Intertek

Valued Quality. Delivered.

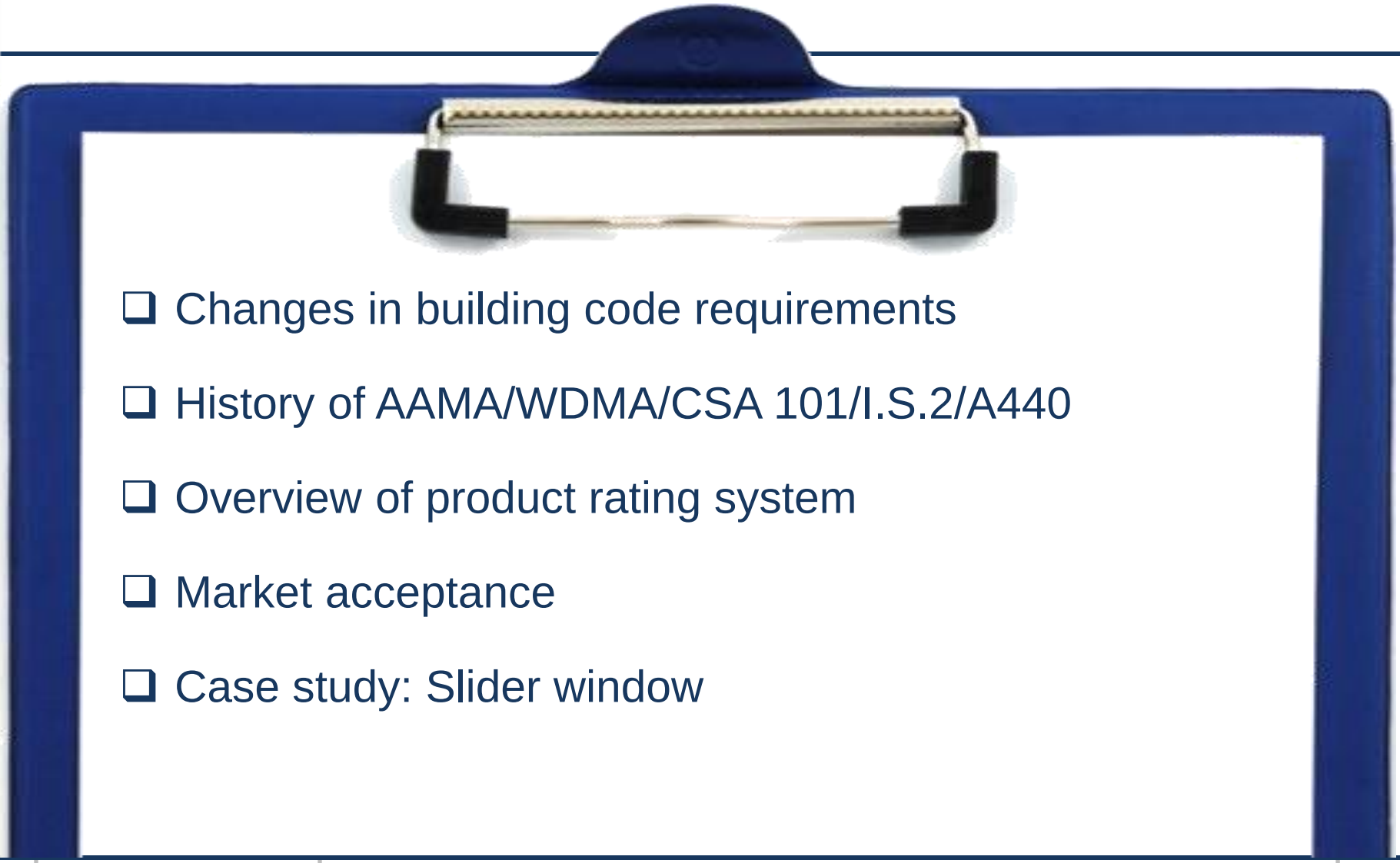
Architectural Testing

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

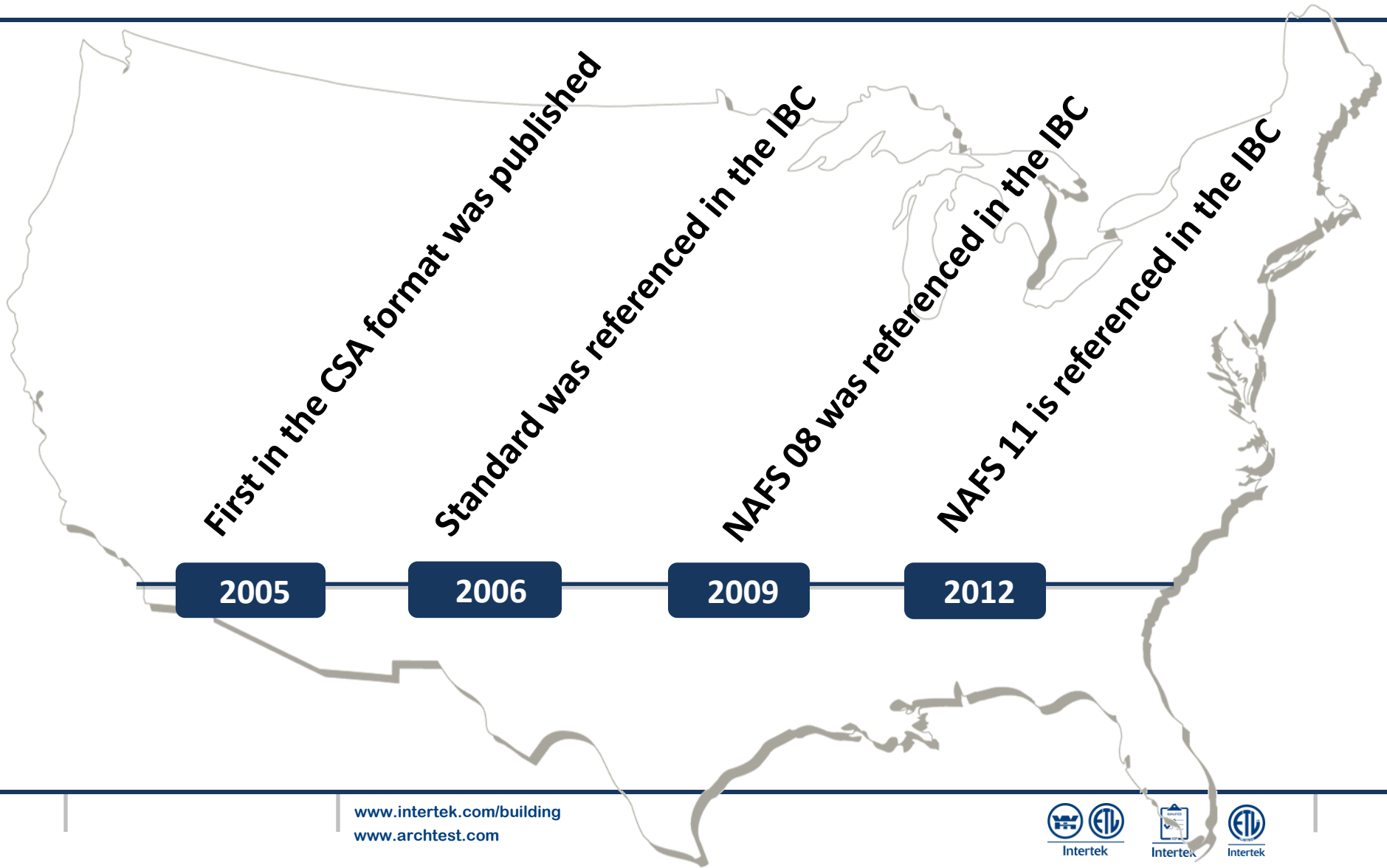
2012 BCBC now being enforced for NAFS & supplement requirements

- 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



NAFS Recognition in Canada

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)

