

Commission 10

Construction

Chair:	van der Horst (BAM Infraconsult bv., The Netherlands)
Deputy-Chair:	Jacquet (Bouygues Travaux Publics, France)
Secretary:	Schmitt (SNCF - IGOA, France)
Members:	Burtet (VSL, Switzerland) , Davy (Bouygues Travaux Publics, France), Fischer (Bilfinger Berger AG, Germany), Herrero (Ferrovial – Agromán, Spain), Hogard (Pehokon Consulting, Sweden), Imberty (Ministère de l'Équipement, France), Klein (T ingenieurie SA, Switzerland), Magyar (Hídépítő, Hungary), Mancini (Politecnico Torino, Italy), Rombach (Techn. Univ. of Hamburg-Harburg, Germany), Srinivasan (Arup, United Kingdom),
Corr. Members:	Alimchandani (STUP Consultants Ltd., Mumbai, India) , Buron Meastro (IECA, Spain) , Curtis (RTR Bridge Construction, Australia) , Geiker (Technical Univ. of Denmark, Denmark), Jensen (MT Højgaard, Denmark), Öberg (NCC AB, Sweden), Tassin (International Bridge Technologies, Inc., USA)
Recent Meetings:	Avignon (Apr. 04), Paris (Sep. 04), Paris (Oct. 05), Naples (June 06), Paris (Oct. 06), Paris (Oct. 07), Amsterdam (May 08), Paris (Nov. 08)
Recent Bulletins:	fib Bulletin 48: <i>Formwork and falsework for heavy construction</i> (Guide to good practice prepared by TG 10.2, published 2009)

Terms of reference

Scope

The Commission addresses state-of-the-art basic principles of the construction process of concrete structures at site. Furthermore the Commission reflects on anticipated developments, which could have a significant influence for construction. The objective is to develop awareness regarding aspects which have an impact on safety, serviceability, durability and environmental issues of concrete structures to be build at site, and to provide information as how to handle the basic principles. The output will be presented as internationally harmonized reports.

Areas of interest

The areas of interest have been developed from the viewpoint that the construction process has two main components: perception-related aspect and process aspects. The perception-related aspects comprise materials, workmanship, formwork and scaffolding, curing of concrete, concrete surface, testing and monitoring, high performance concrete, special technologies, specifications and training/education. The process related aspects comprise the construction process of concrete structures, quality management and life cycle management.

Each of the areas has been detailed further and can be summarized as follows:

1. The construction process of concrete structures: basic principles and drivers to success.

- Management of a process,
 - Multiple discipline interaction,
 - Interface management,
 - Information generation versus tasks,
 - Specifics of design/construct,
 - Optimisation of cost: exchange of labour, material and time.
- Environmental care, safety and health,
- Trace ability of product and activities,
- The impact of adequate preparation and workmanship,
- The construction phase and its impact on durability.
- Strategic choice of materials: robust concrete mixes versus hi-tech, narrow window applicable mixes, reliability/uniformity of concrete properties, properties demand: cover zone versus global section.

2. Quality management:
 - Principles and criteria,
 - Guidelines for implementation.
 - ISO 9000-2000 principles,
 - Global versus detailed process/indicators
 - Improvement through learning,
 - The decisive impact of attitude,
 - Project Quality Plan,
 - Qualified site supervision and/versus ISO 9000-2000 self-control.
3. Materials: packaging, transportation, storage and handling
Cement, additives, sand and gravel, reinforcing steel and prestressing steel, carbon reinforcement
4. Workmanship:
 - Mixing, casting and post casting treatment of concrete.
 - Detailing and installation of reinforcement, both steel and carbon
 - Detailing and installation of prestressing, both steel and carbon
5. Formwork and scaffolding:
Principles, systems and details, design, erection and striking
6. Curing of concrete
 - Moisture curing of concrete and early age crack control
 - Cooling and heating of concrete
 - Protection of the concrete surface after casting
7. Concrete surface: quality and texture.
8. Testing, monitoring and control during construction.
 - Destructive/non destructive testing: aspects, criteria and procedures
 - In-situ monitoring: aspects and procedures
 - Crack width control
9. Life cycle management – LCM (construction phase aspects only)
 - Basic principles:
integral approach versus individual phases, overall cost optimisation, maintenance, repair and replacement strategies, reliability of LCM: robustness versus hi-tech, choice of materials, durability strategy based on both concrete and reinforcement,
 - Birth certificate
Data management: gathering, analysis and measures, record keeping and storage.
Monitoring and control: aspects, readings, analysis, measures, record keeping and storage
 - Demolition plan
10. Special materials: high performance concrete: both strength and workability
11. Special technologies
 - Equipment and robots
 - ICT in construction: 4D Cad, Cam, Data communication and project management
12. Specifications for materials and workmanship: typical examples only
13. Training and education.

Working programme

In its initial phase of work, the Commission developed the detailed list of topics, and set its priorities, from the following areas:

- topics as given above
- further topics identified by the new Commission
- revision of documents published by the preceding commission in FIP (e.g. "*Basic reinforced concrete and prestressed concrete construction*", guide to good practice, 1978).

Based upon the needs of the profession, working programmes for priority issues had to be established and task groups need to be formed - where necessary - in cooperation with other Commissions (for example with Working Party WP 5.4.2 Durability specifics for prestressed concrete structures concerning the items 3 and 4 from the above list).

Task Group

TG 10.1 Curing of concrete

Convener: Jensen (MT Højgaard, Denmark)
Members: all active members of Commission 10

Task Group

TG 10.2 Formwork and falsework

Convener: Jacquet (Bouygues Travaux Publics, France)
Members: all active members of Commission 10

Terms of reference

A practical guide that will cover the following areas of interest was published in early 2009: Travelers (formwork for slabs, span by span bridge construction, cantilever bridge construction, tunnel vault formwork) – Launching girders – Ready for use false work – Towers for high loads – Lessons learnt.

The group also is actively supporting SAG 5 in drafting the chapter on formwork, falsework and centring in the new Model Code.

Task Group

TG 10.3 Life cycle management - construction for service life

Conveners: van der Horst (Delta Marine Consultants bv, The Netherlands)
Members: all active members of Commission 10

Terms of reference

Establishment of a new Guide to good practice, including a general section on construction for service life and addressing in detailed sections issues as management of the construction process, formwork and falsework, concrete (materials, mix, transport, placing, finishing, curing), reinforcement and prestressing, precast concrete, foundations, tolerances, quality control, health and safety, workmanship, staff and labour, methodic statements and workplans.

Task Group

TG 10.x Construction of precast segmental bridges

Conveners: van der Horst (Delta Marine Consultants bv, The Netherlands)
Members: all active members of Commission 10

(in preparation)

