



**National
Fenestration
Rating Council,
Incorporated**

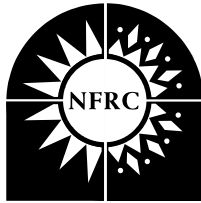
**NFRC 2001 and 2004 Technical
Interpretations**

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Applicable to 2001 and 2004 Procedures	

Prepared by:

**National Fenestration Rating Council, Incorporated
6305 Ivy Lane, Suite 140
Greenbelt, Maryland 20770
Telephone: 301/589-1776
Facsimile: 301/589-3884
Website: www.nfrc.org**



National Fenestration
Rating Council

The NFRC Technical Committee issues Technical Interpretations to NFRC 100: *Procedure for Determining Fenestration Product U-Factors*, NFRC 101: *Procedure for Determining Thermo-Physical Properties of Materials for Use in NFRC-Approved Software Programs*, NFRC 102: *Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems*, NFRC 200: *Procedure for Determining Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence*, NFRC 201: *Procedure for Interim Standard Test Method for Measuring the Solar Heat Gain Coefficient of Fenestration Systems Using Calorimetry Hot Box Methods*, NFRC 300: *Procedure for Determining Solar Optical Properties for Simple Fenestration Products*, NFRC 301: *Standard Test Method for Emittance of Specular Surfaces Using Spectrometric Measurements*, NFRC 400: *Procedure for Determining Fenestration Product Air Leakage*, NFRC 500: *Procedure for Determining Fenestration Product Condensation Resistance Values and NFRC Simulation Manual*. These *NFRC Technical Interpretations* examine questions put forth by NFRC members and those entities involved in the NFRC rating system and certification and labeling program.

This document is published annually, but maybe published more frequently if the need arises. Please contact NFRC to assure that you are reading from the most recent edition of *NFRC Technical Interpretations*. These *NFRC Technical Interpretations*, where applicable, while be incorporated into future editions of their respective program documents.

For more information contact:

*National Fenestration Rating Council, Incorporated
8484 Georgia Avenue, Suite 320
Silver Spring, MD 20910
Telephone: 301-589-1776
Facsimile: 301-589-3884
Web Site: <http://www.nfrc.org>*

Table of Contents

NFRC 100 and 102: Technical Interpretations

Strip Window and Wall Simulation	TI-2003-02
Sidelite and Transom	TI-2003-06
Domed Skylight	TI-2003-08
Curtain Wall Modeling	TI-2003-12
Door Sill Evaluation	TI-2003-13
Air Space for Double Dome Tubular Daylight Devise.....	TI-2003-14
Products Having Edge of Glazing Less than 63.5mm (2.5 inch).....	TI-2003-16
Greenhouse/Garden Windows	TI-2003-17
Decorative Tapes and Applied Dividers	TI-2003-19
Default Divider	TI-2003-20
Exterior Air Cavity	TI-2003-24
Trapped Air Modeling in Spacer	TI-2003-26
Hinged Door Scaling.....	TI-2004-02
Sidelight Scaling	TI-2004-06
Nominal Glass Thickness.....	TI-2004-11
COG Grouping for Slope Glazing	TI-2004-12
COG for Pyramidal and Dome Skylight.....	TI-2004-13
Thermal Testing Surround Panel	TI-2004-17
Internal Frame Air Cavities.....	TI-2004-19
Site Line in Door Slab.....	TI-2004-22
U-Factor SHGC Test alternative for Obscure Glazing.....	TI-2004-24
Ambient Test Temperature for Testing.....	TI-2004-25
Ratings for Test only Glazing Without Frame	TI-2004-26
Cavities for Storm Windows.....	TI-2004-27
Calculation Methodology for 6 layer Glazing Unit	TI-2004-28
Pet Door in Combination Window Unit	TI-2005-01
Window with Permanent Louver Attachment	TI-2005-02
Default Frame for Sidelites	TI-2005-03
Divider Grouping	TI-2005-06
Spacer Grouping	TI-2005-07
Nail on Fin Exterior Boundary Tag	TI-2005-08
Stacked Frame	TI-2005-11
Dome Skylight without frame or flashing	TI-2005-12
U-Factor, SHGC Test Alternative for Obscure Glazing.....	TI-2005-13
Multiple sidelite frames.....	TI-2006-02
Modeling of Non-Circular Diffuser for TDD	TI-2006-03
Component Substitution-Spacer.....	TI-2006-05
Grouping between glass shades COG options.....	TI-2006-06
C-O-G value for Frame, Spacer and Divider grouping.....	TI-2006-07
Dynamic glazed products with between glass shading.....	TI-2006-08
Skylight with internal diffuser	TI-2006-09
Largest CTS Size	TI-2006-10
Skylight with Solar Tracking Device (Mirror)	TI-2006-11
Curtain Wall versus Window Wall Language	TI-2006-12
Simulate a single lite glazed wall.....	TI-2006-13
Selecting intermediate members for curtain wall.....	TI-2006-14
Selecting Door Lite Size for Shading Devices.....	TI-2006-15
Sightline Changes	TI-2007-01
Definition Sightline Changes.....	TI-2007-02
Modeling Simulated Divided Lite.....	TI-2007-03

