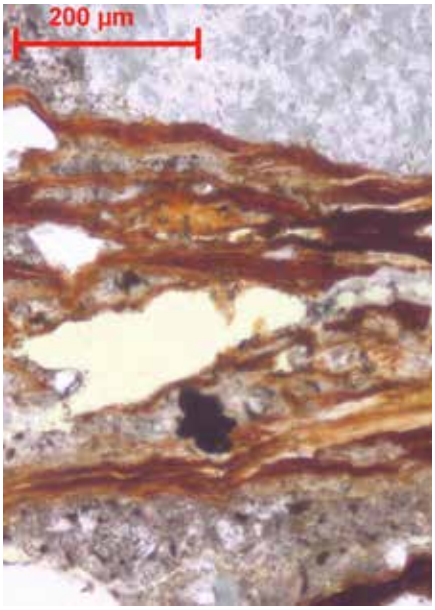
FUGRO-SUHAIMI CONCRETE DISTRESS INVESTIGATION

We offer a professional evaluative consultancy with allied technical services for determining the extent, severity and cause of concrete deterioration, whilst providing advice on remedial measures.

Concrete is a fundamental building material with many beneficial properties arising from its strength, versatility and ready availability. However, a number of deterioration and distress mechanisms could occur as a result of the interaction between the concrete and its environment. When concrete starts to deteriorate, it is essential that it is investigated by experts.

THIS SERVICE INCLUDES:

- **Specialist site teams** for non-destructive and destructive testing to determine the depth of cover to concrete, the condition of the reinforcement bars, crack monitoring, visual surveys, delamination surveys, UPV surveys, core and dust sampling.
- **Chemical laboratory** equipped to determine chloride, sulfate and cement content of cementitious materials, carbonation depth and pH content.
- **Physical laboratory** for compressive and flexural strength testing, along with long-term expansion testing.
- **Petrographic examination** of a range of construction materials, including concrete and aggregate.
- **Analytical techniques** such as ICP-MS, XRF, XRD and SEM.



Photomicrograph of reinforcement corrosion of concrete.

Fugro-Suhaimi

السحيمي - فيغرو

Fully-trained laboratory staff in offices throughout the region.

Fugro-Suhaimi plans and executes complete deterioration investigations, which its experts then use to obtain a thorough understanding of potential deterioration mechanisms and the strengths and limitations of investigative techniques.

INVESTIGATIONS INTO POSSIBLE DISTRESS AND DETERIORATION

A wide range of mechanisms can affect concrete and quite often multiple causes of deterioration are observed within the same structure, such as:

- Reinforcement corrosion
- Internal and external sulfate attack
- Alkali-silica reaction (ASR)
- Construction errors
- Delayed ettringite formation (DEF)
- Thaumasite form of sulfate attack (TSA)
- Chemical attack
- Settlement and movement
- Temperature change
- Weathering and erosion
- Secondary deposits and leaching
- Fire damage

SITE INVESTIGATION TECHNIQUES

A variety of NDT and SDT tests are available to determine the cause of deterioration, such as:

- Visual survey and assessment
- Crack monitoring
- Reinforcement bar detection
- Rebound hammer
- Moisture analysis
- UPV surveys
- Pull-off testing
- Permeability analysis
- Coring and breaking out

ADVICE ON A RANGE OF REPAIR OPTIONS

Upon completion of the investigation, our experts, if required, can discuss a range of repair or rehabilitation options and determine the most appropriate solution(s) depending on the required service life of the structure. Typically, the success of a repair or rehabilitation method will have to be tested, which we can plan and execute. Repair and rehabilitation advice include:

- Strengthening measures
- Concrete repairs
- Protective coatings
- Supervision of repairs
- Electrochemical treatment
- Waterproofing systems
- Decorative treatments
- Preparation of repair strategies

Strength analysis of concrete.

Rebound hammer testing of concrete.

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