

September 20, 2010 3:00 pm Eastern Daylight Time  
Notes from NFRC Attachments Subcommittee Meeting

In attendance:

1. John Lewis (NFRC staff, recording secretary)
2. Edward Peterson (Stork)
3. Joe Jonely (AMSCO)
4. John Gant (Glen Raven)
5. Mike Cienian, Chair (Hunter Douglas)
6. Rich Watkins (Hunter Douglas)
7. Myrna Pula (Canadian Thermo Windows/Magic Window)
8. Dave De Block (ODL)
9. Dennis Roberts (Energy Efficiency Done Right)
10. Terri Williamson (Newell)
11. Joe Hayden (Pella Corp.)
12. Steve Strawn (Jeld-Wen)
13. Mike Rubin (LBNL)
14. Willie duPont (Sunergy Consulting)
15. Tyler Westerling (Architectural Testing)
16. Todd Stratmoen (Larson Doors)
17. Rob Simons (Hunter Douglas)
18. Steve Harp (Associated Materials)
19. David Kirby (Lutron)

The proposed ballots regarding NFRC 100A and NFRC 200A were reviewed during this call chaired by Attachments Subcommittee Chair Mike Cienian, Hunter Douglas.

Attached are the proposed ballot revisions and the note from Chair Mike Cienian.

September 20, 2010 (updated 12:30pm Mountain Time)

To: John Lewis  
From: Mike Cienian  
Subject: Fall 2010 Attachments Subcommittee Ballot Worksheet

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**Fall 2010 Attachments Subcommittee Ballot Worksheet**

There are 13 Attachments Subcommittee Ballots Points being submitted for the Fall 2010 Membership Meeting Ballot Process.

The 100A Ballot will include points: 1,2,4,5,9,10,and 12

The 200A Ballot will include points 3,6,7,8,11 and 13

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Ballot preparation for the Fall 2010 submission is based on Jim Benney guidance of 9/19/2010:

Dear John:

Please note that I told Mike Cienian that your team would work with him on the upcoming ballot to put forward only those parts of the previously referred to documents that are controversial; with an understanding that all other parts of the document have been approved (since no negatives were expressed regarding them).

Please be sure and have your team be prepared to assist M. Cienian in this regard.

Sincerely,

James C. Benney, CAE  
Chief Executive Officer

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Introductory Comments – these comments will be part of the cover page for each of the ballots:

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The NFRC Attachments Subcommittee members have submitted numerous ballots to establish Testing standards for Attachments.

The NFRC 100A Procedure for Determining Fenestration Attachment Product U-Factors was balloted in its entirety for the Spring 2009, Summer 2009, Fall 2009, Spring 2010 and Summer 2010 membership meetings. Over that span it has received approval votes 67% of the time (Approve or Approve with Comment votes total of 71 vs. Negative votes of 35).

The NFRC 200A Procedure for Determining Fenestration Attachment Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence was balloted in its

entirety for the Spring 2009, Fall 2009, Spring 2010 and Summer 2010 membership meetings. Over that span it has received approval votes 69% of the time (Approve or Approve with Comment votes total of 59 vs. Negative votes of 26).

For the Fall 2010 ballots, please find that these ballots have been targeted to address resolution of the specific negatives explored in the Summer 2010 virtual meeting. Prior ballots had resolved earlier negatives.

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### **Ballot Point 1 (100A)**

#### **Base Case Skylights**

Table  
BOM  
Clarification of 6MM glass  
Drawings

*<W. duPont provided summary of activities done by WG in choosing an alternate to laminated glazing; 6mm glass has been chosen to represent the clear glazing option. duPont is now doing a similar exercise with respect to low-e glazing. Remaining issue is to determine if the remaining viable options are ones that can be obtained by labs from various local glass suppliers when constructing the test units; Chair Cienian requested of duPont that the BOM and table be provided in time to support the ballot deadlines of Tuesday, September 21 2010>*

These materials to be supplied by the Attachments Base Case Working Group (Chair Nils Petermann) at the 9/20/10 Task Group meeting

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### **Ballot Point 2 (100A)**

#### **Test and Simulation positions for Attachments for determining 100A U-Factor.**

This ballot **restores** language to the procedure to instruct that the attachment will be tested and simulated in both the fully opened and fully closed positions:

Section 4.2 (Product Line Simulation and Testing - paragraph one)

*The total fenestration attachment product U-factor shall be determined by simulation where a validated simulation exists and performed with fenestration attachment product in **both the fully open and the fully closed positions**, using all Fenestration Attachments Reference Windows or Fenestration Attachments Reference Skylights defined in Table 5.2.*