NAFS-08 Canadian Supplement

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

<u>Examples of qualifications</u>

Geometry and components

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

Operation and orientation – See following slide

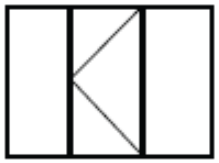
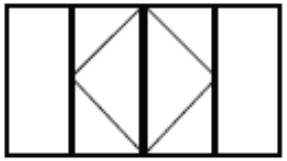
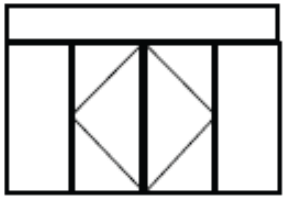
Composite units and unique framing members

- Test in longest dimension desired (i.e. Mullions)

Example of Door Qualifications

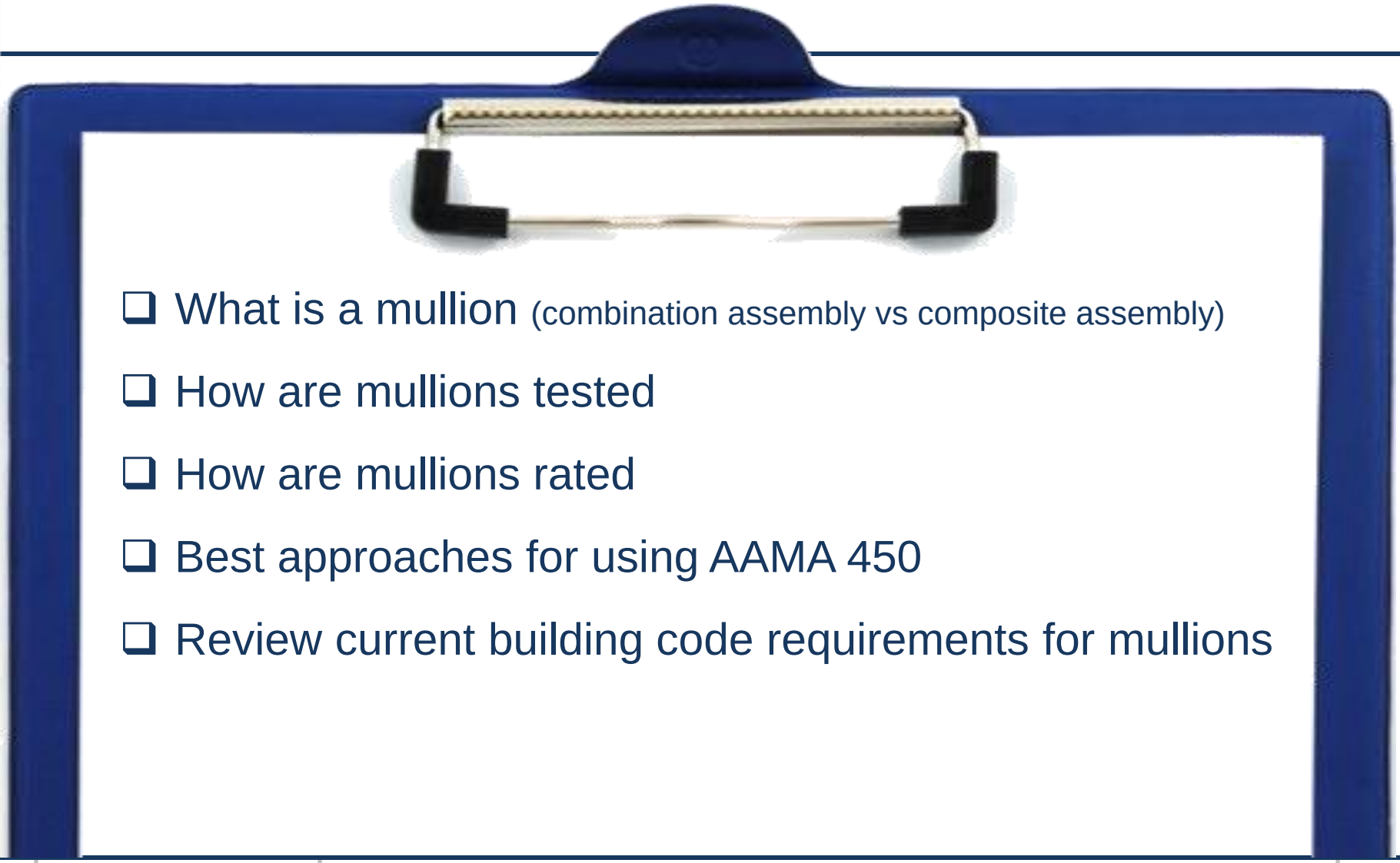
A		Qualifies any single fixed side lite or single fixed door system. Test A qualifies A. Does not qualify B, C, D, E, F, or G.
B		Qualifies any single side-hinged door system with the same hinge location and not more than one operable leaf or operable side lite. Test B qualifies B. Does not qualify A, C, D, E, F, or G.
C		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.
D		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.

