

CE.413

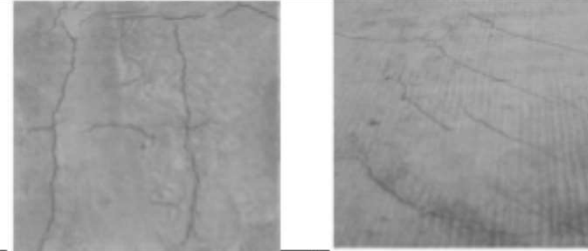
DURABILITY OF CONSTRUCTIONS

DETRIMENTAL AGGRESSIVE AGENTS UPON CONSTRUCTIONS

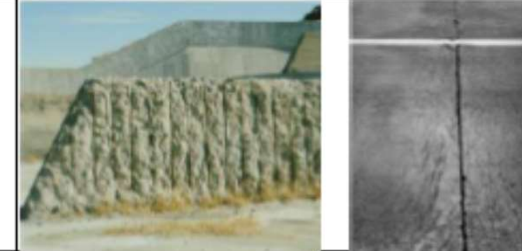
In the first part the course presents:

- Design of the concrete structural members from durability stand point
- Detrimental agents causing deterioration of concrete and the structural members and their identification
- Understanding of how concrete is deteriorated in elements; deterioration mechanisms
- Design provisions of concrete mix that may be additionally taken into consideration for a durable concrete in buildings
- Faulty design identification
- Faulty construction identification.

Shrinkage in concrete structures



Freeze and thaw



Marine corrosion in concrete structures



Corrosion of reinforcement

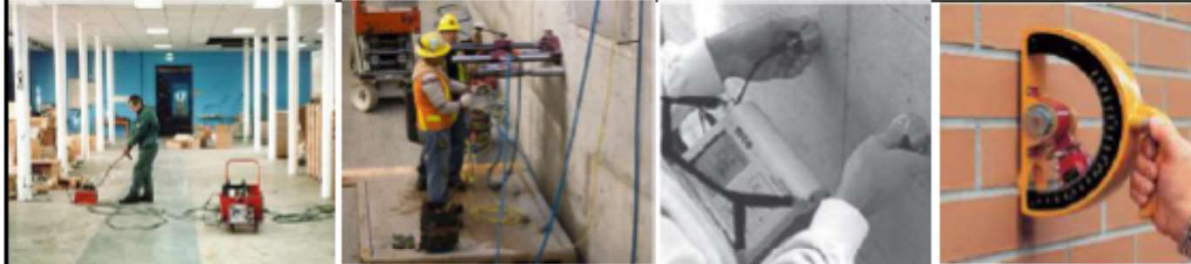


INVESTIGATION METHODS OF STRUCTURAL ELEMENTS

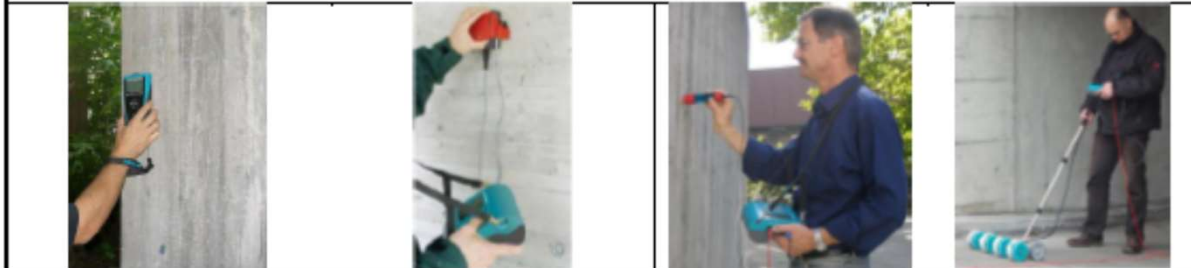
In the second part the course presents:

- Basic knowledge regarding assessment of the deterioration state for a concrete or masonry structure
- Nondestructive investigation methods of structural members.

Nondestructive methods



Nondestructive methods



HIGH PERFORMANCE CONCRETE AND COMPOSITES

PROPERTIES OF HIGH PERFORMANCE CONCRETE (HPC)

In the first part the course presents:

- Materials for the production of high performance concrete (cement , aggregate, chemical admixtures)
- Basic design of the mixture for high performance concrete
- Properties of the high performance concrete in hardened state.

Materials for HPC



Cement and Supplementary Cementing Materials (SCM)



Test specimens



Testing HPC



DESIGN OF STRUCTURAL ELEMENTS

In the second part the course presents:

- Properties of the reinforced high performance concrete members (beams and columns)
- Structural Design Guideline for the Use of High Strength Concrete
- Examples of buildings with high performance concrete structure.