Modeling a Pet Door as a Swing Door	TI-2007-04
---	------------

NFRC 200 and 201: Technical Interpretations

Nominal Glass Thickness for SHGC and VT	TI-2003-01
Strip Window and Wall Simulation	TI-2003-02
Sidelite and Transom	TI-2003-06
Laminated Glass.....	TI-2003-09
Curtain Wall Modeling	TI-2003-12
Decorative Tapes and Applied dividers	TI-2003-19
Default Divider	TI-2003-20
Tubular Daylight Devise SHGC Testing	TI-2003-22
Hinged Door Scaling.....	TI-2004-02
Use of Tested Component SHGC in Product Simulation	TI-2004-04
Door Caming.....	TI-2004-05
Sidelight Scaling	TI-2004-06
Center of Glass Component Size for SHGC Test	TI-2004-07
Center of Glass Component Size for U-factor Test	TI-2004-08
Opaque Component SHGC for Doors	TI-2004-09
COG Grouping for Slope Glazing	TI-2004-12
U-Factor SHGC Test alternative for Obscure Glazing	TI-2004-24
Ratings for Test only Glazing Without Frame	TI-2004-26
Calculation Methodology for 6 layer Glazing Unit	TI-2004-28
Default Frame for Sidelites	TI-2005-03
SHGC and VT 0 and 1 Glazing Option	TI-2005-09
U-Factor, SHGC Test Alternative for Obscure Glazing	TI-2005-13
Translucent pane SHGC and VT.....	TI-2006-01
Modeling of Non-Circular Diffuser for TDD	TI-2006-03
SHGC & VT for unspecified glazing unit for site built.....	TI-2006-04
Grouping between glass shades COG options	TI-2006-06
Dynamic glazed products with between glass shading.....	TI-2006-08
Selecting Door Lite Size for Shading Devices.....	TI-2006-15

NFRC 400: Technical Interpretations

Product Line Grouping for Air Leakage	TI-2003-25
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NFRC 500: Technical Interpretations

Curtain Wall Modeling	TI-2003-12
COG Grouping for Slope Glazing	TI-2004-12

NFRC Simulation Manual:

Boundary Conditions	TI-2003-05
Gas Concentration.....	TI-2003-07
Modeling Caming	TI-2004-10
Cavities for Storm Windows.....	TI-2004-27
Default Frame for Sidelites	TI-2005-03
Modeling Simulated Divided Lite.....	TI-2007-03



TI-2003-01 03/24/03

NFRC Technical Interpretation-2001

<i>Interpretation Requested:</i>
Is TI-100-00003* (Nominal Glass Thickness) applicable to NFRC 200 procedure also? *(Can nominal glass thickness be used for NFRC 100 U-factor calculations-details see Technical Interpretation manual -1997 Part I)

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
03/03/03	03/03/03	03/24/03

<i>Pertinent Document:</i>	
NFRC 200 (1997) and NFRC 200 (2001)	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
NFRC 200 (2001) sec. 6.1.1	Page 8

<i>Interpretation :</i>
Yes. Nominal glass thickness may be used for determining the SHGCc and VTc of the glazing system.

