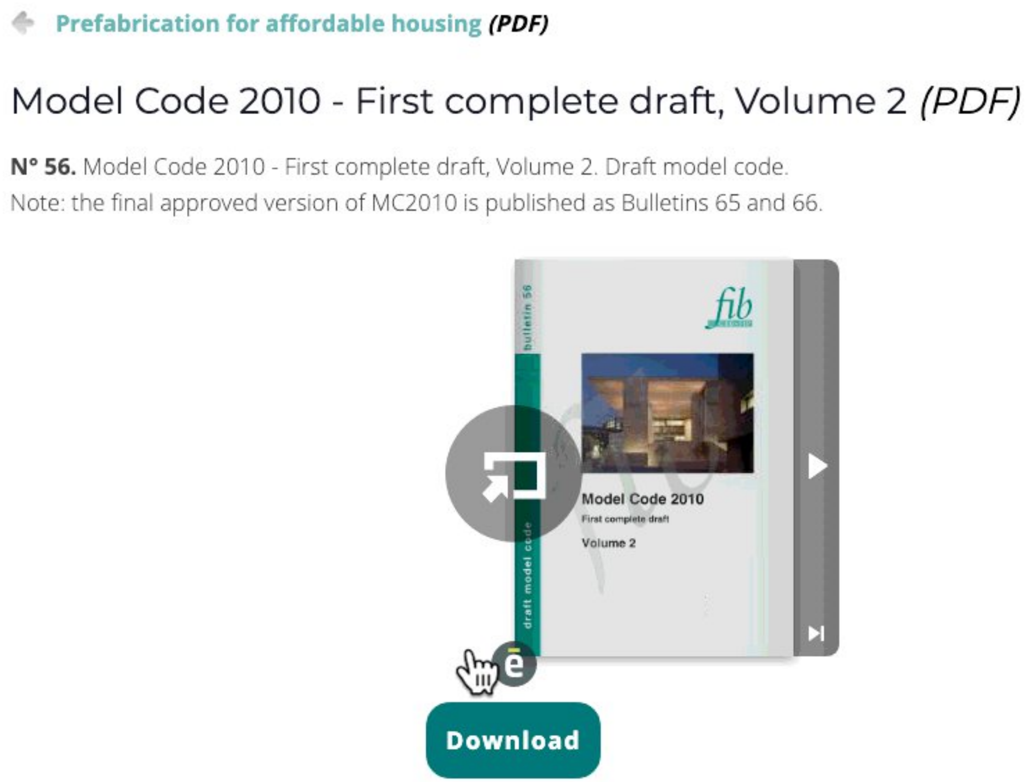
Authors by chapter

Chapters	Main Authors	DOI
1	Vítek	doi.org/10.35789/fib.BULL.0092.Ch01
2	Vítek	doi.org/10.35789/fib.BULL.0092.Ch02
3	Vítek	doi.org/10.35789/fib.BULL.0092.Ch03
4	Bisch, Caldentey, Duarte, Debernardi, Fehling, Guiglia, Mari Bernat, Taliano , Torres, Vítek and Vrablik	doi.org/10.35789/fib.BULL.0092.Ch04
5	Burns, Caldentey, Duarte, Fehling, Mari Bernat, Torres, Vítek and Vrablik	doi.org/10.35789/fib.BULL.0092.Ch05
6	Borosnyoi , Caldentey, Debernardi, Guiglia, Taliano, and Windisch	doi.org/10.35789/fib.BULL.0092.Ch06
7	Červenka	doi.org/10.35789/fib.BULL.0092.Ch07
8	Vítek	doi.org/10.35789/fib.BULL.0092.Ch08

Access to the Publications of the *fib*

PDF viewer

- View your *fib* Bulletin online



Access to the Publications of the *fib*

PDF viewer

Rose Fitzgerald Kennedy Bridge

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Winner

Civil Engineering Structures

Rose Fitzgerald Kennedy Bridge
N25, New Ross Bypass, Ireland

© Marcos Sánchez

The process of designing the Rose Fitzgerald Kennedy Bridge over the River Barrow spanned over 20 years from concept to completion.

