Structural Mechanics & Building Materials

The research at the Structural Mechanics section of the Construction Technology Cluster at the Technology Campus Ghent, focuses on the human-induced vibrations of civil structures. The research can be characterized as applied research (within the framework of Technology Transfer projects and various consultancy assignments) and fundamental research by doctoral studies.

Main focus: Human-induced vibrations

A combined numerical and experimental approach is adopted in the investigation of the following topics:

- Vibration serviceability
- Load models
- Human-structure interaction
- Crowd dynamics/behaviour
- Vibration mitigation
- Vibration measurements

The research at the Building Materials section of the Construction Technology Cluster at the Technology Campus Ghent, focuses on mix design and durability aspects of concrete. The research can be characterized as applied research (within the framework of Technology Transfer projects, software development and consultancy).

Main focus: Mix design of concrete

Development of software “Mix design” and evaluation of “practical” concrete mixtures.

- Management of raw materials
- Specifications
- Mix design
- Optimization

![Structural Mechanics & Building Materials](image)
Infrastructure

To support the experimental framework, the infrastructure of the research group is composed of the following state-of-the-art experimental technologies:

- Wireless triaxial accelerometers
- Wireless motion trackers
- Force plate

Consultancy

The research expertise is applied in projects involving:

- **Vibration serviceability** of civil structures subjected to human-induced loading:
  - Assessment of the vibration performance of the structure based on design guides and state-of-the-art load models;
  - Design of vibration mitigation measures.
- **Full-scale testing**
  - Control measurements:
    - Identification and verification of the dynamic behaviour and performance of the structure;
    - Identification and verification of the efficiency of the installed vibration mitigation measures.
- **Finite Element Analysis**
- **Finite Element Model Updating**

Sustainable design

- **Modelling chloride diffusion en carbonation in concrete**
- **Probabilistic and semi-probabilistic evaluation of concrete mixtures on durability aspects**