<i>Technical Committee Revisions to Initial Interpretation:</i>



TI-2003-02
03/24/03

NFRC Technical Interpretation-2001

Interpretation Requested:

How are strip window wall simulated? Are intermediate Jambs measured centerline to centerline?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
03/03/03	03/03/03	03/24/03

Pertinent Document:

NFRC 100 (1997) and NFRC 100 (2001), NFRC 200 (1997) and NFRC 200 (2001)

<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
NFRC 100 (1997) sec. 5.2, NFRC 100 (2001) sec.1.5.3	Page 14 and , Page1-21 respectively

Interpretation :

Strip windows were determined to be the same as a window wall; therefore, intermediate vertical members are simulated for the jambs based on centerline to centerline dimensions.

Technical Committee Revisions to Initial Interpretation:



TI-2003-05 03/24/03

NFRC Technical Interpretation-2001

<i>Interpretation Requested:</i>
What boundary condition must one apply when the frame is made of a metal material and the sash is made of a vinyl material?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
03/03/03	03/03/03	03/24/03

<i>Pertinent Document:</i>	
Simulation Manual (SM)	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
SM section 6.5.1	Page 6-24

<i>Interpretation :</i>
<p>A single boundary condition must be applied to the entire interior surface of a given frame section, even if it contains different material components (i.e. vinyl sash and aluminum frame). The surface condition applied shall be the component with the greatest interior exposed area of that section. This may result in different boundary conditions being applied to different cross-sections (i.e. the fixed portion of a horizontal slider could be an aluminum boundary while the vent section could be a vinyl boundary). This interpretation allows this condition. This does not alter the rules of section 6.6 pertaining to applied caps and/or cladding.</p>

<i>Technical Committee Revisions to Initial Interpretation:</i>



TI-2003-06 03/24/03

NFRC Technical Interpretation-2001

<i>Interpretation Requested:</i>
When a manufacturer builds a sidelite or transom product that cannot be area weighted at the standard NFRC sizes, how should these products be area weighted?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
03/03/03	03/03/03	03/24/03

<i>Pertinent Document:</i>	
NFRC 100 (2001) and NFRC 200 (2001)	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
NFRC 100 table 1	Pg. 1-21

<i>Interpretation :</i>
For sidelite and transom designs that when area weighted at the standard NFRC sizes, there is no center of glass and/or less than 2 1/2" edge of glass, the product shall be area weighted with each section at the manufacturer's standard frame height (pfd) plus 2.5 inches of edge of glass. In no case shall the total product height of transoms be less than 14 inches or the total product width of sidelights less than 16 inches. This interpretation may affect the width of sidelites or the height of transoms only.

<i>Technical Committee Revisions to Initial Interpretation:</i>



TI-2003-07 03/24/03

NFRC Technical Interpretation-2001

Interpretation Requested:
Table 5.3 of the NFRC Simulation Manual details the “Maximum Gas Concentration Achieved” for three gas fill techniques. What percentage of gas concentration is allowed when simulating a mixed gas (more than one gas type, e.g. Argon and Krypton)?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
03/03/03	03/03/03	03/24/03

Pertinent Document:	
Simulation Manual	
Referenced Sections:	Referenced Pages:
SM Section 5.3.3	Page 5-10

Interpretation :
For IG units with multiple gases, the simulation shall be performed using the gas concentrations stipulated by the manufacturer, but in no case can the simulation exceed the “Maximum Gas Concentration” shown in table 5.3 for the fill technique used. In the case where the fill technique is “Two-Probe with concentration sensor” and the gas mix is Krypton & Argon, the Maximum Gas Concentration of the mixed gas shall not exceed 90%.

Technical Committee Revisions to Initial Interpretation:



TI-2003-08 04/04/03

NFRC Technical Interpretation-2001

Interpretation Requested:
What is the procedure for simulating product where glazing was tested under ASTM C 1363 procedure, e.g. dome skylight?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
03/20/03	04/02/03	04/04/03

Pertinent Document:	
NFRC 100 (2001) and NFRC 100 (1997)	
Referenced Sections:	Referenced Pages:
NFRC 100 Section 1.5.2.2	Page 1-19

Interpretation :
<ul style="list-style-type: none"> • Test the dome only using ASTM C 1363 test procedure to determine the conductance value. • Use the conductance value and create a glass in WINDOW having thickness equivalent to frame IG insert opening. • Import the glazing of the modeled glazing into the frame (150mm, 6 inches). Note the value of the film coefficients. Run all cross-sections in accordance with NFRC requirements. • Area wt. and obtain the total U-factor, the using the COG U-factor calculated in WINDOW or later using the film coefficient from THERM/FRAME import and the conductance value.

