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Update on moisture management research and related tech transfer activities and new research projects

Maref, W.; Lacasse, M. A.; Rousseau, M. Z.; Mukhopadhyaya, P.

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Update on Moisture Management Research & Related Tech Transfer Activities & New Research Projects

Wahid Maref

on behalf of the

***MEWS Research Team & Window-wall interface Research Team
Institute for Research in Construction***

March 04, 2003

Outline

- ***News on the MEWS-related activities since November 2002***
 - *One day meeting with partners*
 - *IRC cross-Canada one day BSI*
 - *hyglIRC 1-D*
- **New projects**
 - Evaluating the effectiveness of window-wall interface details to manage rainwater
 - High Performance stucco

News on the MEWS-related activities since November 2002 -Tech transfer

IRC hosted one-day meeting with MEWS partners in December 2002.

- The objective was to present a final wrap up on MEWS accomplishments, as well as new initiatives IRC was about to undertake on the research as well as the technology transfer fronts .***

News on the MEWS-related activities since November 2002 -Tech transfer

- ***This year, IRC cross-Canada one-day Building Science Insight seminar will be about Moisture Management in Exterior Walls.***
- ***It will cover issues such as:***
 - ***rain penetration, condensation potential, climate loads and drying of walls in wood-frame buildings, and will integrate research results obtained in the MEWS project***
- ***hyglIRC -1D model being developed at the moment, will also be demonstrated at the seminar***
 - ***We will be seeking some potential users of the software for Beta-testing and for the development of users interfaces***

News on the MEWS-related activities since November 2002 -Tech transfer

- ***The BSI seminar will run from October 2003 to January 2004.***
 - ***The target audience includes practitioners, regulators, technologists and building developers, owners and managers***
 - ***We should be in Vancouver in mid-November, 1 day or 2?***
 - ***We will be approaching organizations and associations for sponsorship once the program is finalized (in early April).***



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- News on the MEWS-related activities since November 2002
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 - hygIRC 1-D
- ***New projects***
 - *Window-wall interface*
 - *High Performance Stucco*

Window-wall Interface- Background

- ***CMHC studies in BC and Alberta -***
 - ***Premature failures of the building envelope due to:***
 - ***Inadequate detailing practice***
 - ***Defective installation of windows***
- ***Development of alternative construction details to manage water intrusion at the window-wall interface***
- ***Joint research project with CMHC (Silvio Plescia)***

Window-wall Interface- Objective & Approach

Objective -

- ***Evaluate specific window-wall interface details to determine how effective they manage rainwater intrusion***