Door Qualifications Cont'd

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.

AAMA 450

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.

AAMA 450

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

AAMA 450

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

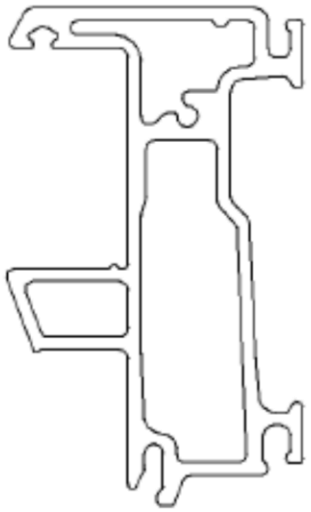
(+) Quick, inexpensive evaluation of many profiles.

(-) L/175 limit

(-) Follow on air/water

(-) Anchor analysis 3rd Party PE

(-) No credit for partial composite action or PVC



---------- Low Profile SH and HS ----------

Area:		5.6747
Perimeter:		26.7012
Bounding box:	X: -0.0032	-- 2.0621
	Y: 0.0000	-- 3.4650
Centroid:	X: 1.1620	
	Y: 1.8108	
Moments of inertia:	X: 23.6341	
	Y: 8.5244	
Product of inertia:	XY: 11.8287	
Radii of gyration:	X: 2.0408	
	Y: 1.2256	

Principal moments and X-Y directions about centroid:
I: 0.8588 along [0.0268 -0.9996]
J: 5.0300 along [0.9996 0.0268]

