

Commission 1 Areas of interest

- Bridges
- Tunnels, underground structures and special foundations
- Marine structures
- Containment structures (tanks, silos)
- Buildings

- And

- Aesthetics
- Conceptual design
- Design applications

Concrete – an essential part of life

- Concrete is used more than any other man-made material in the world.
- Estimated that about 7.5 cubic kilometres of concrete are made each year— *more than one cubic metre for every person on Earth.*
- *Virtually ALL Structures use Concrete*

Concrete Structures

Roads and Railways



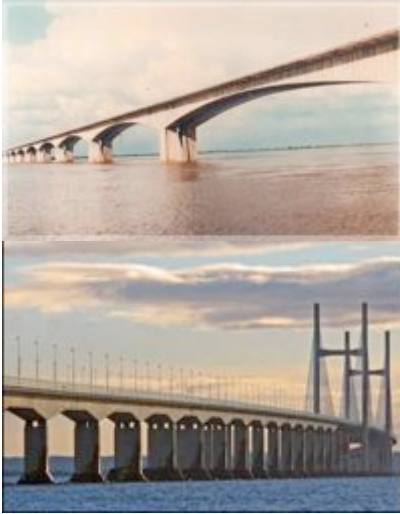
Concrete Structures

Houses, Offices, Towers



Concrete Structures

Bridges



Concrete Structures

Foundations, Basements and Tunnels



Concrete Structures

Harbours and Sea Defences



Concrete Structures

Airports



Concrete Structures

Dams, Power Stations



Concrete Structures

Storage Tanks, Offshore





Commission 1 Remit

- All types of concrete structures
- Encourage and develop innovation
- Promote new knowledge and technical evolution
- Interacts significantly with other Commissions



Commission 1 Membership

Gordon Clark	UK (Chair)
Michel Moussard	France (dep Chair)
Jean-Francois Klein	Switzerland
Tor Ole Olsen	Norway
Akio Kasuga	Japan
Chander Alimchandani	India
Andy Truby	UK
Shoji Ikeda	Japan
Jiri Strasky	Czech Republic
Joao Almeida	Portugal
Stein-Atle Haugerud	Norway
Michel Virlogeux	France

Commission 1 Report on Activities

- Currently 4 active Task Groups
 - TG1.1 Design Applications
 - Stein Atle Haugerud (Norway)
 - TG1.2 Bridges
 - Jean-Francois Klein (Switzerland)
 - TG1.5 Concrete Structures in Marine Environments
 - Tor Ole Olsen (Norway)
 - TG1.6 High-rise Buildings
 - Andy Truby (UK)

TG1.1 Design Applications

- Design Examples for strut and tie models
- 3 associated papers being presented to Congress

Recent Publications

- **fib Bulletin No. 31**
- **Title:** Post-tensioning in buildings



Forthcoming Publications

- Strut and Tie Models
- Follow up to Bulletin 16
- Design Examples



TG1.2 Bridges

- Active Working Parties:
 - High speed train bridges
 - Pedestrian bridges
 - Corrugated steel web bridges

Recent Publications

- **fib Bulletin No 32**
- **Title:** Guidelines for the design of footbridges
- **Category:** Guide to good practice



Future Publications

- Revision of Guidelines for the design of footbridges
- Corrugated Steel Web Bridges
- Guidelines for High Speed Railway Bridges

Footbridges update

- Two main areas:
- State of the Art on Vibration/Dynamics has changed
- Illumination – many changes in forms of lighting

Guidelines for Corrugated Steel Web Bridges

- Introduction
- General Features of CSW
- Design Approach (conceptual)
- Structural Components
- Construction
- Examples of CSW Bridge Construction
- Summary and Future Research and Development
- References
- Appendix:
 - Selected CSW Bridge Project Data (Up to 10 Bridges)

Post-tensioned bridges with corrugated steel webs



Extradosed bridges

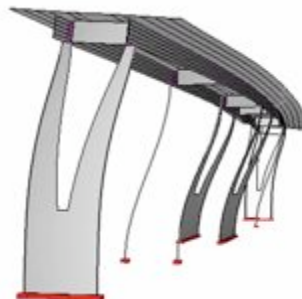


External post-tensioned bridge

High Speed Railway Bridges

- Objectives of a good design
- Conceptual design of HSRB
 - Basic design rules, functional requirements, aesthetic
 - Statical systems, cross-sections
- Important Issues
 - Dynamic effects (SLS, ULS, fatigue)
 - SLS criteria
 - Track-deck interaction
- Examples of best practice