The River Barrow Bridge provides the latest crossing point for the River Barrow which is at least 300 m wide at any point south of the town of New Ross. Located 30 km away from the sea, the bridge has been an engineering target for decades in Ireland. It provides a vital piece of infrastructure in the eastern corridor of the national roads network. Its completion removed a significant proportion of heavy traffic from the town of New Ross, enhancing the quality of life of the local communities while providing a much-needed reduction in long haul journey times in the south-east region.

The project was developed by Transport Infrastructure Ireland and their Technical Advisors Mott MacDonald Ireland in multiple stages. Between late 1998 and 2008, a concept design was developed during the planning and environmental studies stage and several alternatives were considered; from cable stayed to arches and balanced cantilevers, with a final preference for a three-tower extrados bridge which provided the right balance of slenderness and modest height towers. Tender for construction in a Public-Private Partnership (PPP) format took place in 2014, the contract was awarded in 2016 and the road was opened to traffic in January 2020.

The project, which includes a 12km long dual carriageway bypassing New Ross town, was tendered as a PPP Contract and awarded to BAM Iridium PPP Co with a team consisting of Dragados + BAM Ireland as contractors and Arup and Carlos Fernandez Casado S.L. as designers.

The design and value engineering of the structure was constrained by the requirements already established during planning as part of the Environmental Impact Statement and covered in Construction Requirements (critical documents in the Irish planning and tendering process). The following constraints, amongst others, were established as fixed:

- The exact position of the three towers (thus fixing the main spans to 230m).
- The height of the pylons (causing the bridge to be an extrados structure and limiting the cable angle to less than 12 degrees).
- The clear envelope for the navigational river channel (117m wide and 36m high over Mean High-Water Spring).
- The requirement for a full concrete section for the deck and pylons (at least the outside surfaces) and the requirements of a "closed" section with inclined webs without props or ribs.
- The maximum deck depth at the central pylon of 8m and at midspan of 3.5m.
- The position of a central pylon and a central plane of cables in cross section.
- The maximum height of the abutments over ground level of 10m.

With all the above constraints, the number of variables to optimise the design was limited to the cable spacing, number and size, along with the cross-section configuration for the main spans. There was also room to tweak the road design, both in plan and elevation, on the approaches and the configuration of the side spans.

Working within the challenging constraints listed above, the detailed design phase aimed to optimise the preliminary design concept of the structure for structural efficiency and material savings. To achieve a world record span in concrete for an extrados structure with a significant slenderness, the following changes were made:

The cross section was modified from inclined outer webs to two vertical webs 8m apart, substituting the outer webs with precast panels to maintain the appearance of a closed section. The precast panels contribute to the transversal behaviour but there is a gap of 20mm between each panel longitudinally, so they do not contribute to the longitudinal direction.

© Ian Cahill

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The initial proposal of three parallel cables was substituted by a single cable, spaced 6.5m longitudinally and with a maximum size of 127 strands. Saddles were proposed for the cable detail passing on the pylons, allowing the pylon width to be reduced from 2.6m to 1.6m, to enable the minimum possible deck width.

To maintain a relatively light deck, the web and slab thickness were minimised using high strength concrete, where required. C80/95 concrete was used in the main spans and C60/75 in the side spans where the compression required this strength, while the approach spans were designed as C50/60.

Finally, minor adjustments to the side spans were implemented to optimise the longitudinal behaviour. The road alignment was also modified to reduce the bridge width on both ends to achieve a constant width cross section, where possible, and reducing the bridge length from 905m to 887m by changes in the vertical alignment.