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

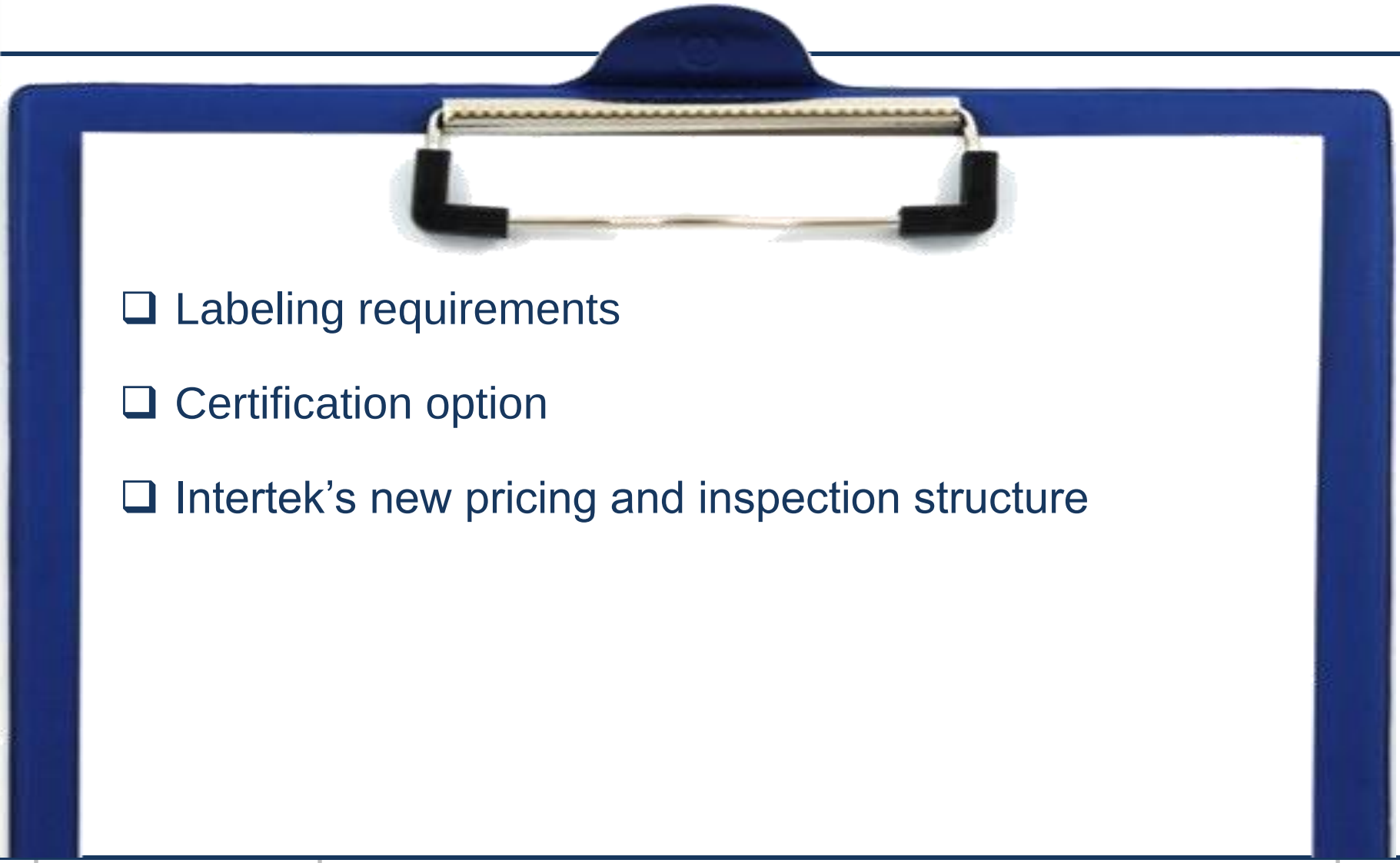
- best suited for composite mullions that would be conservatively analyzed by Option 3

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

NAFS Labeling Primary Designator

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

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

NAFS – Self Labelling Example

Intertek Architectural Testing

Temporary Label

PHYSICAL PERFORMANCE RATINGS
Manufacturer Name – Door Type & Model 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) = 1440 Pa (30 psf) Water Penetration Resistance Test Pressure = 260 Pa (5.25 psf) Canadian Air Infiltration/Exfiltration = A3 Level
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

Testing	Certification
No traceability	Traceability through plant audit
Test lab can only extend results to tested unit	Certification can extend results to all qualified units made
Products can't be marked nor claims can be made that all units will perform similarly	Manufacturer can label their products and are certified by independent lab

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

ENERGY PERFORMANCE RATINGS		
U-value ($W/m^2 \cdot K$)	Solar Heat Gain Coefficient	Visual transmittance
Energy Rating	Air Leakage ($L/s \cdot m^2$)	-

Manufacturer name
Window type & model
IGU dimensions, gas fill, Low-E Coat

C Intertek

Energy performance ratings certified to CSA A440.2-09. Energy ratings are determined for a fixed set of environmental conditions and a specific reference product size. Certification agency does not recommend nor warrant product for any specific use. Please refer to http://whdirectory.intertek.com for detailed Listing information.