Technical Committee Revisions to Initial Interpretation:



TI-2003-09 04/04/03

NFRC Technical Interpretation-2001

Interpretation Requested:
<p>For laminated glass:</p> <p>a) Can a simulator use the actual pane thickness for determining SHGC and VT.?</p> <p>b) If the table 6.1 approach is used does one have to use the actual lami-pane thicknesses for laminated pane less than or equal to 7.1 mm for modeling SHGC and VT or use 3mm – 0.764mm – 3mm to be the representative laminated glass?</p>

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
03/20/03	04/02/03	04/04/03

Pertinent Document:	
NFRC 200 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 200 Section 6.1.1	Page 10

Interpretation :
<p>a. Yes, actual laminated pane thickness is always an option that can be used for determining SHGC and VT.</p> <p>b. If the Table 6.1 approach is used for laminated pane less than or equal to 7.1 mm for modeling SHGC and VT, the simulator shall use 3mm – 0.764mm – 3mm to be the representative laminated glass.</p>

Technical Committee Revisions to Initial Interpretation:



TI-2003-12
06/29/03

NFRC Technical Interpretation-2001

Interpretation Requested:
<p>a) For a Curtain Wall, how can the Jambs, Head and Sill cross-sections be modeled to reflect center line to centerline modeling?</p> <p>b) For a Window Wall or strip window, how can the Jamb cross-sections be modeled to reflect center line to center-line modeling?</p>

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
06/03/03	06/08/03	06/08/03

Pertinent Document:	
NFRC 100 (2001), NFRC 200 (2001), NFRC 500 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 100 - Table 1 foot notes	Page 21

Interpretation :
<p>For determining the NFRC Rating:</p> <ol style="list-style-type: none"> 1) Simulate the intermediate vertical as jambs and the intermediate horizontal members as head and sill, with the glazing modeled on both sides. 2) Assign the boundary condition in accordance with the THERM/WINDOW simulation manual. 3) Determine one-half of the frame cross-section (see attached figure) by measuring the PFD dimension from site-line to site-line on the interior and dividing the distance by a factor of 2. Draw a datum line and insert a point in the THERM file on the interior and exterior sides of the frame section at this intersection. This will allow you to assign different U-Factor and SHGC tags to each half. 4) When using the intermediate horizontal member as the head and sill, the member shall be run (calculated) twice, once as the head and once as the sill as follows:

- 5) When running the section as the sill, set the “properties” in the THERM file to Sill. Set the U-factor tag on the interior centerline point to the top site-line as Frame, and the first 63.5mm of the glass as edge. (NOTE: If CR calculations will be performed, make sure that the glazing cavity height is set to 1900mm). Assign the lower half of the frame and bottom glass a U-factor tag of ‘None’. On the exterior side, assign the top half of the frame center-line to site-line as SHGC exterior. All other sections on the exterior are assigned a tag of ‘None’.
- 6) When running the section as the head, set the “properties” in the Therm file to Head. Set the U-factor tag on the interior centerline point to the bottom site-line as Frame, and the first 63.5mm of the glass as edge. (NOTE: If CR calculations will be performed, make sure that the glazing cavity height is set to 1900mm). Assign the upper half of the frame and top glass a U-factor tag of ‘None’. On the exterior side, assign the bottom half of the frame center-line to site-line as SHGC exterior. All other sections on the exterior are assigned a tag of ‘None’.
- 7) When using the intermediate vertical member as the jambs, the member shall be run (calculated) twice, once as the left jamb and once as the right jamb as follows:
- 8) When running the section as the right jamb, set the “properties” in the THERM file to Jamb. Set the U-factor tag on the interior centerline point to the top site-line as Frame, and the first 63.5mm of the glass as edge. (NOTE: CR calculations are not applicable to jamb sections). Assign the lower half of the frame and bottom glass a U-factor tag of ‘None’. On the exterior side, assign the top half of the frame center-line to site-line as SHGC exterior. All other sections on the exterior are assigned a tag of ‘None’.
- 9) When running the section as the left jamb, set the “properties” in the THERM file to Jamb. Set the U-factor tag on the interior centerline point to the bottom site-line as Frame, and the first 63.5mm of the glass as edge. (NOTE: CR calculations are not applicable to jamb sections). Assign the upper half of the frame and top glass a U-factor tag of ‘None’. On the exterior side, assign the bottom half of the frame center-line to site-line as SHGC exterior. All other sections on the exterior are assigned a tag of ‘None’.
- 10) Determine frame and edge-of-glazing U factors for each cross-section.
- 11) Use the values obtained for the jambs, head, sill and the intermediate vertical member in equation 4 of NFRC 100 to calculate the total U-factor.
- 12) The same procedure shall be used to calculate SHGC, VT and Condensation Resistance.