The bridge's final configuration, after the minor span changes during tender, resulted in a total length of 887m, as already indicated, with an arrangement of 36 + 45 + 95 + 230 + 230 + 95 + 70 + 50 + 36m. In this way, the structure is characterised by 9 spans with 8 intermediate piers – P1 to P8 – and the 2 abutments – A1 and A2. The plan alignment is straight along 440m located approximately in the central part of the bridge and then curved with a transition from a radius of 720m to the straight alignment at both ends. The height of the deck above the ground or over the river reaches 40m and the height of the towers above the deck is 27.0m for the central tower (P4) and 16.2m for the two lateral ones (P3 and P5). These values imply tower height to span ratios of 0.07L for the side towers and 0.117L for the central tower (with L being the central span length). These are low values which lead to a classic extrados cable arrangement. In addition, the deck is only 3.5m deep at midspan (L/65), 8.5m at the central tower (L/27) and 6.5m at the side towers (L/35). These are quite slender parameters. It is also important to highlight the implication of the different heights of the towers. This leads to an asymmetric distribution of the cables along the main spans (8 from the side towers and 18 from the main tower). This asymmetry on the cable

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support on the main spans leads to different cantilever lengths during construction, the 8 cables from the lateral towers support approximately 90m while the main tower supports the remaining 140m of each span, resulting in a cantilever length during construction of 140m which would have equated to a 280m equivalent main span.

This asymmetry and the presence of a central tower also affect the contribution of the cable system under traffic loads, as the central tower provides relatively low contribution when asymmetric spans are loaded.

The Rose Fitzgerald Kennedy Bridge over the River Barrow is a milestone in the design and construction of bridges of this typology. As a world record breaker span with a full concrete deck, its design and construction represented a significant challenge. This was not only due to its size, but also the slenderness achieved and the geometrical constraints derived from the Environmental Impact Statement. The fact that this structure presents a very slender deck affects the load distribution between this element and the cable system. This leads to a behaviour more closely related with cable stayed bridges in comparison with other extrados bridges. From an aesthetic point of view, this bridge is also unique due to the difference in height between the central tower and the side towers. This creates an asymmetry in the cable arrangement in relation to the central spans. Because of the slenderness of the deck, 3.5m deep at the tip with a maximum cantilever of 140m and extremely shallow cables angles (10 degrees with the deck), the geometric deflection control during construction was especially complicated, with the added difficulties of early age properties of the high strength concrete mix used in the project.

OWNER Transport Infrastructure Ireland (TII)
AUTHORITIES' TECHNICAL ADVISOR Mott MacDonald
MAIN AUTHORS Miguel Angel Astiz Suarez & Marcos Sánchez
OTHER PARTICIPANTS Lucia Blanco Martin, Guillermo Ayuso Calle, Borja Martin, Miguel Angel Gil, Raul Gonzalez Aguilar, Cian Long, Claudia Sanroman, Alfonso Ramirez Marchena, Mary Bowe, John Iliff, Fergal Cahill, Pierre O'Loughlin, Joe Shinkwin, John Murphy, Mike Wade & Ron Yee
CONTRACTORS BAM Ireland & Dragados UK Ireland
SUBCONTRACTORS/SUPPLIERS Tensa, Rubrica, Roadstone & Banagher
OPENED TO TRAFFIC January 2020