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) = 1440 Pa (30 psf)
Water Penetration Resistance Test Pressure = 260 Pa (5.25 psf)
Canadian Air Infiltration/Exfiltration = A3 Level

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

Permanent Manufacturer Label

C Intertek

MANUFACTURER NAME
Manufacturer contact information

Evaluation for performance to / Evaluation pour la performance à: CSA A440.2-09 and AAMA/WDMA//CSA 101/I.S.2/A440-08

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

Location	Column A	Column B	Column C		Column D
	Driving rain wind pressure (DRWP), Pa, 1/10	Hourly wind pressure (HWP), kPa, 1/50	Snow load, kPa, 1/50		January design temp. (JDT), °C, 2.5%
			Ground snow load, S_s	Associated rain load, S_r	
British Columbia					
Abbotsford	200	0.62	2.0	0.3	–10
Agassiz	200	0.75	2.4	0.7	–13
Alberni	280	0.63	3.0	0.4	–5
Ashcroft	100	0.38	1.7	0.1	–25
Beatton River	100	0.30	3.3	0.1	–37
Burns Lake	120	0.39	3.4	0.2	–30
Cache Creek	100	0.39	1.7	0.2	–25
Campbell River	300	0.64	3.3	0.4	–7
Carmi	80	0.38	3.9	0.2	–24
Castlegar	80	0.34	4.2	0.1	–19
Chetwynd	80	0.40	2.4	0.2	–35
Chilliwack	200	0.72	2.2	0.3	–12
Comox	300	0.65	2.6	0.4	–7
Courtenay	300	0.65	2.6	0.4	–7
Prince George	100	0.37	3.4	0.2	–33
Prince Rupert	280	0.54	1.9	0.4	–14
Princeton	120	0.36	2.9	0.6	–27
Qualicum Beach	280	0.64	2.2	0.4	–7
Quesnel	100	0.31	3.0	0.1	–33

Worst case: DWRP = 300 Pa; HWP = 0.65 Pa.

Case Study – Horizontal Slider

Step 2: Water Penetration

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

Table 1
Specified DRWP (p_r) for open terrain
(See Clauses 4.2.1 and A.4.2.1 and Figure A.1.)

	p_r, Pa																			
	1/10 DRWP, Pa																			
Height, m	40	60	80	100	120	140	160	180	200	220	240	260	280	300	350	400	450	500	550	600	650
10	49	73	98	122	146	171	195	220	244	268	293	317	342	366	427	488	549	610	671	732	793
15	53	79	106	132	159	185	212	238	265	291	318	344	370	397	463	529	595	662	728	794	860
20	56	84	112	140																841	911
25	59	88	117	147																879	952
30	61	91	122	152	182	213	243	274	304	334	365	395	426	456	532	608	684	760	836	912	988
35	63	94	125	157	188	219	251	282	313	345	376	408	439	470	549	627	705	784	862	940	1019
40	64	97	129	161	193	225	258	290	322	354	386	419	451	483	563	644	724	805	885	966	1046
45	66	99	132	165	198	231	264	297	330	363	396	429	461	494	577	659	742	824	906	989	1071
50	67	101	135	168	202	236	269	303	337	370	404	438	471	505	589	673	757	842	926	1010	1094

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 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.)

Performance class and optional performance grade (PG)				Design pressure (DP)		Structural test pressure (STP)		Water penetration resistance test pressure			
								R, LC, CW		AW	
R	LC	CW	AW	Pa	(psf)	Pa	(psf)	Pa	(psf)	Pa	(psf)
20	—	—	—	960	(20.00)	1 440	(30.00)	150	(3.00)	—	—
25	—	—	—	1 200	(25.00)	1 800	(37.50)	180	(3.75)	—	—
30	30	—	—	1 440	(30.00)	2 160	(45.00)	220	(4.50)	—	—
35	35	35	—	1 680	(35.00)	2 520	(52.50)	260	(5.25)	—	—
40	40	40	—	1 920	(40.00)	2 880	(60.00)	290	(6.00)	—	—
45	45	45	45	2 160	(45.00)	3 240	(67.50)	330	(6.75)	440	(9.00)
50	50	50	50	2 400	(50.00)	3 600	(75.00)	360	(7.50)	480	(10.00)
55	55	55	55	2 640	(55.00)	3 960	(82.50)	400	(8.25)	530	(11.00)
60	60	60	60	2 880	(60.00)	4 320	(90.00)	440	(9.00)	580	(12.00)
65	65	65	65	3 120	(65.00)	4 680	(97.50)	470	(9.75)	630	(13.00)
70											
75											
80	80	80	80	3 840	(80.00)	5 760	(120.00)	580	(12.00)	730	(15.00)