For representative product used for validation test:

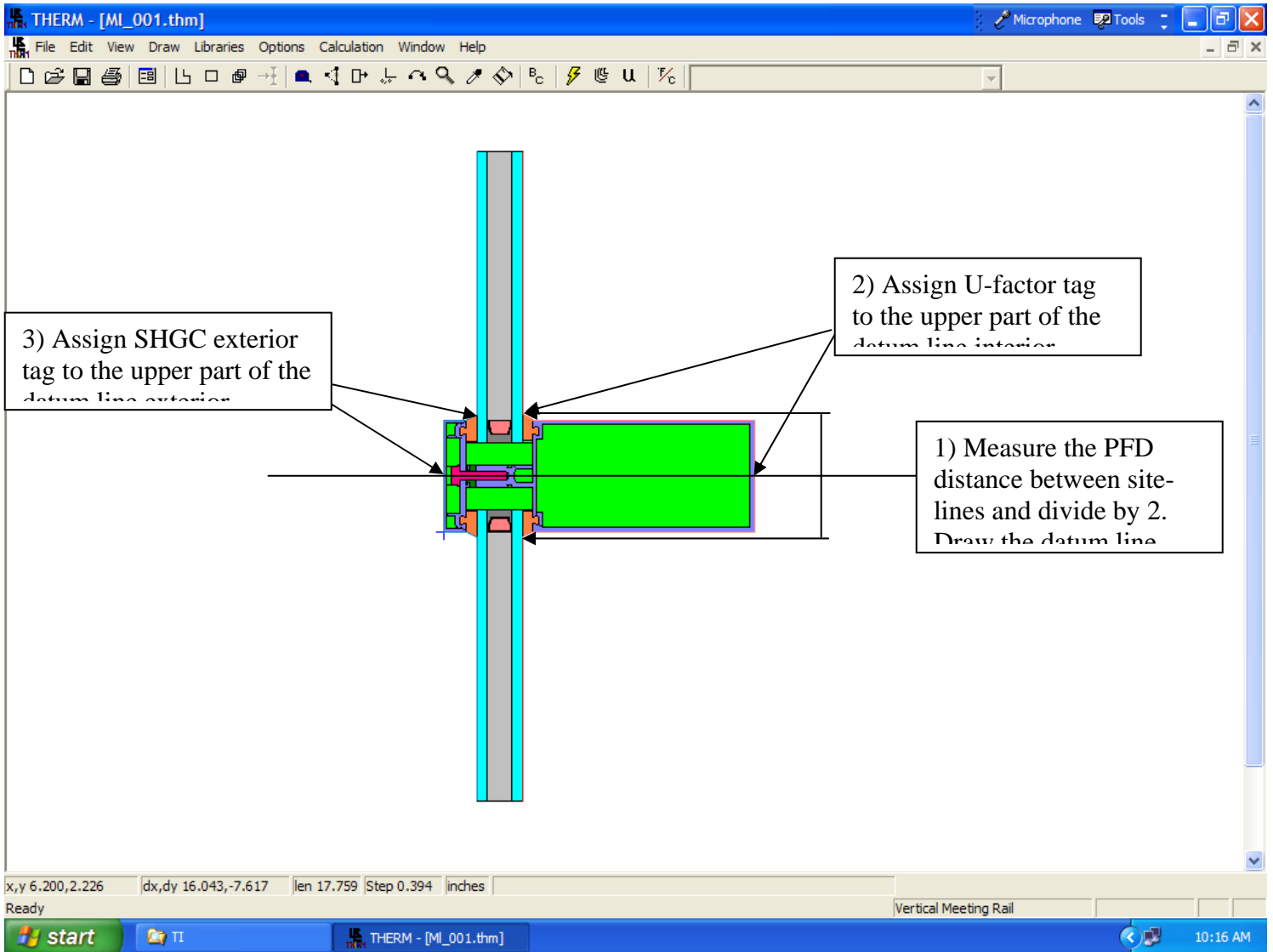
a) Simulate the full vertical intermediate member twice. Once with the left glass replaced with wood, which is the same thickness as the IG unit, and once with the right glass replaced with wood, which is the same thickness as the IG unit. The wood shall extend to the original site line (This is for the left and right jambs).

b) Simulate the full intermediate horizontal member twice. Once with the top glass replaced with wood, which is the same thickness as the IG unit, and once with the bottom glass replaced with wood, which is the same thickness as the IG unit. The wood shall extend to the original site line (This is for the head and sill).