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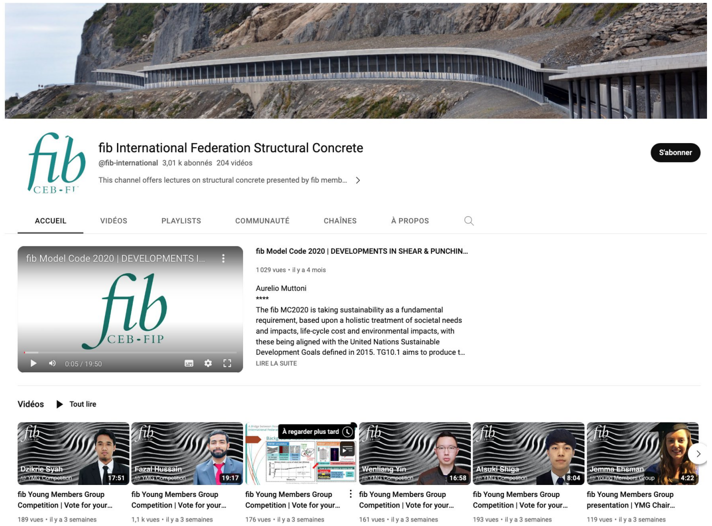
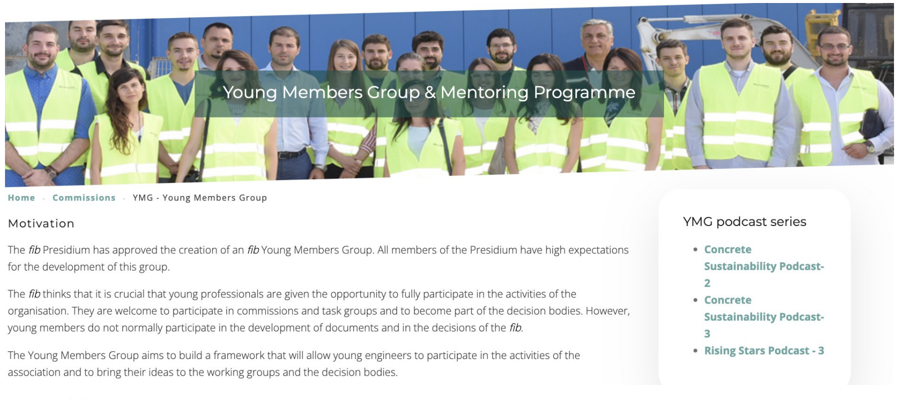
Let's keep in touch …

- Social media
- *fib*-news
- e-newsletter

fib YouTube Channel



Join the *fib* Young Members Group!