Section 4.2.1.1.E (Installation Requirements for Testing and Simulation Interior Attachment)

*E. The fenestration attachment product shall be evaluated in both the fully open and the fully closed positions.*

Section 4.2.1.2.E (Installation Requirements for Testing and Simulation Exterior Fenestration Attachment Products)

*E. The fenestration attachment product shall be evaluated in both the fully open and the fully closed positions.*

Section 4.2.3.2 (Total Fenestration Attachment Products Test Procedure)

*Testing shall be conducted as detailed in NFRC 102 with the following additional items added:*

*Fenestration Attachment Products shall be installed as indicated in section 4.1.*

*The system shall be tested with the product in both the fully open and the fully closed positions or as installed position for non-operating/fixed in place devices.*

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**Ballot Point 3 (200A)**

**Test and Simulation positions for Attachments for determining 200A SHGC and Visible Transmittance at Normal Incidence.**

This ballot **restores language** to the procedure to instruct that the attachment will be tested and simulated in both the fully opened and fully closed positions:

**Section 4.2.1.E (Installation Requirements for Testing and Simulation Interior Attachment)**

*E. The fenestration attachment product shall be evaluated in both the fully open and the fully closed positions.*

**Section 4.2.2.F (Installation Requirements for Testing and Simulation Exterior Attachment)**

*F. The fenestration attachment product shall be evaluated in both the fully open and the fully closed positions.*

## Section 4.5.2 (Whole Fenestration Product with Fenestration Attachment Product Test Procedure)

*Testing is conducted as detailed in NFRC 201. The Attachment will be mounted as indicated in section 4.2.1 and 4.2.2 to the reference window with following addition to the test procedure. The system shall be tested with the attachment in the fully open and fully closed positions.*

- *Monofilament line will be used to keep the attachment coplanar to the reference window during testing. The product should not vary in its distance from the reference window by more than 1/8" when the system is oriented horizontal – the thickness and number of lines used should be minimized and will vary depending on the product being tested.*
- *Specific mounting configuration will be noted in the report*
  - *What monofilament line was used – manufacturer, diameter, material*
  - *How many lines were used?*
  - *How and where the lines were attached?*
  - *What was the distance between the surface of the reference window and the closest surface of the attachment*

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### Ballot Point 4 (100A)

Validation Language for the 100A procedure.

This ballot changes the specific base case reference window to be used for **Validation** from a **poor performing base case reference window** (single pane) to a **better performing base case reference window** (double glaze clear glass). [J. Hayden had concerns with condensation; Tyler W (ATI) advises that condensation is not an issue due to the way the test is run; Joe defers to experts]

## Section 4.2 (Product Line Simulation and Testing, second paragraph)

*Each new simulation will be validated utilizing a representative fenestration attachment product tested according to section 4.2.3 utilizing the double glazed clear version of the Fenestration Attachments Reference Window and/or Fenestration Attachments Reference Skylight defined in Table 5.2.1 Fenestration Attachment Products Reference Windows or 5.2.2 Fenestration Attachment Products Reference Skylights. The simulation and tested U-factors must validate according to section 4.2.4.*

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## **Ballot Point 5 (100A)**

### **Description of Edges Seals as Attachment Edge Seals**

This Ballot adds the descriptor “attachment” in front of the term Edge Seals in the following places where edge seals are mentioned in the 100A document:

*“Any fenestration attachment product that incorporates Attachment Edge Seals such as but not limited to; Track type seal”*

This is now updated in the following sections:

- Section 2.2.1 Cellular Type Attachment
- Section 2.2.2 Slat or Louver Type Attachment
- Section 2.2.3 Sheer Type Attachment
- Section 2.2.4 Shutter Type Attachment
- Section 2.2.5 Pleated Type Attachment
- Section 2.2.6 Roller Type Attachment
- Section 2.2.7 Roman Shade Type Attachment
- Section 2.2.8 Drape Type Attachment
- Section 2.2.9 Flat Panel Attachment non Glazed
- Section 2.2.10 Flat Panel Attachment Glazed

This ballot also adds the descriptor “attachment” to the term Edge Seals in the Section 3 Definitions of the 100A document:

### **Section 3 Definitions**

*“Attachment Edge Seal: Any device purposely constructed to reduce air flow between the fenestration attachment edges seals such as but not limited to: Track Type Seals.”*

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## **Ballot Point 6 (200A)**

