Windows & Doors

Regulatory Compliance in Canada

presented by Dan Braun & Adam Mantei
Webinar Outline

- Changes in building code requirements
- History of AAMA/WDMA/CSA 101/I.S.2/A440
- Overview of product rating system
- Market acceptance
- Case study: Slider window
Changes in National & Provincial Building Codes

- Earlier versions of NBCC and NBCC-based provincial codes required conformance to CSA A440-00

- Now, must conform to NAFS-08 and CSA A440S1-09 Canadian Supplement per 2010 NBC Section 9.7.4.2
  - Scope includes windows, doors, and skylights

- Certification not required by code; Conformance required
Changes in National & Provincial Building Codes

2012 BCBC now being enforced for NAFS & supplement requirements

- Ontario enforcement expected to start mid-2014
- Other jurisdictions may adopt
- NAFS-11 anticipated for future code editions
History of NAFS

- NAFS-North American Fenestration Standard
- Combined effort of AAMA, WDMA and CSA
- Harmonization of AAMA 101, WDMA I.S.2, CSA A440
- Formally known as; AAMA/WDMA/CSA 101/I.S.2/A440
NAFS Recognition in the US

- **2005**: First in the CSA format was published
- **2006**: Standard was referenced in the IBC
- **2009**: NAFS 08 was referenced in the IBC
- **2012**: NAFS 11 is referenced in the IBC
NAFS Recognition in Canada

Standard was first referenced in the NBCC
First enforced in British Columbia (2012 BCBC)
Enforcement & Interpretation depends on AHJs

2010
NAFS-08 vs. NAFS-11

- Measure and record force to operate dead-bolt (SHD)
- Removed pass/fail for AAMA925-07
- Operator type changes; Added RWG, RWP, changed TDD to TDDCC and TDDOC
- Reference to downward and upward tied to Positive and negative loads (roof-installed products)
- 2X DP loads in downward (positive) direction for skylights
- Folding door systems excluded from scope
NAFS Product Rating System
Overview – NAFS Product Selection

- Details on the Canadian Supplement
- Understanding NAFS products rating system
NAFS-08

Primary tests:
- Air infiltration/exfiltration
- Water penetration
- Structural capacity

Auxiliary tests:
- Operation, Forced Entry, Sash Strength, etc.

Materials & Components:
- Sections 6 & 7 of NAFS-08.
CSA A440S1-09 Canadian Supplement

CSA A440S1-09 describes the minimum wind & water ratings needed based on climate data, building height, and terrain.

Other requirements such as Performance Class, overall size must be considered.

Primary drivers for product selection:
- Water penetration
- Wind load (structural)
Local AHJs may choose to specify requirements above and beyond those required by the supplement.

Minimum label requirements are specified by the supplement:
- Permanent: manufacturer name
- Temporary: Primary & Secondary Designators
- Should indicate conformance to NAFS-08 and CSA A440S1-09

Note that environmental data in CSA A440S1-09 does not currently match Code in some cases – consult the AHJ.
Limited Water Option – Doors

Water penetration tests of doors may be conducted at 0 psf pressure differential for limited water rating

- Side-hinged doors only.

Limitation indicated on test report

Permitted for doors in a covered area
Interpreting Primary Results

Air leakage

• Result is a volume per window area for pre-determined pressure difference
• Canada: A2 minimum
• Maximum air leakage, in Canada, is measured for both directions

Water Penetration

• Evaluates ability to resist water penetration at a differential pressure tied to Performance Grade (PG)

Structural: Uniform load

• No permanent damage to window
• Must operate freely after test
• Deflection limits apply for CW and AW ratings
Developing a Test Plan

Critical information to compile before commencing tests:

- Drawings
  - Assembly, individual dies, parts list
- Product variations
- Intended market applications
Supporting Documentation

Drawings and Components
  • Allow for comparison to other “similar” products or components for equivalency
  • Required for detailed test report – can assist with determining equivalency

Product variations
  • To determine if similar products can be grouped together

*NOTE*: Any desired substitutions should be considered early in process
Allowable Substitutions

Qualification of designs, configuration and assemblies

Examples of qualifications

Geometry and components
- Must fit in the rectangle of the tested sample
- Must have equivalent components

