Façade Tectonics Forum: Simulation Vs. Reality

Measurement and Verification

May 6, 2021

Lori O’Malley, P.Eng., M.A.Sc., LEED Green Associate

Building Envelope Engineering Specialist

- 24 years of building envelope experience
- B.A.Sc. and M.A.Sc. from the Department of Civil Engineering at the University of Toronto
- Associate responsible for the Building Science group at a large consulting engineering firm in Toronto for over 11 years
- Joined PCL in 2008 as a Building Envelope Engineering Specialist
- Provide technical building envelope assistance to projects in Toronto and other districts throughout North America

Simulation vs. Reality

Measurement and Verification

General Trend of Building Performance

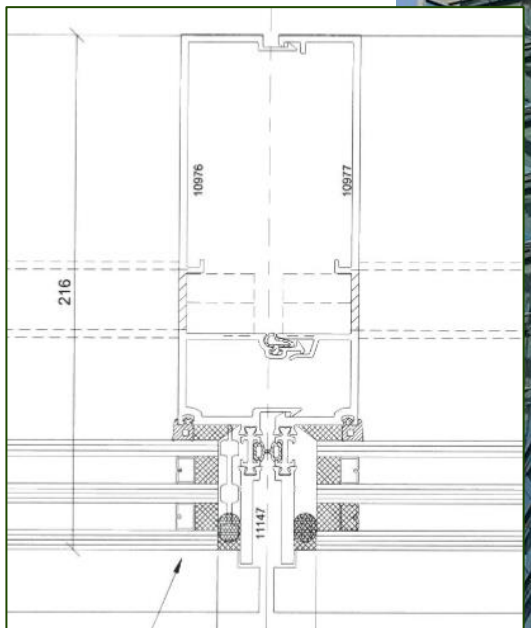
- Improved Thermal Design
- Improved Air Tightness
- Improved Resilience

Simulation vs. Reality

Measurement and Verification

General Trend of Building Performance

- Improved Thermal Design
  - Impact of thermal bridging on the thermal performance recognized
  - Higher thermal performance and the use of passive design strategies to reduce heating loads encouraged
- Improved Air Tightness
- Improved Resilience



Simulation vs. Reality

Measurement and Verification

General Trend of Building Performance

- Improved Thermal Design
- Improved Air Tightness
  - Recognition that improved air tightness will lower utility costs, reduce heating loads and improve the effectiveness of the mechanical systems, improve the durability and occupant comfort, and enhance resiliency
  - Assembly level and whole building testing being completed on projects
- Improved Resilience

Simulation vs. Reality

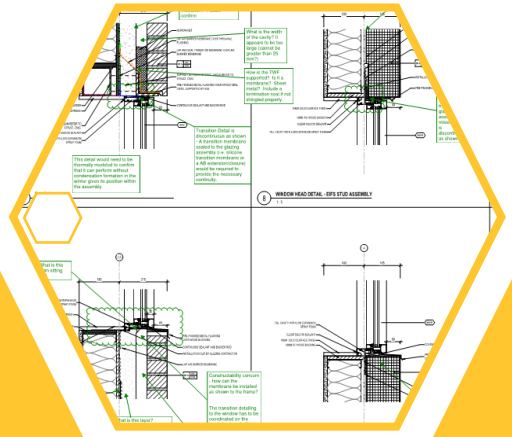
Measurement and Verification

General Trend of Building Performance

- Improved Thermal Design
- Improved Air Tightness
- Improved Resilience
  - Buildings must be able to withstand the impacts of climate change and extreme weather events using passive design

Simulation vs. Reality

Measurement and Verification



Design

Building Operation

Construction

Preconstruction Planning

Ken Soble Tower Passive House Renewal Project

High Building Envelope Performance Requirements

- Air Tightness
- Thermal Performance
- Water Penetration Resistance

Verification of as-built condition required for certification

Ken Soble Tower (500 MacNab St. N.) – CityHousing Hamilton
E.R.A. Architects Inc.

Ken Soble Tower Passive House Renewal Project

intertek
Total Quality. Assured.