### **Description of Edges Seals as Attachment Edge Seals**

This Ballot adds the descriptor “attachment” in front of the term Edge Seals in the following places where edge seals are mentioned in the 200A document:

*“Any fenestration attachment product that incorporates Attachment Edge Seals such as but not limited to; Track type seal”*

This is now updated in the following sections:

- Section 2.2.1 Cellular Type Attachment
- Section 2.2.2 Slat or Louver Type Attachment
- Section 2.2.3 Sheer Type Attachment
- Section 2.2.4 Shutter Type Attachment
- Section 2.2.5 Pleated Type Attachment
- Section 2.2.6 Roller Type Attachment
- Section 2.2.7 Roman Shade Type Attachment
- Section 2.2.8 Drape Type Attachment
- Section 2.2.9 Flat Panel Attachment non Glazed
- Section 2.2.10 Flat Panel Attachment Glazed

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### **Ballot Point 7 (200A)**

#### **Permeability Clarified for the 200A document**

This ballot addresses concerns raised in the Summer 2010 ballot where the term digital imaging was used to quantify material openness as part of product line characteristics. This has been resolved to describe permeability as material openness/porosity as determined by ASTM D737:

*<Note: R. Simon states openness/porosity as related to air infiltration/air flow, that is a factor when performing an SHGC test... M. Rubin: confused re: 'openness' as stated in prior ballot seemed to be related to optical openness [i.e., area not occupied by thread or fabric], and this is now related to air flow... M Cienian suggests we defer to M. Rubin's EN 14500 suggested edit... >*

The following comment has been added to the characteristics for each product line:

***“Material openness/porosity as determined by ASTM D737”***

This can be found in each of the following sections:

- Section 2.2.1 Cellular Type Attachment
- Section 2.2.2 Slat or Louver Type Attachment
- Section 2.2.3 Sheer Type Attachment
- Section 2.2.4 Shutter Type Attachment
- Section 2.2.5 Pleated Type Attachment
- Section 2.2.6 Roller Type Attachment
- Section 2.2.7 Roman Shade Type Attachment
- Section 2.2.8 Drape Type Attachment
- Section 2.2.9 Flat Panel Attachment non Glazed

## Section 2.2.10 Flat Panel Attachment Glazed

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### **Ballot Point 8 (200A)**

#### **Whole Fenestration Products with Attachments Clarified for the 200A document**

This ballot addresses concerns raised in the Summer 2010 ballot where the term “Whole Fenestration Products with Attachments” was preferred by membership.

The following sections of the 200A document are updated to reflect this:

Section 3 Definition:

***Fenestration product with attachment:*** the whole fenestration product with attachment resulting when a fenestration attachment is combined with (i.e., installed on) a reference fenestration product in the manner recommended by the manufacturer.

#### **Section 4.1 Compliance**

*Fenestration attachment product ratings shall be determined by following the procedure outlined in Section 4.1 in accordance with the criteria specified in Sections 4.2 through Section 4.7. This Section 4 presents and references methods for determining specific whole fenestration product with fenestration attachment product heat transfer properties or quantities used in the determination of these properties.*

##### **Section 4.1.1 Product Line Simulation and Testing**

*The whole fenestration product with fenestration attachment product Solar Heat Gain Coefficient (SHGC) and Visible Transmittance (VT) shall be evaluated in the Fully Opened and Fully Closed positions and in accordance with ISO 15099, using all Fenestration Attachments Reference Windows or Fenestration Attachments Reference Skylights defined in Table 5.2 of NFRC 100A. All attachment products shall be tested or simulated as an individual product without screens, applied film, removable grilles, or any other applied devices.*

##### **Section 4.1.2 Testing Alternative**

*The whole fenestration product with fenestration attachment product SHGC shall be determined by testing in accordance with*

*NFRC 201 only if the product cannot be simulated using NFRC approved simulation software.*

## **Section 4.2 Fenestration Attachments Standard Simulation and Test Conditions**

*This section presents procedures for determining whole fenestration product with fenestration attachment product Solar Heat Gain Coefficient (SHGC) and Visible Transmittance (VT). For rating Solar Heat Gain Coefficient and Visible Transmittance of individual products at model sizes, follow Section 4.4.*

### **Section 4.5.2 Whole Fenestration Product with Fenestration Attachment Product Test Procedure**

*Testing is conducted as detailed in NFRC 201. The Attachment will be mounted as indicated in section 4.2.1 and 4.2.2 to the reference window with following addition to the test procedure. The system shall be tested with the attachment in the full closed position.*