Operation and orientation – See following slide

Composite units and unique framing members
- Test in longest dimension desired (i.e. Mullions)
## Example of Door Qualifications

<table>
<thead>
<tr>
<th>A</th>
<th>Qualifies any single fixed side lite or single fixed door system. Test A qualifies A. Does not qualify B, C, D, E, F, or G.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Qualifies any single side-hinged door system with the same hinge location and not more than one operable leaf or operable side lite. Test B qualifies B. Does not qualify A, C, D, E, F, or G.</td>
</tr>
<tr>
<td>C</td>
<td>Qualifies any single side-hinged door system combination assembly or composite door system with the same hinge location (side jamb) and not more than one operable leaf or operable side lite. Test C qualifies A, B, and C. Does not qualify C hinged-at-center mull, D, E, F, or G. Test C hinged-at-center qualifies A, B, or C hinged-at-center. Does not qualify C side jamb hinged, D, E, F, or G.</td>
</tr>
<tr>
<td>D</td>
<td>Qualifies any single side-hinged door system combination assembly or composite unit with the same hinge location and not more than two operable side lites. Test D qualifies B, C, and D. Does not qualify A, E, F, G, or C hinged-at-center.</td>
</tr>
</tbody>
</table>
| E | Qualifies any single side-hinged door system combination assembly or composite unit with the same hinge location and not more than one operable leaf or operable side lite.  
Test E qualifies A, B, C, E, and C hinged-at-center mull. Does not qualify D, F, or G. |
|---|---|
| F | Qualifies any single side-hinged door system combination assembly or composite unit with the same hinge location and not more than two operable leaves or two operable side lites.  
Test F qualifies A, B, C, D, E, F, and C hinged-at-center. Does not qualify G. |
| G | Qualifies any single side-hinged door system combination assembly or composite unit with the same hinge location and not more than two operable leaves or two operable side lites and a transom.  
Test G qualifies A, B, C, D, E, F, G, and C hinged-at-center. |
Mulled Assemblies
Overview – Mulled Assemblies

- What is a mullion (combination assembly vs composite assembly)
- How are mullions tested
- How are mullions rated
- Best approaches for using AAMA 450
- Review current building code requirements for mullions
**Definitions**

**Combination assembly** — an assembly formed by a combination of two or more separate fenestration products whose frames are mulled together utilizing a combination mullion or reinforcing mullion.

**Combination mullion** — a horizontal or vertical member formed by joining two or more individual fenestration units together without a mullion stiffener.

**Composite unit** — a fenestration product consisting of two or more sash, leaves, lites, or sliding door panels within a single frame utilizing an integral mullion.

**Integral mullion** — a horizontal or vertical member which is bounded at either end or both ends by crossing frame members.
Definitions

**Mullion stiffener** — an additional reinforcing member used in a reinforcing mullion. Mullion stiffeners carry the entire load or share the load with adjacent framing members.

**Reinforcing mullion** — a horizontal or vertical member with an added continuous mullion stiffener and joining two or more individual fenestration units along the sides of the mullion stiffener.

**Span** — the clear distance measured parallel to the length of a mullion or divider between support points.

**Tributary width** — the width of wind-bearing area contributing to the load on a mullion or divider.
Mullion Assembly Testing

Combination Assembly

Tested as a combination assembly (Clause 4.6.3.2)

• If tested as a combination assembly, the individual units making up the combination assembly shall also qualify as individual units with width and height less than or equal to individual test unit size, provided that the individual units also comply with Clause 4.4.2.5. Also, the mullion shall qualify for spans and tributary widths less than or equal to those of the tested combination assembly.

~ Or ~

• By testing as individual units, with mullion performance tested separately or calculated in accordance with AAMA 450
Mullion Assembly Testing

Composite Assembly

Tested as a composite assembly

• Each unique framing member shall be tested in the longest dimensions for which compliance is desired

• Framing members shall be of identical cross-section of those tested to claim compliance

• If all gateway requirements are met for a composite assembly, and all auxiliary tests are performed and passed, single unit tests shall not be required
Mullions – How Rated

NAFS Section 4.6.1 Mullion Rating

- **Mullion Rating by Testing** - Testing composite units or mulled combination assemblies (including window wall assemblies) in accordance with this Standard/Specification qualifies mullions in similar units or assemblies with equal or smaller spans, and equal or smaller tributary widths, and horizontal mullions with equal or smaller supported mass.