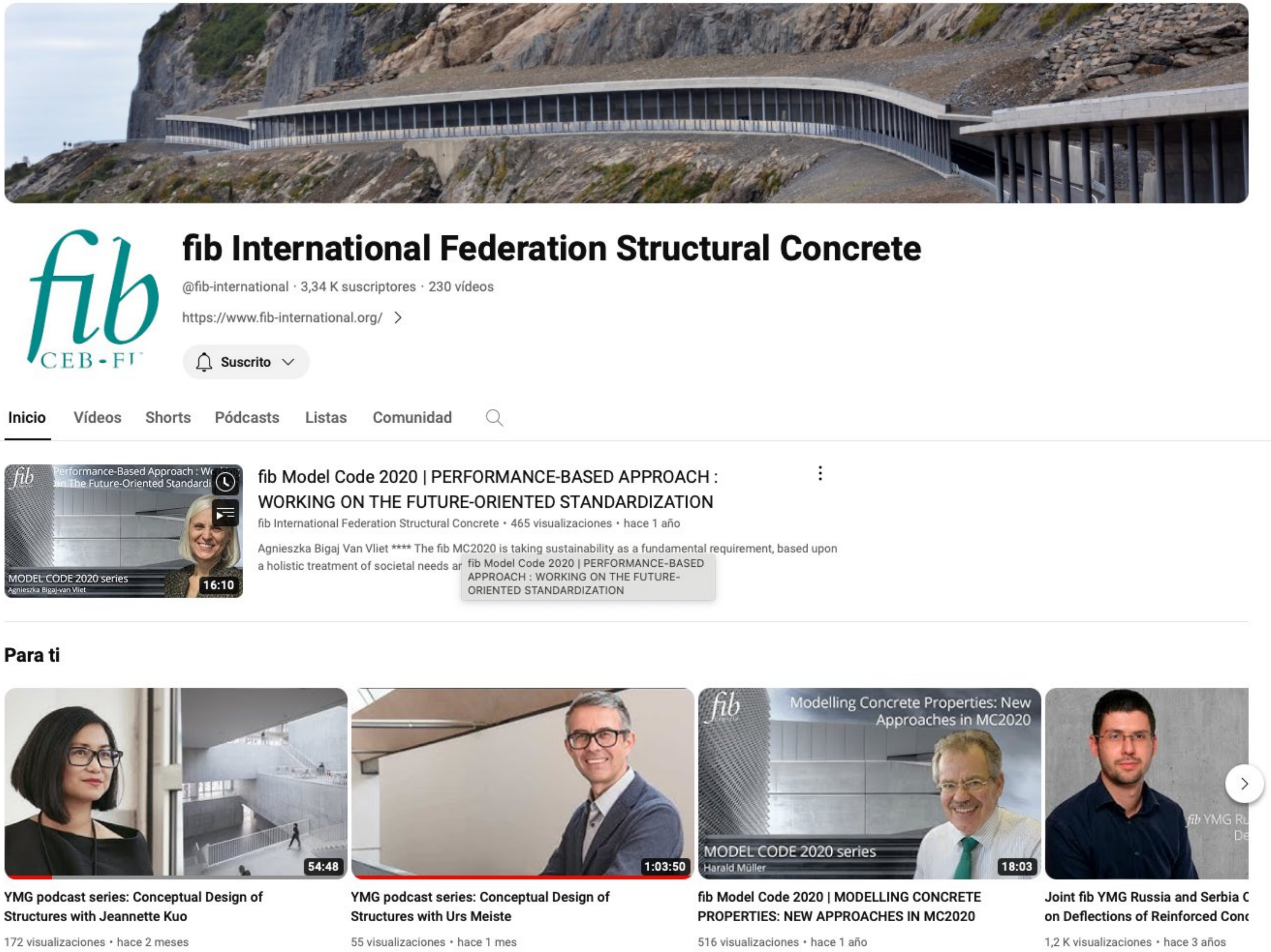


Commission Chair
Jemma Ehsman

Deputy Chair
Marcelo Melo

- Events
- Podcast series
- YMG competition
- … and more!

Staying informed about the *fib* Youtube



fib Young Members Group!

Home - Commissions - YMG - Young Members Group

Motivation

The *fib* Presidium has approved the creation of an *fib* Young Members Group. All members of the Presidium have high expectations for the development of this group.

The *fib* thinks that it is crucial that young professionals are given the opportunity to fully participate in the activities of the organisation. They are welcome to participate in commissions and task groups and to become part of the decision bodies. However, young members do not normally participate in the development of documents and in the decisions of the *fib*.

The Young Members Group aims to build a framework that will allow young engineers to participate in the activities of the association and to bring their ideas to the working groups and the decision bodies.

Scope and objective

The main objectives of the *fib* Young Members Group include:

- Improving the profession’s self-concept in the XXI century
- Encouraging mentoring within the *fib*
- Studying the work of other engineers to improve one's own work
- Networking

YMG podcast series

- Concrete Sustainability Podcast-2
- Concrete Sustainability Podcast-3
- Rising Stars Podcast - 3