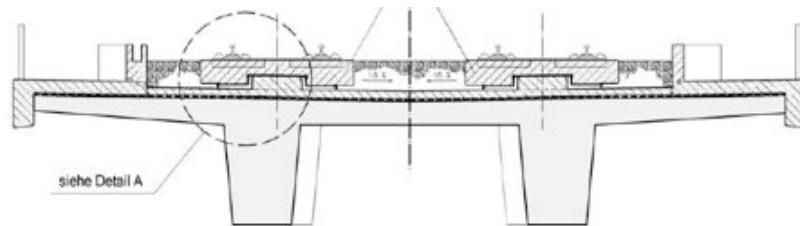
Important Issues – dynamic effects



$$n_1 = 0,7 \text{ Hz}$$

Important Issues – Track-deck interaction

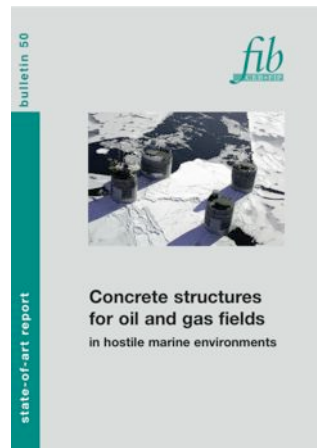
- Rail systems on bridges (ballast-concrete, rigid-movable)
- Joints
- Rail stresses



TG1.5 Concrete Structures in Marine Environments

Recent Publications

- *fib* Bulletin No. 50
- **Title:** Concrete structures for oil and gas fields in hostile marine environments