CASCADIA WINDOWS LTD
TEST REPORT

SPECIFICATION
AAMA/WDMA/CSA 101/I.S.2/A440-08
AAMA/WDMA/CSA 101/I.S.2/A440-11
A44051-09

PRODUCT SERIES & TYPE
Universal Series Picture Window – Interior Glazed

PRIMARY DESIGNATION
Class CW – PG95 – Size Tested 2135 x 2595 mm (84 x 1

SECONDARY DESIGNATION
Positive Design Pressure = 4560 Pa (95.2 psf)
Negative Design Pressure = 4560 Pa (95.2 psf)
Water Penetration Resistance = 730 Pa (15.3 psf)
Canadian Air Leakage Resistance = Fixed

REPORT NUMBER
103028212COQ-001J

ISSUE DATE
20-July-2017

REVISION DATE
19-Sept-2017

PAGES
23

DOCUMENT CONTROL NUMBER
GFT-OP-10b (13-March-2017)
© 2017 INTERTEK

SILICONE TRANSITION STRIP AND WINDOW
SITE INSTALLATION QUALITY CHECKLIST

Project Name:	500 MacNab	Date:	
Job #:		PCL Inspector:	
Subcontractor:			
Foreman:		Crew Size:	
Lead Installer:		Climber:	

Project Specific Information:

Time of Inspection:		Weather:	
Location:		Windows Reviewed:	
Elevation:			
Gridlines:	Between Gridlines ____ and ____ on Gridline ____		

Subcontractor Checklist Received and Completed Properly ☐ YES ☐ NO ☐ N/A
Subcontractor Confirmed Area Ready for Review ☐ YES ☐ NO ☐ N/A

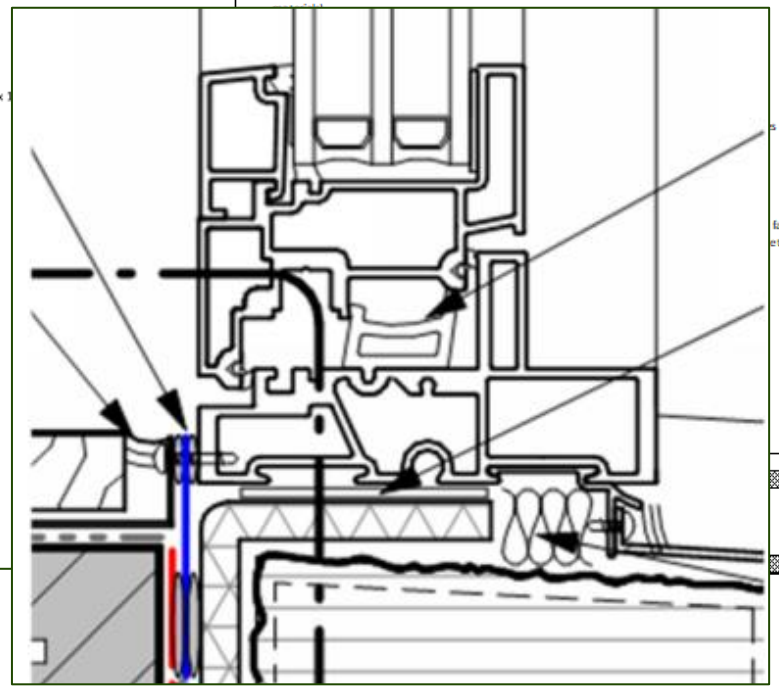
SUBSTRATE CONDITION /PREPARATION

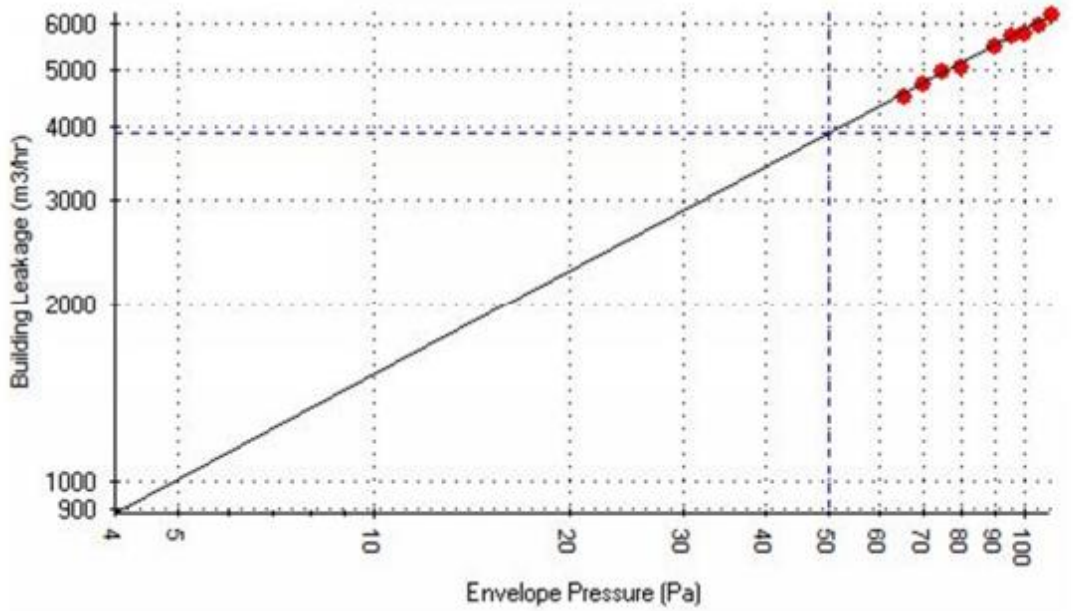
- Cement Bear completed in this area prior to C3 starting work ☐ YES ☐ NO ☐ N/A
- C3 did not identify any concerns with the Cement Bear or substrate prior to staring work ☐ YES ☐ NO ☐ N/A