Deputy Chair

Marcelo Melo

Next events

***fib* ICCS24 Sustainability in Guimarães, Portugal**

11-13 September 2024

***fib* Symposium 2024 in Christchurch, New Zealand**

11-13 November 2024

***fib* International Symposium on Conceptual Design of Concrete Structures, 2025 Rio de Janeiro, Brazil**

14-16 May 2025

***fib* Symposium 2025 in Antibes, France**

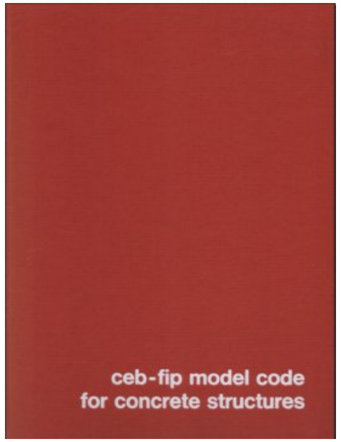
16-18 June 2025

fib Honours and Awards

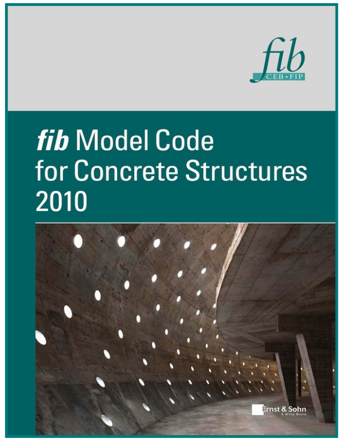
Award	Description
Freyssinet Medal	**Recognizes outstanding technical contributions in the field of structural concrete**
Medal of Merit	**Recognizes outstanding contributions to structural concrete and to the *fib***
Honorary Life Members	**Recognizes significant personal contributions to the work of the *fib***
Awards for Outstanding Concrete Structures	**International recognition for concrete structures which demonstrate the versatility of concrete as a structural medium**
Achievement Award for Young Engineers	**Recognizes engineers younger than 40 years old**
fib fellows	**Recognizes *fib* members that have been active for many years and that have contributed to the goals of the *fib***

2022 Award-winning concrete structures

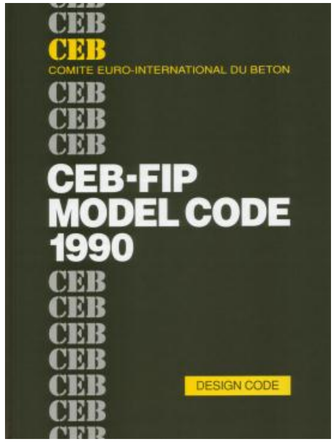
Evolution of Model Codes



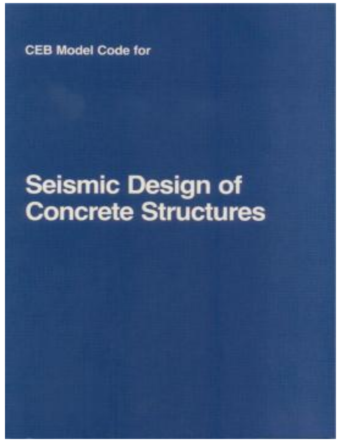
Model Code 1978



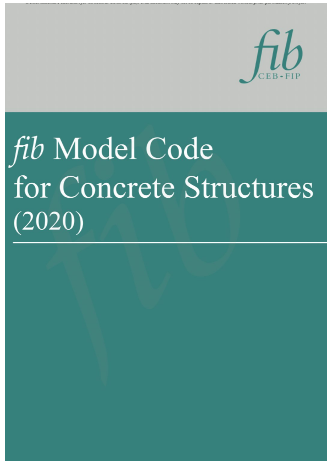
Model Code 2010



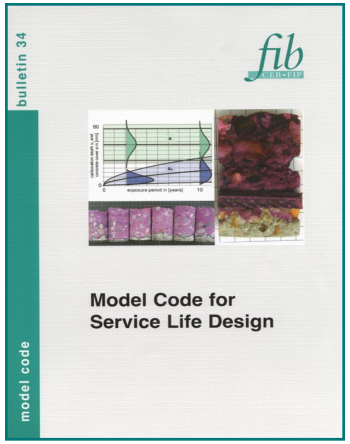
Model Code 1990



CEB Bull. 165 Seismic Design

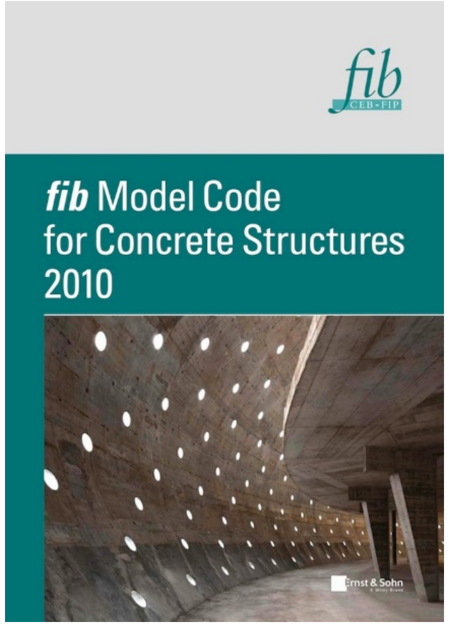


Model Code (2020)