- **Mullion ratings** shall be determined according to the requirements and procedures of AAMA 450 (i.e., air, water and structural) and the ratings shall become a part of the test record for the composite units or mulled combination assembly.
Voluntary Performance Rating Method for Mulled Fenestration Assemblies

Scope
Procedures and requirements for determining the air infiltration, water resistance and structural performance of factory built or knocked down and field mulled fenestration assemblies.

Presents test procedures and calculation procedures for structural performance.

Provides a means of grouping mulled fenestration assemblies.
Option 1: Test Total Assembly

(+) Covers mandatory air/water testing

(+) Exempt from L/175

(+) PE review and seal not required

(+) Follow on calculations for alternate sizes (8.1)

(-) Test specimen prep, test specimen cost and test lab scheduling
Option 2: Test Mullion Element

(+) Minimal test specimen prep and test specimen cost

(+) More favorable results than Option 3

(-) Analysis by PE

(-) L/175 limit

(-) Follow on air/water

(-) Anchor analysis 3rd Party PE
AAMA 450

Option 3: Engineering

(+) No test specimen

(+) Quick, inexpensive evaluation of many profiles.

(-) L/175 limit

(-) Follow on air/water

(-) Anchor analysis 3rd Party PE

(-) No credit for partial composite action or PVC
AAMA 450 – Discussion

Option 1
• seems the most logical to follow as air/water testing is required for others
• should not be undertaken without thorough planning and anticipation of Grouping

Option 2
• best suited for composite mullions that would be conservatively analyzed by Option 3

Option 3
• valuable component of Grouping
• valuable for existing testing where optional water tests have been performed
Market Acceptance
Overview – Market Acceptance

- Labeling requirements
- Certification option
- Intertek’s new pricing and inspection structure
NAFS Marking Requirements

From CSA A440S1-09:

6.4 Markings

6.4.1 Product manufacturer
All fenestration products shall bear a permanent marking indicating the fenestration product manufacturer’s identity in a location that is visible when the product is installed.

6.4.2 Performance rating
Performance ratings shall be indicated on a label using primary and secondary designators in accordance with Clauses 4.4.2 and 4.4.3 of AAMA/WDMA/CSA 101/I.S.2/A440 and shall include
(a) positive design pressure, where applicable;
(b) negative design pressure, where applicable;
(c) water penetration test pressure; and
(d) the Canadian air infiltration and exfiltration level.

Note: Performance rating labels may be non-permanent.
NAFS Labeling Primary Designator

Primary Designator

- 3 or 4 part code which includes:
  - Performance Class
  - Performance Grade (PG)
  - Maximum size tested
  - Product type (optional)

**Primary Designator**
LC-PG40-HS – 1830 mm x 1525 mm (72” x 60”) – Horizontally Sliding window

**Secondary Designator**
Design Pressure = 1920 Pa (40.0 psf)
Negative Design Pressure = -1920 Pa (-40.0 psf)
Water Penetration Resistance = 400 Pa (8.25 psf)
Canadian Air Leakage Resistance = A3 Level
Secondary designator

- Optional supplement to primary
- Consists of:
  - Positive design pressure (DP)
  - Negative design pressure (DP)
  - Water penetration resistance pressure
  - Canadian air infiltration/exfiltration level

<table>
<thead>
<tr>
<th>Primary Designator</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC-PG40-HS – 1830 mm x 1525 mm (72” x 60”) – Horizontally Sliding window</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary Designator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Pressure = 1920 Pa (40.0 psf)</td>
</tr>
<tr>
<td>Negative Design Pressure = -1920 Pa (-40.0 psf)</td>
</tr>
<tr>
<td>Water Penetration Resistance = 400 Pa (8.25 psf)</td>
</tr>
<tr>
<td>Canadian Air Leakage Resistance = A3 Level</td>
</tr>
</tbody>
</table>
# NAFS – Self Labelling Example

