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Master thesis project at Building Technology

Title

Condition assessment of concrete products for municipal applications

Background

Cement-based concrete products are the most important building materials which can be found applications in many municipal works such as sewage pipes and road/street pavement blocks. Owing to aggressive exposure environments the service life of concrete products may significantly vary. The concrete piles for sewage are exposed to an environment containing acid caused from sulfate oxides whilst the pavement concrete blocks are suffered to frost attack and erosion. To achieve the best sustainability, an optimal balance among low production costs, low carbon footprint and long service life is needed in manufacture of concrete products for municipal applications. This project intends to assess the conditions of the concrete piles for sewage and the concrete blocks for pavement and to identify possible damage mechanisms so as to find solutions to optimal production of concrete products for municipal applications. The project is in close cooperation with S:t Eriks AB – Swedish producer of concrete piles and pavement blocks.

Aim/Purpose

The goal of the study is, through condition assessment to identify possible damage mechanisms of the concrete products used under severe environments so as to find solutions to optimal production of concrete products for municipal applications.

Method

- Literature review
- Field assessment of concrete conditions including concrete piles for sewage and blocks for pavement
- Laboratory evaluation of concrete properties
- Analysis of possible damage mechanisms
- Suggestion of possible solutions

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