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Maintenance Management of Building Facades Using a Geographical Information System (GIS)

Objectives

To develop a prototype system to evaluate the performance and prioritize the maintenance of high- and medium-rise building facades while taking into account environmental loads.

Background

Regular building maintenance is essential because it helps conserve both energy and materials over the life of the building. To plan and prioritize maintenance activities effectively, building managers must be able to assess the risk of failure. In the case of facades, they need to know both the climate loads that the building is likely to experience and the probable response of the particular type of façade to those loads. There is thus a need for software to integrate this information and provide building managers with cost effective maintenance scenarios.

Statement of Work

- Develop and implement a database using a GIS platform to integrate climate and geographical information, and populate it with data from at least two regions in Canada with distinctly different climates.
- Using simulation techniques, estimate the hygrothermal response of at least three different types of facade (metal-glass curtain wall, masonry veneer, and prefabricated concrete panel) to the climate loads found in those two regions.
- Apply available deterioration models to the components of those wall systems.

Expected Outcomes

A prototype maintenance management system that helps building managers decide when and how often to maintain, repair and replace facade components.

Partners

Program for Energy Research and Development (PERD), Public Works and Government Services Canada (PWGSC), Natural Resources Canada (NRCan), Environment Canada, DOCO Microsystems, Canada Mortgage and Housing Corporation (CMHC), and Canada Post

Start/Expected Completion Dates

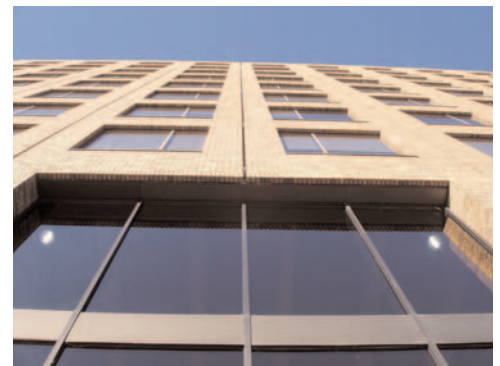
This project began in October 2004 and will be completed in 2009.

Project Managers

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For more information, see http://irc.nrc-cnrc.gc.ca/bes/hmpe/gis_e.html

Factsheet 53, May 2005



Precast concrete panel with brick masonry facade located in Gatineau, Quebec