## Temporary Label

**PHYSICAL PERFORMANCE RATINGS**

<table>
<thead>
<tr>
<th>Manufacturer Name – Door Type &amp; Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class R – PG30 – Size tested 800 x 1800 mm (32 x 71 in) – Type H</td>
</tr>
<tr>
<td>Positive Design Pressure (DP) = 1680 Pa (35 psf)</td>
</tr>
<tr>
<td>Negative Design Pressure (DP) = 1440 Pa (30 psf)</td>
</tr>
<tr>
<td>Water Penetration Resistance Test Pressure = 260 Pa (5.25 psf)</td>
</tr>
<tr>
<td>Canadian Air Infiltration/Exfiltration = A3 Level</td>
</tr>
</tbody>
</table>

Conforms to AAMA/WDMA/CSA 101/I.S.2/A440-08 and CSA A440S1-09

## Permanent Manufacturer Label

**MANUFACTURER NAME**

Manufacturer contact information

Conforms to AAMA/WDMA/CSA 101/I.S.2/A440-08 and CSA A440S1-09
# Testing vs. Certification

<table>
<thead>
<tr>
<th>Testing</th>
<th>Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>No traceability</td>
<td>Traceability through plant audit</td>
</tr>
<tr>
<td>Test lab can only extend results to tested unit</td>
<td>Certification can extend results to all qualified units made</td>
</tr>
<tr>
<td>Products can’t be marked nor claims can be made that all units will perform similarly</td>
<td>Manufacturer can label their products and are certified by independent lab</td>
</tr>
</tbody>
</table>
Benefits of Certification

- Designed to streamline the building consent and inspection process
- Provides independent confirmation that a product complies with the Building Code
- Product listings are available for all AHJs and customers to assess conformance to the Building Code
Certification of Windows & Doors

Representative Samples and Substitutions

Accredited agencies have power to make engineering judgments – consider product variations and permit substitutions of components

Considerations:

• Door and Window hardware
• Window frame installation variations (i.e. nail-on flange vs. “renovation style” recessed installation or brick-molds)
• Door Slabs and Door Lites evaluated for “worst case”

Permit potential qualification of wide variety of products when a “representative sample” is tested
NAFS – Certified Labeling Example

Temporary Performance Rating Label

<table>
<thead>
<tr>
<th>ENERGY PERFORMANCE RATINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>U-value (W/m²-K)</td>
</tr>
<tr>
<td>Solar Heat Gain Coefficient</td>
</tr>
<tr>
<td>Visual transmittance</td>
</tr>
<tr>
<td>Energy Rating</td>
</tr>
<tr>
<td>Air Leakage (Us*m²)</td>
</tr>
</tbody>
</table>

MANUFACTURER NAME

Evaluation for performance to / Evaluation pour la performance à: CSA A440.2-09 and AAMA/WDMA/CSA 1011/S.2/A440-08

Refer to Intertek website / Referez-vous au site web d’Intertek. (http://whdirectory.intertek.com)

MANUFACTURER CONTACT INFORMATION

Intertek

PHYSICAL PERFORMANCE RATINGS

Class R — PG30 — Size tested 800 x 1800 mm (32 x 71 in) — Type H
Positive Design Pressure (DP) = 1680 Pa (35 psf)
Negative Design Pressure (DP) = 1448 Pa (30 psf)
Water Penetration Resistance Test Pressure = 288 Pa (5.25 psf)
Canadian Air Infiltration/Exfiltration = X3 Level

Conforms to AAMA/WDMA/CSA 1011/S.2/A440-08 and CSA A440S1-09

www.intertek.com/building
www.archtest.com
Case Study

Horizontal Slider
Case Study – Horizontal Slider

Window manufacturer needs to test their vinyl horizontal slider with the following specifications:

- Size: 72” wide x 60” high
- Single slider
- Location: Qualicum Beach, Campbell River, Courtenay
- For residential construction ≤ 10 m high
Case Study – Horizontal Slider

Step 1: Determining Performance Requirements

Locations: Qualicum Beach, Campbell River, Courtenay

Height of Building: 10 m

May be installed in rough or open terrain
  • Evaluate for Open Terrain as worst-case
### Table A.1
**Climate design data for selected locations in Canada**
(See Clauses 4.1, A.4.1, A.4.2.1, A.4.2.2, and A.4.2.4 and Figure A.1.)