366 Pa rounds up to 400 Pa water penetration pressure

Case Study – Horizontal Slider

Step 3: Structural

Highest *HWP* from climate data: 0.65 kPa

Table 3
Specified wind load (*p*) for windows, doors, and positive loads on unit skylights — Open terrain
(See Clauses 4.2.2 and A.4.2.2 and Figure A.1.)

	p, kPa																					
	1/50 Hourly wind pressure, kPa																					
Height, m	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	1.05	1.10	1.15	1.20	1.25
10	0.56	0.70	0.84	0.98	1.13	1.27	1.41	1.55	1.69	1.83	1.97	2.11	2.25	2.39	2.53	2.67	2.81	2.95	3.09	3.23	3.38	3.52
15	0.61	0.76	0.92	1.07	1.22	1.37	1.53	1.68	1.83	1.98	2.14	2.29	2.44	2.59	2.75	2.90	3.05	3.20	3.36	3.51	3.66	3.81
20	0.65																	.39	3.55	3.72	3.88	4.04
25	0.68																	.55	3.72	3.88	4.05	4.22
30	0.70	0.88	1.05	1.23	1.40	1.58	1.75	1.93	2.10	2.28	2.45	2.63	2.80	2.98	3.15	3.33	3.50	3.68	3.85	4.03	4.20	4.38
35	0.72	0.90	1.08	1.26	1.45	1.63	1.81	1.99	2.17	2.35	2.53	2.71	2.89	3.07	3.25	3.43	3.61	3.79	3.97	4.16	4.34	4.52
40	0.74	0.93	1.11	1.30	1.48	1.67	1.86	2.04	2.23	2.41	2.60	2.78	2.97	3.15	3.34	3.53	3.71	3.90	4.08	4.27	4.45	4.64

HWP of 0.65 kPa corresponds to DP of 1830 Pa at 10 m

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.)

Performance class and optional performance grade (PG)				Design pressure (DP)		Structural test pressure (STP)		Water penetration resistance test pressure			
								R, LC, CW		AW	
R	LC	CW	AW	Pa	(psf)	Pa	(psf)	Pa	(psf)	Pa	(psf)
20	—	—	—	960	(20.00)	1 440	(30.00)	150	(3.00)	—	—
25	—	—	—	1 200	(25.00)	1 800	(37.50)	180	(3.75)	—	—
30	30	—	—	1 440	(30.00)	2 160	(45.00)	220	(4.50)	—	—
35	35	35	—	1 680	(35.00)	2 520	(52.50)	260	(5.25)	—	—
40	40	40	—	1 920	(40.00)	2 880	(60.00)	290	(6.00)	—	—
45	45	45	45	2 160	(45.00)	3 240	(67.50)	330	(6.75)	440	(9.00)
50	50	50	50	2 400	(50.00)	3 600	(75.00)	360	(7.50)	480	(10.00)
55	55	55	55	2 640	(55.00)	3 960	(82.50)	400	(8.25)	530	(11.00)
60	60	60	60	2 880	(60.00)	4 320	(90.00)	440	(9.00)	580	(12.00)
65	65	65	65	3 120	(65.00)	4 680	(97.50)	470	(9.75)	630	(13.00)
70											
75											
80	80	80	80	3 840	(80.00)	5 760	(120.00)	580	(12.00)	730	(15.00)