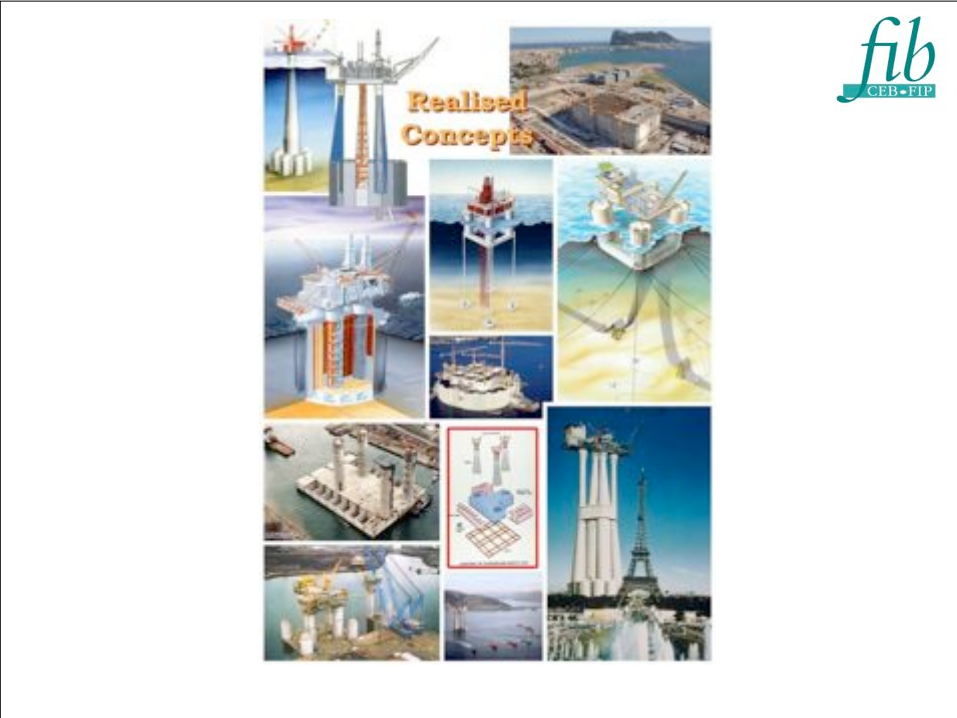


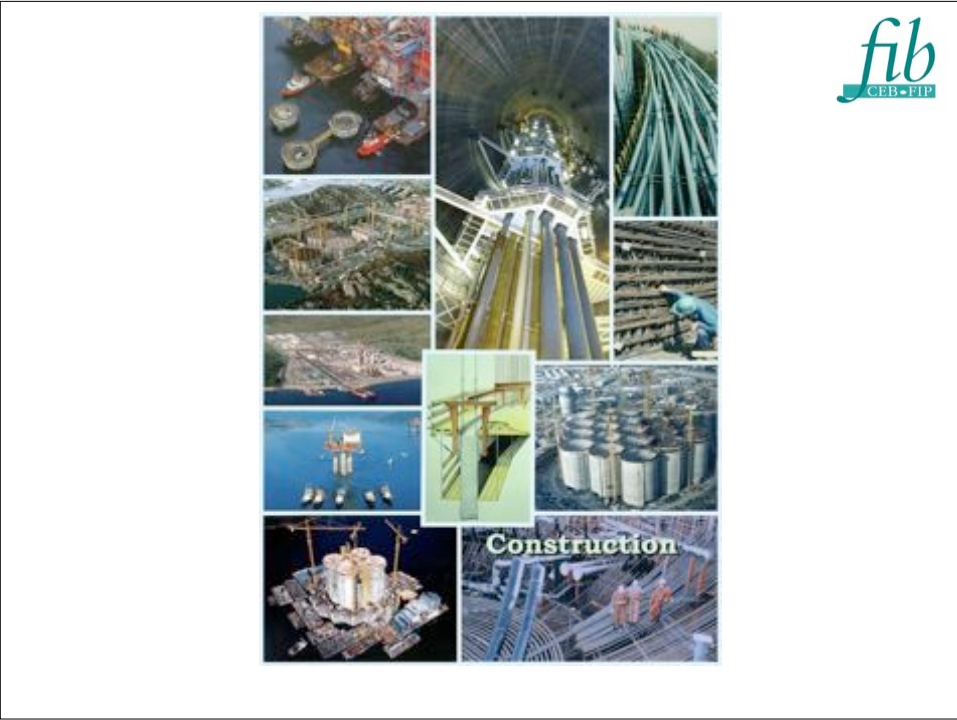


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Contents - *fib* State-of-the-art report

- 1. Summary
- 2. The history and performance of offshore concrete structures
- 3. Project planning and execution
- 4. Design
- 5. Construction
- 6. Materials
- 7. Durability
- 8. Environmental issues
- 9. Concrete in the Arctic
- 10. Other applications
- 11. Codes and standards
- 12. Bibliography

TG1.6 High-rise Buildings

- New task group

Fib Commission 1 TG1.6 High-rise Buildings

Remit:

- To review the state of the art relating to design and construction of high-rise buildings and particularly with reference to
 - Axial shortening
 - Steel reinforced Columns (SRC)
 - Damping in Tall Buildings
 - Concrete cores
 - Post-tensioned slabs
 - Design guidance
 - Design for Construction

Fib Commission 1 TG1.6 High-rise Buildings

Remit (contd):

- To review the state of the art relating to design and construction of high-rise buildings and particularly with reference to
 - Tolerances
 - Vertical Pre-stressing of Core Walls
 - Wind induced vibrations
 - Acceptable limits for accelerations and displacement velocities considering human tolerance and comfort
 - Special fire regulations?
 - Catastrophe safety
 - Liaison with UK Concrete Centre re their planned Tall Building publication



Commission 1 - Structures

- Met in London in June 2009
- Possible new areas of work

- Tunnels – interest in forming new TG
- Structural Failures – possible new TG to act as feedback group

- Next C1 meeting Monday 31st May

Advances which will affect Concrete Structures

- Thermal Modelling – Building performance for Sustainability
- Use of Thermal mass of Concrete in Buildings

- Sustainability and the Economy driving us to refurbish

And new Offshore challenges

- Deep water offshore windfarms

Coming Soon





Commission 1 - Conclusions

- Keep up with State of the Art
 - Look at future opportunities and challenges
 - Share Innovations
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- Thank you for your attention