<table>
<thead>
<tr>
<th>Location</th>
<th>Column A</th>
<th>Column B</th>
<th>Column C</th>
<th>Column D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Driving rain wind pressure (DRWP), Pa, 1/10</td>
<td>Hourly wind pressure (HWP), kPa, 1/50</td>
<td>Snow load, kPa, 1/50</td>
<td>January design temp. (JDT), ºC, 2.5%</td>
</tr>
<tr>
<td>British Columbia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abbotsford</td>
<td>200</td>
<td>0.62</td>
<td>2.0</td>
<td>0.3</td>
</tr>
<tr>
<td>Agassiz</td>
<td>200</td>
<td>0.75</td>
<td>2.4</td>
<td>0.7</td>
</tr>
<tr>
<td>Alberni</td>
<td>280</td>
<td>0.63</td>
<td>3.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Ashcroft</td>
<td>100</td>
<td>0.38</td>
<td>1.7</td>
<td>0.1</td>
</tr>
<tr>
<td>Beatton River</td>
<td>100</td>
<td>0.30</td>
<td>3.3</td>
<td>0.1</td>
</tr>
<tr>
<td>Burns Lake</td>
<td>120</td>
<td>0.39</td>
<td>3.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Cache Creek</td>
<td>100</td>
<td>0.39</td>
<td>1.7</td>
<td>0.2</td>
</tr>
<tr>
<td>Campbell River</td>
<td>300</td>
<td>0.64</td>
<td>3.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Carmi</td>
<td>80</td>
<td>0.38</td>
<td>3.9</td>
<td>0.2</td>
</tr>
<tr>
<td>Castlegar</td>
<td>80</td>
<td>0.34</td>
<td>4.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Chetwynd</td>
<td>80</td>
<td>0.40</td>
<td>2.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Chilliwack</td>
<td>200</td>
<td>0.72</td>
<td>2.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Comox</td>
<td>300</td>
<td>0.65</td>
<td>2.6</td>
<td>0.4</td>
</tr>
<tr>
<td>Courtenay</td>
<td>300</td>
<td>0.65</td>
<td>2.6</td>
<td>0.4</td>
</tr>
<tr>
<td>Prince George</td>
<td>100</td>
<td>0.37</td>
<td>3.4</td>
<td>0.2</td>
</tr>
<tr>
<td>Prince Rupert</td>
<td>280</td>
<td>0.54</td>
<td>1.9</td>
<td>0.4</td>
</tr>
<tr>
<td>Princeton</td>
<td>120</td>
<td>0.36</td>
<td>2.9</td>
<td>0.6</td>
</tr>
<tr>
<td>Qualicum Beach</td>
<td>280</td>
<td>0.64</td>
<td>2.2</td>
<td>0.4</td>
</tr>
<tr>
<td>Quesnel</td>
<td>100</td>
<td>0.31</td>
<td>3.0</td>
<td>0.1</td>
</tr>
</tbody>
</table>

**Worst case: DWWRP = 300 Pa; HWP = 0.65 Pa.**
## Step 2: Water Penetration

Highest DRWP from Table A.1 Column A was 300 Pa

### Table 1

<table>
<thead>
<tr>
<th>$p_r$, Pa</th>
<th>1/10 DRWP, Pa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height, m</td>
<td>40 60 80 100 120 140 160 180 200 220 240 260 280 300 350 400 450 500 550 600 650</td>
</tr>
<tr>
<td>10</td>
<td>49 73 98 122 146 171 195 220 244 268 293 317 342 366 388 412 434 456 478 500 522</td>
</tr>
<tr>
<td>15</td>
<td>53 79 106 132 159 185 212 238 265 291 318 344 370 397 434 471 508 545 582 619 656</td>
</tr>
<tr>
<td>20</td>
<td>56 84 112 140 168 196 224 252 280 308 336 364 392 420 448 476 504 532 560 588 616</td>
</tr>
<tr>
<td>25</td>
<td>59 88 117 145 174 202 230 258 286 314 342 370 398 426 454 482 510 538 566 594 622</td>
</tr>
<tr>
<td>30</td>
<td>61 91 122 152 182 213 243 274 304 334 364 394 424 454 484 514 544 574 604 634 664</td>
</tr>
<tr>
<td>35</td>
<td>64 94 125 157 188 219 251 282 313 345 376 408 440 472 504 536 568 600 632 664 696</td>
</tr>
<tr>
<td>40</td>
<td>67 97 129 161 193 225 258 290 322 354 386 419 451 483 515 547 579 611 643 675 707</td>
</tr>
<tr>
<td>45</td>
<td>69 101 133 165 197 230 263 296 329 362 395 428 461 494 527 560 593 626 659 692 725</td>
</tr>
<tr>
<td>50</td>
<td>72 105 137 170 203 236 270 303 336 370 404 438 472 506 540 574 608 642 676 710 744</td>
</tr>
</tbody>
</table>