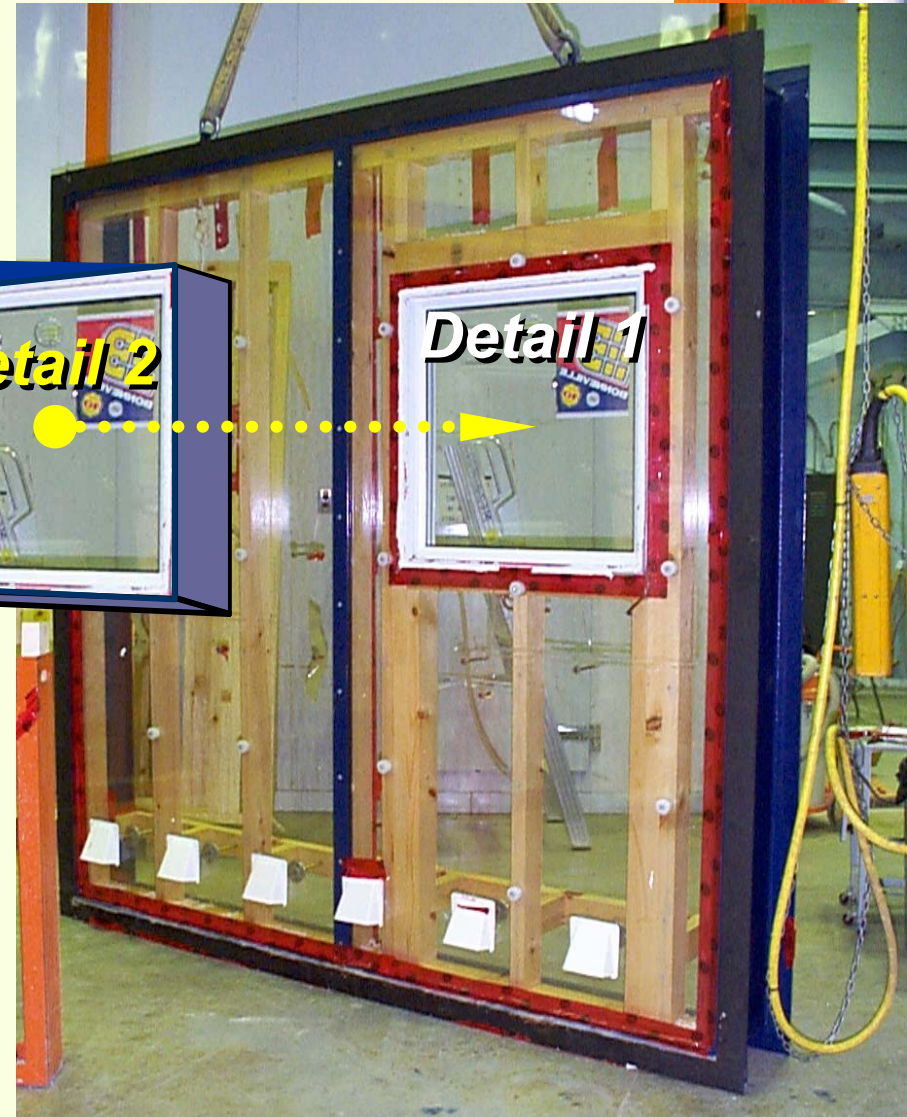
Approach –

- ***Laboratory investigations provide an effective way to obtain reliable, insightful information***
 - ***Provide qualitative and well as quantitative information***
- ***Assess the water management capabilities of specific details for a series of window types in a given wall cladding system***

Window-wall Interface –

Approach - Assess water management capabilities

- Assess the water management capabilities of specific details for a series of window types in a given wall cladding system



Window-wall Interface –

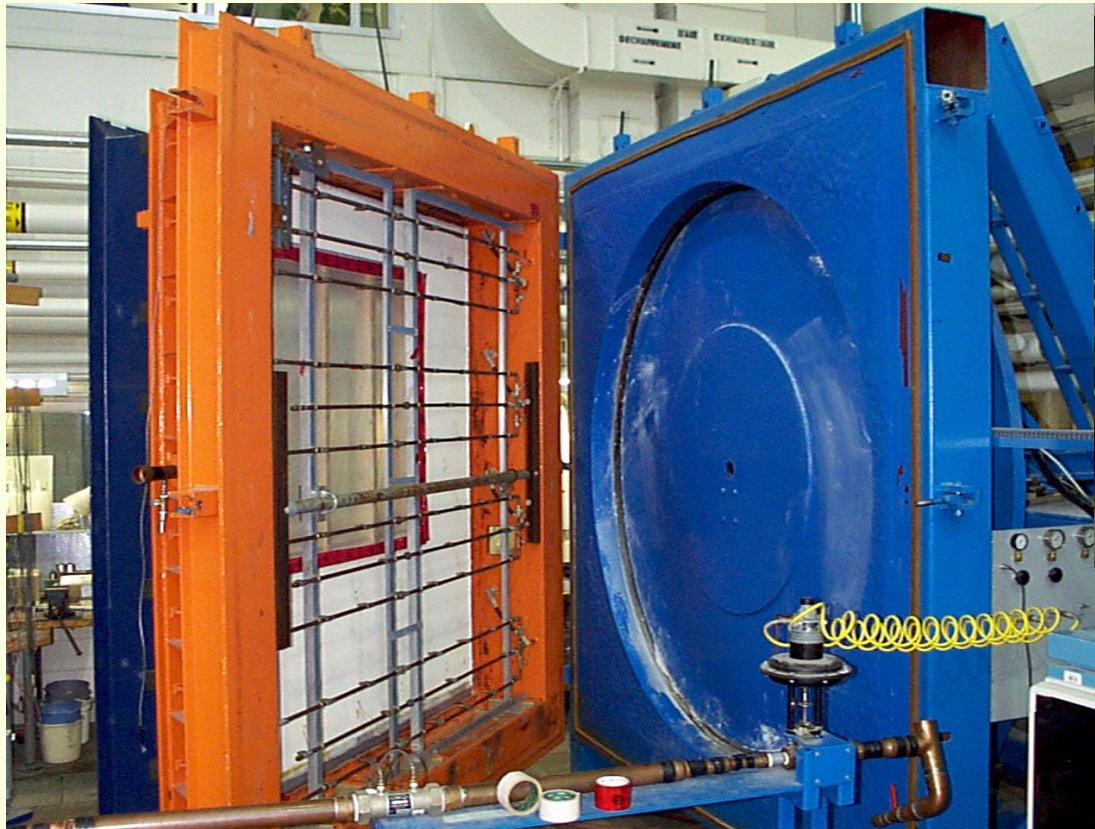
Approach - Assess water management capabilities

- ***Interface details are selected based on the input from the industry specialists:***
 - ***Dave Ricketts - RDH (Practices in BC)***
 - ***John Vlooswyk – Building Envelope Eng. Inc. (Prairies)***
 - ***Don Buchan - BLP Consultant (Ontario-Central Canada)***
 - ***Armand Patenaude – Air-Ins (Quebec)***

Window-wall Interface – Approach

- ***Subject window-wall assemblies to simulated wind-driven rain conditions***
- ***Conditions are representative of range of climatic conditions for geographical region(s) of interest to the consortia members***