- *Monofilament line will be used to keep the attachment coplanar to the reference window during testing. The product should not vary in its distance from the reference window by more than 1/8" when the system is oriented horizontal – the thickness and number of lines used should be minimized and will vary depending on the product being tested.*
- *Specific mounting configuration will be noted in the report*
  - *What monofilament line was used – manufacturer, diameter, material*
  - *How many lines were used?*
  - *How and where the lines were attached?*
  - *What was the distance between the surface of the reference window and the closest surface of the attachment*

### **Section 4.6 Total Fenestration Attachment Product Rating**

The whole fenestration product with fenestration attachment product SHGC and VT shall be reported as follows:

#### **4.6.1 Solar Heat Gain Coefficient**

Calculate the final SHGC value to six significant digits (0.XXXXXX) for the whole system that is reference window and attachment. For labeling and reporting, round the final SHGC value to two significant digits (0.XX).

#### 4.6.2 Visible Transmittance

Calculate the final VT value to six significant digits (0.XXXXXX) for the whole system that is reference window and attachment. For labeling and reporting, round the final SHGC value to two significant digits (0.XX).

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#### Ballot Point 9 (100A)

##### Restatement of Section 4.2.1.1.B.b for the 100A document

This ballot removes the word **assumed** from the 100A document in this section:

##### Section 4.2.1.1.B.b Installation Requirements for Testing and Simulation Interior Attachment

*“The fenestration attachment product to edge of frame allowance shall ~~be~~ the result of the manufacturer’s standard deductions based on applicable Fenestration Attachments Reference Windows or Fenestration Attachments Reference Skylights construction.”*

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#### Ballot Point 10 (100A)

##### Language to accommodate situations where Product Design may not conform to standard specifics – 100A

Language in the 100A has been modified to address potential cases where attachment Product Design may not conform to standard specifics:

##### Section 4.2.1.1.D Installation Requirements for Testing and Simulation Interior Attachments

- D. Product shall be simulated as installed according to manufacturer’s installation instructions utilizing the specific dimension given above in A-C*
  - a. These dimensions may be adjusted if the construction and manufacturer recommended installation instructions preclude their use. If the dimensions listed in A-C are not used the actual dimensions utilized will be recorded.*

**Section 4.2.1.2.D Installation Requirements for Testing and Simulation Exterior Attachments**

*D. Product shall be simulated as installed according to manufacturer's installation instructions utilizing the specific dimension given above in A-C*

*a. These dimensions may be adjusted if the construction and manufacturer recommended installation instructions preclude their use. If the dimensions listed in A-C are not used the actual dimensions utilized will be recorded.*

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**Ballot Point 11 (200A)**

**Language to accommodate situations where Product Design may not conform to standard specifics – 200A**

Language in the 200A has been modified to address potential cases where attachment Product Design may not conform to standard specifics:

**Section 4.2.1.1.D Installation Requirements for Testing and Simulation Interior Attachments**

*E. Product shall be simulated as installed according to manufacturer's installation instructions utilizing the specific dimension given above in A-C*

*a. These dimensions may be adjusted if the construction and manufacturer recommended installation instructions preclude their use. If the dimensions listed in A-C are not used the actual dimensions utilized will be recorded.*

**Section 4.2.1.2.D Installation Requirements for Testing and Simulation Exterior Attachments**

*D. Product shall be simulated as installed according to manufacturer's installation instructions utilizing the specific dimension given above in A-C*

*a. These dimensions may be adjusted if the construction and manufacturer recommended installation instructions preclude their use. If the dimensions listed in A-C are not used the actual dimensions utilized will be recorded.*

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## **Ballot Point 12 (100A)**

### **Clarification of when reference windows require verification – 100a**

This Ballot addresses concerns expressed over the term **test group**, which is now removed. The new language in section 4.2.3 describes that reference window will need to be verified for U-Factor each time a reference window is installed and when it is removed.

#### **Section 4.2.3.1 Fenestration Attachment Reference Window/Skylight Test Procedure**

*“The reference window U factor will be verified utilizing NFRC 102 each time a reference window is installed and each time it is removed.”*

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## **Ballot Point 13 (200A)**

### **Clarification of when reference windows require verification – 200a**

This Ballot addresses concerns expressed over the term **test group**, which is now removed. The new language in section 4.5.1 describes that reference window will need to be verified for U-Factor each time a reference window is installed and when it is removed.

#### **Section 4.5.1 Reference Window Test Procedure**

*“The reference window SHGC will be verified utilizing NFRC 102 each time a reference window is installed and each time it is removed.”*