Produce the test sample with the same cross sections as simulated in steps a & b.

The reported product simulated value shall be based on the simulations as performed in steps 1 through 7. Validation is checked by comparing the values obtained by simulating the product using steps a & b and the physical test results.

Technical Committee Revisions to Initial Interpretation:





TI-2003-13
07/09/03

NFRC Technical Interpretation-2001

Interpretation Requested:

How can a manufacturer of side-hinged exterior doors simplify the evaluation of multiple sill options available in a given side-hinged exterior door system?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
07/08/03	07/09/03	07/09/03

Pertinent Document:	
NFRC 100 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 100 - Section 3.3	Page 3-2

Interpretation :

Side-hinged exterior door sill systems that are non-metal or metal and meet the requirement of a thermally broken member, as defined in NFRC 100-2001 Section 1.3, may be given the same total product U-factor as the same door system option with the NFRC default sill.

Side-hinged exterior door sill systems that are metal and do not meet the requirement of a thermally broken member, as defined in NFRC 100-2001 Section 1.3, may be given total product U-factor 0.10 W/m²C (0.02 BTU/hr*ft²*F) higher than the same door system option with the NFRC default sill system.

The simulation report shall include a simulation for the exact option as tested.

Technical Committee Revisions to Initial Interpretation:



TI-2003-14 09/04/03

NFRC Technical Interpretation-2001

Interpretation Requested:
In a tubular daylighting device which utilize two exterior domes how should the air space between the exterior domes be modeled?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
07/1/03	08/05/03	09/04/03

Pertinent Document:	
NFRC 100 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 100 section 5.1-5.6	Page 5-1, 5-2

Interpretation :
<ul style="list-style-type: none"> • Test the dome only using ASTM C 1363 test procedure to determine the conductance value. • Use the conductance value for the standard Tubular Daylighting Device as defined in NFRC Simulation manual. • Follow the modeling steps specified in the NFRC THERM/WINDOW Simulation manual <p>NOTE: This is the same procedure that is currently being used for double and triple dome skylights.</p>

Technical Committee Revisions to Initial Interpretation:



