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Institute for Research in Construction

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Rain Penetration and Moisture Management of Claddings

Objective

To develop a method for evaluating the rain penetration and moisture management of various innovative cladding products under a variety of climate and moisture loads.

Background

Exterior claddings are required to have a rain penetration control strategy. Strategies that have been incorporated in the National Building Code of Canada 2005 (NBC) as elements of acceptable solutions are: a clear 10 mm. air space; the insertion of drainage material behind the cladding; and the use of loosely-fastened cladding components whose configuration incorporates a series of drained and vented spaces. Recently proposed alternative solutions include new cavity devices, innovative claddings, and systems that use reduced air space behind the cladding. NRC-IRC's Canadian Construction Materials Centre and Building Envelope and Structure program have initiated a consortium project to develop a controlled, repeatable laboratory method to evaluate the water penetration and moisture management of these innovative products and systems.

Statement of Work

- Construct new facilities to accommodate large-scale test walls.
- Develop a protocol to assess cladding products in the laboratory under controlled and repeatable conditions.
- Analyze the NBC 2005 requirements that apply to cladding and supporting wall assemblies.
- Develop specifications for a benchmark cladding system based on acceptable solutions in the NBC.
- Categorize claddings based on the method of attachment, the drainage medium, and the configuration and complexity of the cladding system.
- Determine pass/fail criteria for proposed alternative solutions from the moisture management performance of the benchmark systems.
- Develop a method to evaluate water and moisture management capabilities for each category of cladding system.
- Verify and utilize hygrothermal modeling for cladding systems.

Expected Outcomes

- A controlled and repeatable method to evaluate water penetration and moisture management of cladding systems.
- Quantifiable performance levels for acceptable solutions in the NBC.

Partners

Centurion Stone, Cultured Stone – a Division of Owens Corning, G.S. Harris, Inc., Coronado Stone, Eldorado Stone LLC, Prairie Stone International, CertainTeed Corp., James Hardie

Start/Expected Completion Dates

This project began in 2005 and will be completed in 2007.

Project Managers

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

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