fib Bull. 34 Service Life Design

fib Model Code 2010

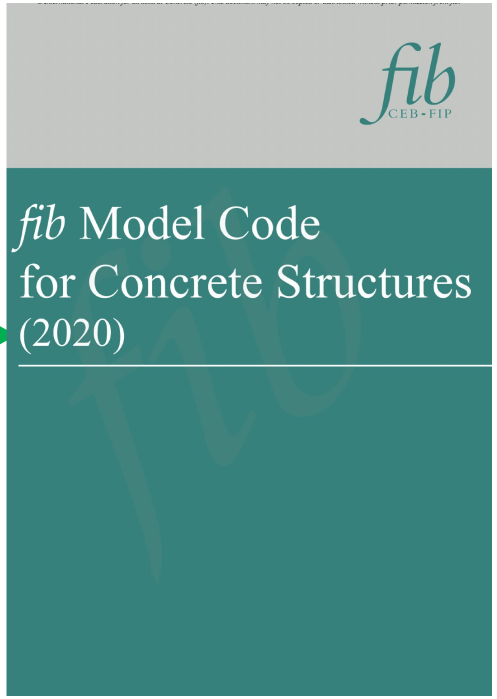


MC(2010)

5 Parts

10 Chapters

fib Model Code 2020



MC(2020)

10 Parts

39 Chapters

Greatly extended technical scope and coverage

MC2020

Identified overarching goals for the publication

- MC2020 is a single, merged structural code for new *and* existing structures
- Is an operational model code and oriented towards practical needs
- Includes worldwide knowledge with respect to materials and structural behaviour
- Recognizes the needs of engineering communities around the world

MC2020 Content

- Takes an integrated life cycle perspective
- Provides a holistic treatment of structural safety, serviceability, durability and sustainability
- Defines fundamental principles and a safety philosophy based on reliability concepts and sustainability
- Uses performance-based concept to remove specific constraints for novel types of concrete and reinforcing materials

MC2020 Table of Contents

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PART VII - DESIGN AND ASSESSMENT

MC2020 Table of Contents

the *fib* Statement on Sustainability (2021)

Received: 18 June 2021 | Accepted: 20 June 2021

DOI: 10.1002/suco.202100396

POSITION PAPER

The *fib* official statement on sustainability

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Email: akasuga@smcon.co.jp

Received: 18 June 2021 | Accepted: 20 June 2021

DOI: 10.1002/suco.202100396

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Casse Postale 88, Lausanne, 1015, Switzerland.
Email: akasuga@smcon.co.jp

Sustainability is a key value for today's society and also for the *fib*. In this sense, the whole organization is focused to develop information, documents, and tools to be used by the construction community and the society in general to achieve sustainability goals.

The ambition of the *fib* is that the work developed by the organization creates relevant knowledge in the three pillars of sustainability for the society. The work in the *fib* on the three pillars of sustainability is linked to the United Nations 17 Sustainable Development Goals and the developments of other organizations.

The *fib* is a not-for-profit association formed by 41 national member groups and approximately 1,000 corporate and individual members. The *fib*'s mission is to develop at an international level the study of scientific and practical knowledge capable of advancing the technical, social, economic, and environmental performance of concrete structures.

The knowledge developed and shared by the *fib* (*fib* Model Codes, *fib* Bulletins, *fib* events, *fib* workshops, *fib* courses, etc.) is entirely the result of the volunteering work provided by the *fib* members.

The *fib* was created in 1998 by the merger of the Euro-International Committee for Concrete (the CEB) and the International Federation for Pre-stressing (the FIP). These predecessor organizations existed independently since 1953 and 1952, respectively.