Window-wall Interface – Approach - Simulated wind-driven rain



DWTF - Dynamic wind and wall test facility



Siding test specimen

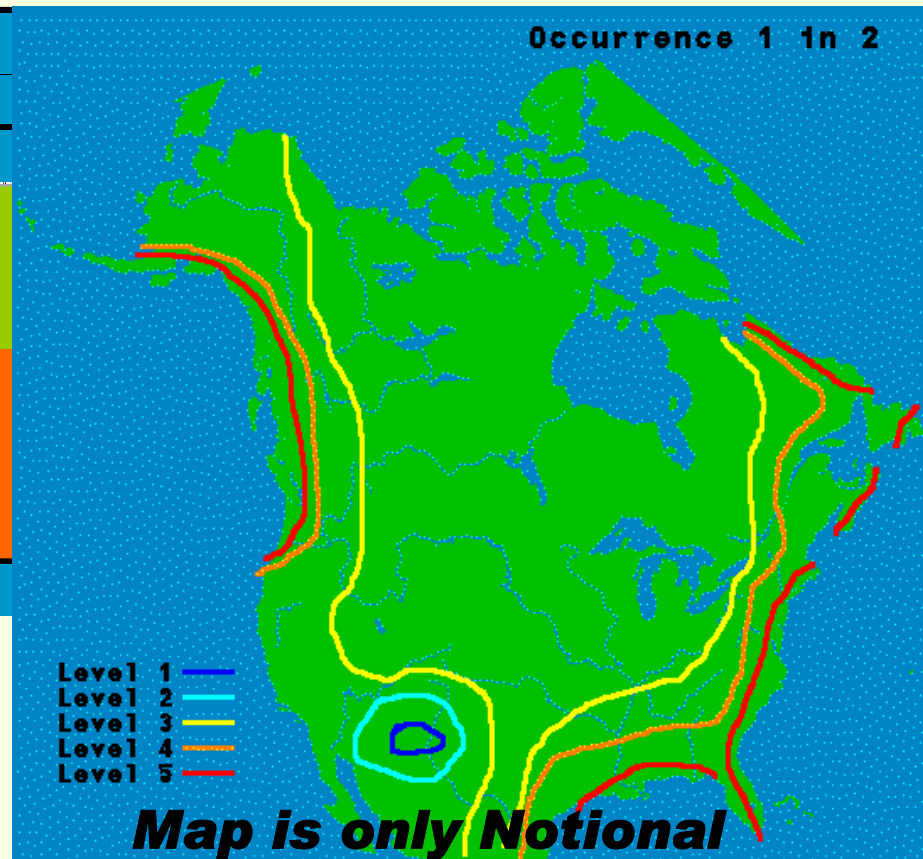
Window-wall Interface – Approach – Climate data \Rightarrow Load levels

From climate data \Rightarrow Establish test protocol

From test results \Rightarrow Determine response to load levels

From climate data \Rightarrow Determine probability of load levels

Pressure Differential (Pa)	Spray rate (L/min-m ²)					
	0.1	0.2	0.4	0.8	1.6	3.4
0						
10	L1					
15		L2				
30			L3			
75				L4		
150					L5	
300						
600						



Window-wall Interface – Benefits

- ***Knowledge used to help produce planned CMHC Best Practices Guide for Window Installation***
- ***Project findings available to standards committees such as CSA A440.4 Technical Committee for Window Installations***
- ***Develop evaluation criteria and test protocol***

Window-wall Interface – Further benefits

- ***Enhanced Technical knowledge that helps :***
 - ***Improve effectiveness of specific product(s) at managing rainwater when used in wall assembly , leading to ⇒***
 - ***Better installation practice ⇒ fewer callbacks***



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 - *Window-wall interface*
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High Performance Stucco (IRC/CMHC)

Project Objectives

- Possibility of engineering a Portland cement stucco material that will limit liquid water entry on its external surface and at the same time allow water vapour to dry out of it.***
- Consider stucco as a material component of an ideal wall system (not system performance)***
- Hence, the objective of the proposed work can be summarised as: to engineer a 'high performance stucco' material that has much lower liquid diffusivity but no lesser water vapour permeability than the 'Normal Stucco'***

For more info...

- **MEWS** (**Dr. M.K. Kumaran- (613) 993 9611**)
Kumar.Kumaran@nrc.cnrc.gc.ca
<http://irc.nrc-cnrc.gc.ca/bes/mews/index.html>
- **BSI** (**M. M.Z. Rousseau – (613) 993 3938**)
Madeleine.Rousseau@nrc.cnrc.gc.ca
<http://irc.nrc-cnrc.gc.ca/bsi/2003/index.html>
- **Window-Wall Interface** (**Dr. M.A. Lacasse – (613) 993 9715**)
Michael.Lacasse@nrc.cnrc.gc.ca
<http://irc.nrc-nrc.gc.ca/bes/fenestra/index.html>
- **hyglIRC 1-D** (**Dr. W. Maref – (613) 993 5709**)
Wahid.Maref@nrc.cnrc.gc.ca
- **High P. Stucco** (**Dr. P. Mukhopadhyaya – (613) 993 9600**)
Phalguni.Mukhopadhyaya@nrc.cnrc.gc.ca