TI-2003-16 09/08/03

NFRC Technical Interpretation 2001

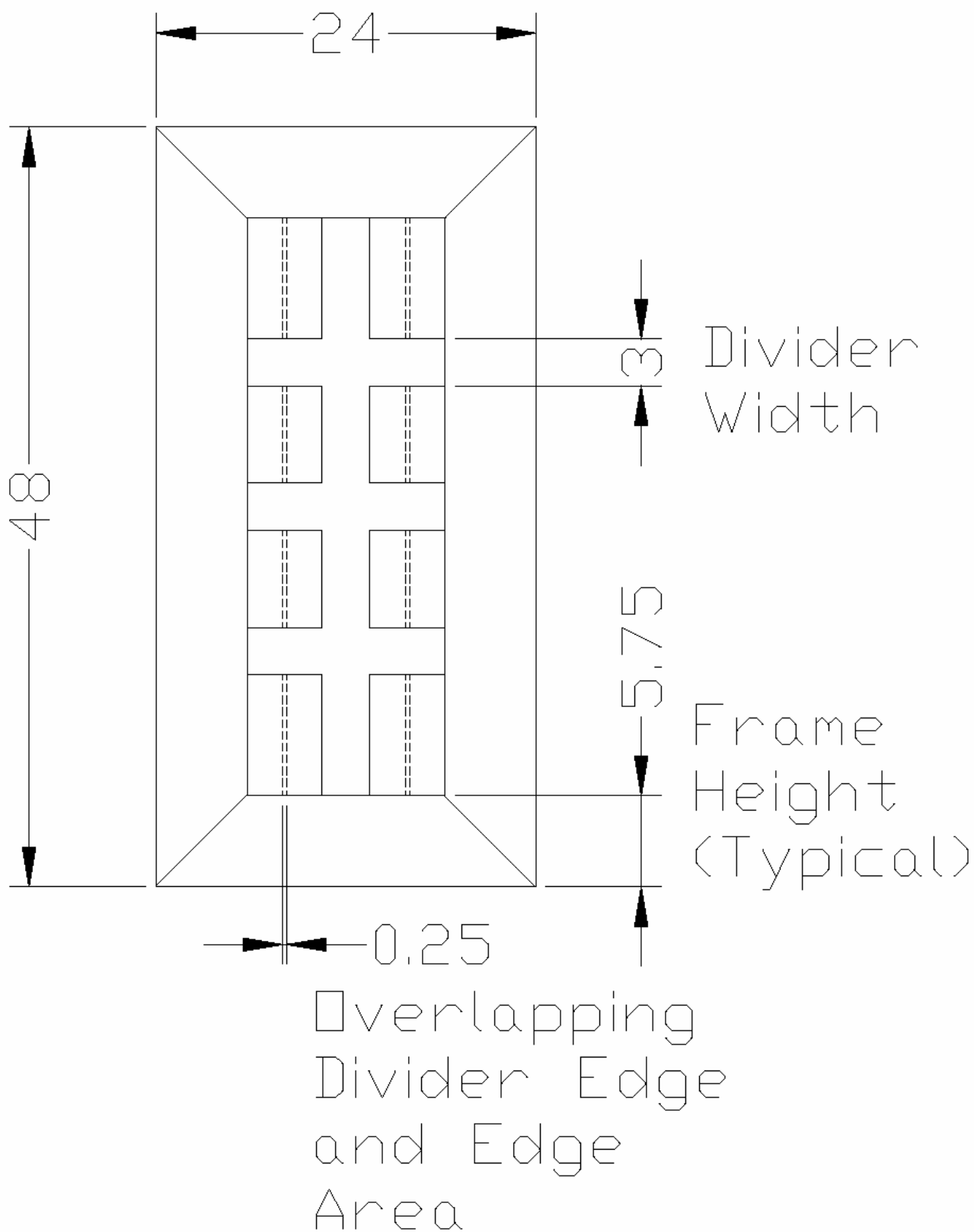
Interpretation Requested:
A standard window product is made with and without dividers. The dividers must be modeled in accordance with NFRC 100, but the default divider pattern does not allow for the full 63.5mm of edge-of-glass (divider) to be modeled. How should this product be area-weighted? (See attached drawing)

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
08/19/03	09/08/03	09/08/03

Pertinent Document:	
NFRC 100 (2001)	
Referenced Sections:	Referenced Pages:
NFRC Section 1.4.2, 1.4.4.1	Page 1-11, 1-15

Interpretation :
<p>This interpretation shall apply to all fenestration products.</p> <p>Increase the overall dimension(s) by the distance of the overlap, thereby restoring the 63.5mm edge and divider-edge dimensions, leaving the center-of-glass area equal to zero.</p> <p><i>Note: This would be the same as the interpretation for transoms and sidelites (TI-100-99008)</i></p>

Technical Committee Revisions to Initial Interpretation:





TI-2003-17 09/08/03

NFRC Technical Interpretation-2001

<i>Interpretation Requested:</i>
How do we model greenhouse/garden windows?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
09/04/03	09/08/03	09/08/03

<i>Pertinent Document:</i>	
NFRC100-(2001)	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
NFRC 100 sec. 1.5.3	Page 1-21

<i>Interpretation :</i>
Currently greenhouse/garden windows cannot be simulated. They are test only products.

<i>Technical Committee Revisions to Initial Interpretation:</i>



TI-2003-19 09/29/03

NFRC Technical Interpretation-2001

Interpretation Requested:
Tapes are used for decorative window applications. It can be used to simulate the appearance of grids or other designs. The main question is: Can this product be ignored when calculating U, SHGC, and VT. If not, how can it be rated?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
09/15/03	09/29/03	09/29/03

Pertinent Document:	
NFRC 100 (2001), 200 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 100, section 1.4.4.1, NFRC 200 section 6.1.1	NFRC 100- Page. 1-15, NFRC 200 Page 9

Interpretation :
Tapes that are transparent or translucent shall be deemed to be equivalent the same glass without the tape.