The *fib* is an independent society of professionals working in the field of concrete that includes concrete users, researchers, designers, and engineers from academia, design firms, constructors, and owners.

The *fib* has had a commission dedicated to environmental aspects of structural concrete from the start. Since then, the *fib* has created a Special Activity Group (SAG8) to deal with sustainability and environment in 2010 and created the Commission 7 "Sustainability" in 2015. In the *fib*, there are many Task Groups working on sustainability topics related to structural concepts, resilient structures, precasting, environmentally friendly concrete materials, recycling of materials and components, environmental product declarations, life cycle perspective analysis, etc. And *fib* will introduce some indicators to assess our commission activities in the field of sustainability. These indicators are used for the *fib* value assessment.

Sustainability concepts were already introduced in the Model Code 2010 and are a key part in the elaboration of the Model Code 2020 development. The *fib* Model Code is the only code which has sustainability philosophy as the main concept for the design, construction, and conservation of concrete structures built with concrete which started with MC2010.

Sustainability is a crucial concept for the design, construction, conservation and reuse of concrete structures. The *fib* has had a very intense activity on the environment and sustainability. As an example, we list the past bulletins developed in the *fib* about environmental aspects and sustainability:

- *fib* Bulletin 18. Recycling of offshore concrete structures. 2002.
- *fib* Bulletin 21. Environmental issues in prefabrication. 2003.
- *fib* Bulletin 23. Environmental effects of concrete. 2003.

Discussion on this paper must be submitted within two months of the print publication. The discussion will then be published in print, along with the authors' closure, if any, approximately nine months after the print publication.

Sustainability in the Model Code

Received: 11 January 2023 | Revised: 25 February 2023 | Accepted: 26 March 2023
DOI: 10.1002/suco.202300022

fib WILEY

ARTICLE

Sustainability perspective in *fib* MC2020: Contribution of concrete structures to sustainability

Petr Hajek

Open Access:

https://doi.org/10.1002/suco.202300022

Received: 11 January 2023 | Revised: 25 February 2023 | Accepted: 26 March 2023
DOI: 10.1002/suco.202300022

ARTICLE

fib WILEY

Sustainability perspective in *fib* MC2020: Contribution of concrete structures to sustainability

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Abstract

Sustainability is a global goal of sustainable development aimed at ensuring a quality life on the Earth for the future generations. Buildings, infrastructure and the entire built environment should be better prepared for the new conditions—they should be sustainable, resilient and adaptable to new situations. This requires new technical solutions for the construction, reconstruction, and modernization of buildings and all other engineering structures. Concrete is gradually becoming a building material with great potential for realizing technical solutions that meet new requirements, leading to the necessary reduction of environmental impacts and consequent improvement of social and economic conditions. The paper presents implementation of sustainability principles in the new fib Model Code 2020 (MC2020). This represents a contribution of the International Federation for Structural Concrete (fib) to the achievements of the Sustainable Development Goals (SDGs), set by the United Nations in 2015 as an action plan for the period up to 2030.

KEYWORDS
concrete, LCA, sustainability

1 | INTRODUCTION

1.1 | Global situation

The world faces an increasing number of environmental damage and/or natural disasters, and constantly growing economic and social problems and challenges. The most critical causes of this situation are population growth and global warming due to the rapidly increasing amount of greenhouse gasses in the atmosphere during last 2 hundred years.

In 2022, the world population has exceeded 8 billion. This represents 3.2× increase since 1950. During the same period, CO_2 emissions increased more than six times, world average temperature increased by 1°C and the number of recorded natural disasters increased 15 times.[1] Entire society, all nations, must take an action to slow down this process and adapt to the new natural and social conditions. To achieve these goals, it is crucial to implement sustainability and resilience as the most important objectives in all human activities and actions.

Discussion on this paper must be submitted within two months of the print publication. The discussion will then be published in print, along with the authors' closure, if any, approximately nine months after the print publication.

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