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

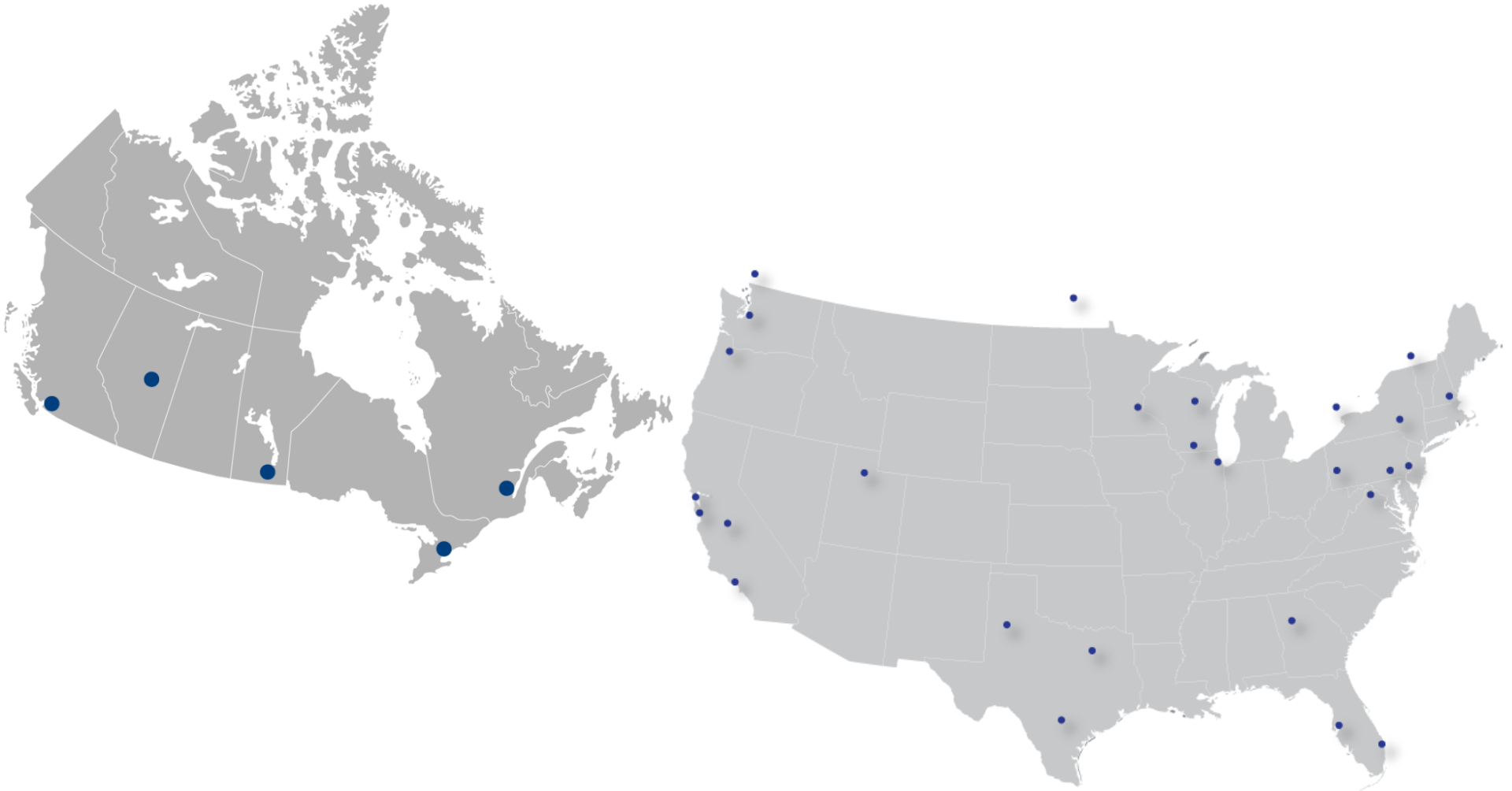
Fenestration Canada is an excellent resource with tools and guides available to its members

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?

Adam Mantei

Engineer, Building Products
(604) 528-8710
adam.mantei@intertek.com

Dan Braun

Vice President, ATI US
(651) 636-3835
daniel.braun@intertek.com

Intertek

Valued Quality. Delivered.

Architectural Testing

Thank you for your time.