**Specified DRWP = 366 Pa**

NOTE: Height is for the top of the window/door, and it’s rounded up
Case Study – Horizontal Slider

Specified DRWP from previous slide = 366 Pa

<table>
<thead>
<tr>
<th>Performance class and optional performance grade (PG)</th>
<th>Design pressure (DP)</th>
<th>Structural test pressure (STP)</th>
<th>Water penetration resistance test pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>LC</td>
<td>CW</td>
<td>AW</td>
</tr>
<tr>
<td>20</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>25</td>
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<tr>
<td>75</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>

366 Pa rounds up to 400 Pa water penetration pressure
### Step 3: Structural

Highest HWP from climate data: 0.65 kPa

The highest wind pressure (HWP) from climate data is 0.65 kPa. This corresponds to a design pressure (DP) of 1830 Pa at 10 m.

<table>
<thead>
<tr>
<th>Height, m</th>
<th>0.20</th>
<th>0.25</th>
<th>0.30</th>
<th>0.35</th>
<th>0.40</th>
<th>0.45</th>
<th>0.50</th>
<th>0.55</th>
<th>0.60</th>
<th>0.65</th>
<th>0.70</th>
<th>0.75</th>
<th>0.80</th>
<th>0.85</th>
<th>0.90</th>
<th>0.95</th>
<th>1.00</th>
<th>1.05</th>
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Pre-calculated using formula & constants specified in the Supplement
Case Study – Horizontal Slider

Specified HWP from previous slide = 1830 Pa

Table 3
Canada (only) optional performance grades (PG)
(See Clauses 0.2.6.1, 4.3.2.2, 4.4.3.2-4.4.3.4, 5.3.3.1, 5.3.4.2, and 5.3.4.3.)

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<th>Design pressure (DP) (Pa)</th>
<th>Structural test pressure (STP) (Pa)</th>
<th>Water penetration resistance test pressure (R, LC, CW, AW) (Pa)</th>
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1830 Pa rounds up to 1920 Pa DP (40 psf design load)
Case Study – Final Results

Requirements for Window

- LC Class – Minimum gateway test size: 72” x 56” (PG25)
- Air Leakage – A2 minimum
- Water penetration – PG55
- Structural Resistance – PG40

Test Window Evaluated

- Overall dimensions: 72” wide x 60” high
- Minimum Performance Grade required is PG40
  - Water: must be evaluated at PG55 level (400 Pa)

Test Results

- Air leakage: 0.46 L/s·m² – Pass A3 Canadian Air Leakage
- Water penetration: no pen. @ 400 Pa (8.25 psf) – Pass LC, PG55
- Structural: Operable, no damage after 2880 Pa (60.0 psf) Structural Test Pressure
- Auxiliary tests for LC gateway requirements: passed
Case Study – Designators for use on Temporary Label

Primary Designator
LC-PG40-HS – 1830 mm x 1525 mm (72” x 60”) – Horizontally Sliding window

Secondary Designator
Design Pressure = 1920 Pa (40.0 psf)
Negative Design Pressure = -1920 Pa (-40.0 psf)
Water Penetration Resistance = 400 Pa (8.25 psf)
Canadian Air Leakage Resistance = A3 Level
Closing remarks

Always a good bet to call your contact at ATI or Intertek should you have any questions

Fenestration Canada is an excellent resource with tools and guides available to its members

http://www.cwdma.ca/lang/en/
New Pricing and Inspection Schedule

• Two inspections per year rather than four
• Reduced pricing structure
• Intertek/ATI testing facilities in multiple locations in both Canada and US
• Evaluation to NFRC for US markets available through ATI
Intertek & ATI labs in North America
Questions?

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(604) 528-8710
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daniel.braun@intertek.com
Thank you for your time.