Primer Required: ☐ YES ☐ NO ☐ N/A		Primer:	
Type of Silicone Sealant:	Spectrem 1	Manufacturer:	Tremco
Type of Silicone Strip:	Double Ribbed Engineering Transition Assembly (ETA)	Manufacturer:	Tremco

Preparation:

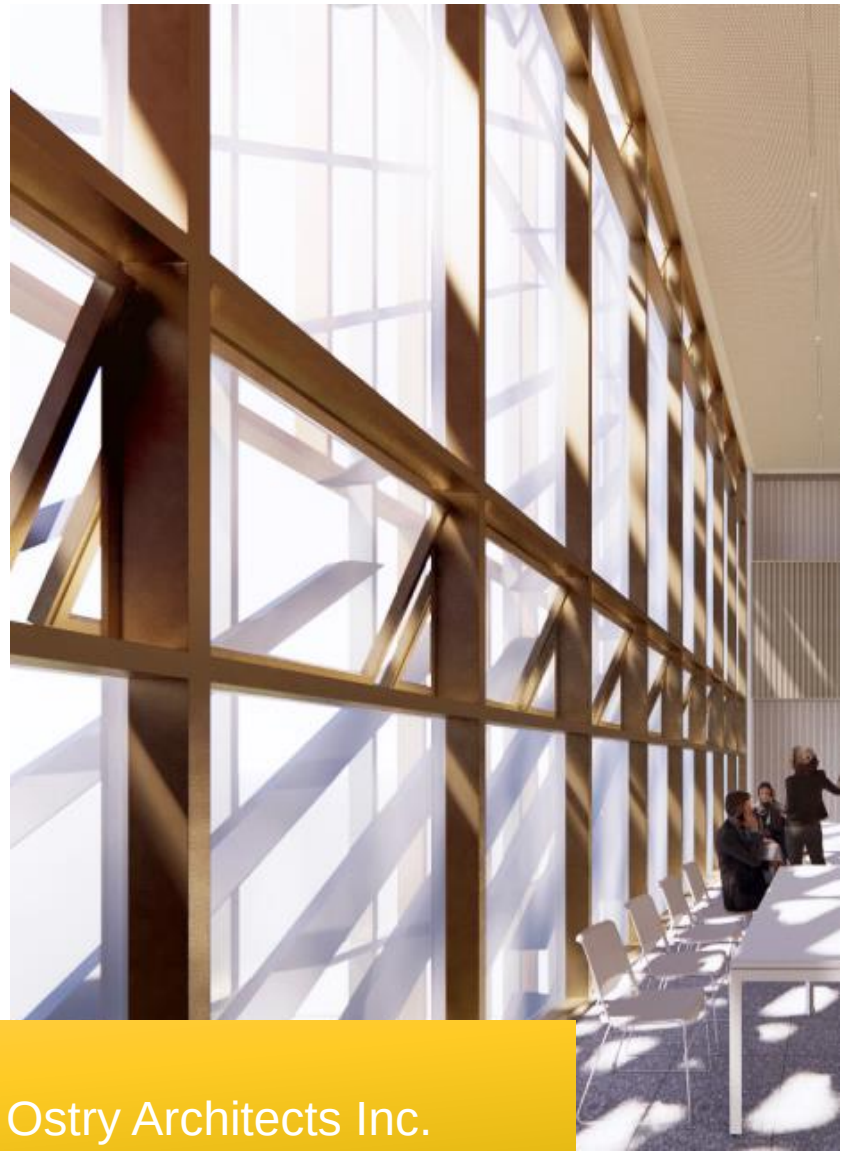
- Appears that C3 properly prepared the surface (i.e. no signs of dust, loose material, or any other ☐ YES ☐ NO ☐ N/A





Simulation vs. Reality

Measurement and Verification



George Brown College - The Arbour
Moriyama & Teshima Architects / Acton Ostry Architects Inc.

Thank you