Technical Committee Revisions to Initial Interpretation:



TI-2003-20 09/29/03

NFRC Technical Interpretation-2001

Interpretation Requested:
When calculating the number of horizontal and vertical dividers, which dimensions should be used?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
09/15/03	09/29/03	09/29/03

Pertinent Document:	
NFRC 100 (2001), 200 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 100- section 1.4.2, NFRC 200- section 6.1.1	NFRC 100 Page1-11, NFRC 200 Page 9

Interpretation :
The overall window dimension shall be used to determine the number of horizontal and vertical dividers.

Technical Committee Revisions to Initial Interpretation:



TI-2003-22
10/16/03

NFRC Technical Interpretation-2001

Interpretation Requested:
How are Tubular Day-lighting Device (TDD) tested in accordance with NFRC 201

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
09/23/03	10/13/03	10/16/03

Pertinent Document:	
NFRC 200 (2001) and NFRC 201 (2001)	
Referenced Sections:	Referenced Pages:
Addendum to NFRC 200, NFRC 201 Section 7.1	NFRC 201 Page 33

Interpretation :
<p>For testing Tubular Day-lighting Device:</p> <ol style="list-style-type: none"> 1-Test per NFRC 201 with the following stipulations. 2-Install per manufacturer’s instructions, include manufacturer’s installation instructions as appendix to test report. 3-Build a 30” thick surround panel with opening of sufficient size to install the TDD. 4-The size tested shall be 14” shaft diameter and 30” shaft length size. If manufacturer does not make a TDD with exactly 14” diameter shaft use the equation in Section 1.5.3 of NFRC 100 to determine the minimum deviation from 14” tube. 5-If the dome is not symmetrical, install in orientation in manufacturer’s instructions. Include orientation in report. 6-Test with a 30 degree altitude angle of incidence, plus or minus 5 degrees. The azimuth shall be the same as sun within plus or minus 5 degrees. No test shall be conducted with the sun less than 30 degree altitude or greater than 60 degree altitude. 7-The Apf (product area) used to calculate the SHGC shall be the size of the opening required for mounting minus clearances) 8-The pyranometer shall be installed normal to sun plus or minus 5 degrees. 9-The TDD shall be sealed on both interior and exterior to prevent air leakage.

Technical Committee Revisions to Initial Interpretation:

NFRC Technical Interpretation-2001

Interpretation Requested:

When defining exterior Slightly Ventilated Cavities, should cavities $\leq 2\text{mm}$ within the defined Slightly Ventilated Cavities be treated as standard Frame Cavities?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
11/11/03	12/08/03	12/08/03

Pertinent Document:

THERM 5/WINDOW5 NFRC Simulation Manual (SM)

Referenced Sections:

SM section 6.3.7

Referenced Pages:

Page 6-13

Interpretation :

Yes. When an exterior cavity has been defined as a “Frame Cavity Slightly Ventilated NFRC 100-2001” per the simulation manual and now engulfs cavities that have openings less than or equal to 2mm, the cavities $\leq 2\text{mm}$ shall be filled with the standard “Frame Cavity NFRC 100-2001.”

Example:

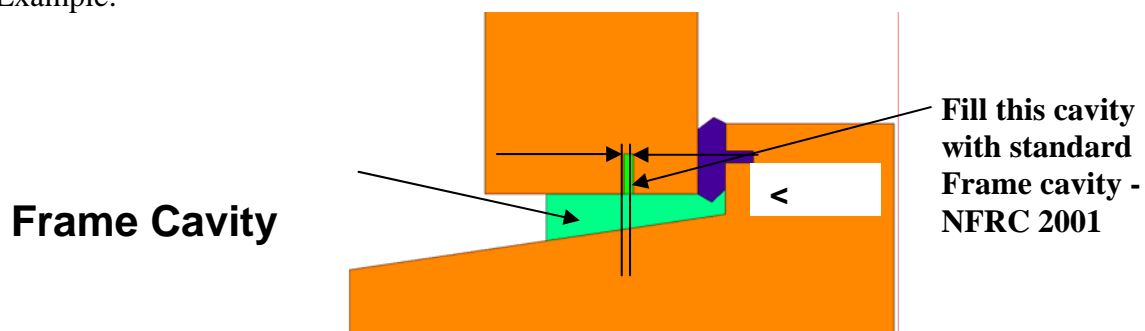


Figure:1

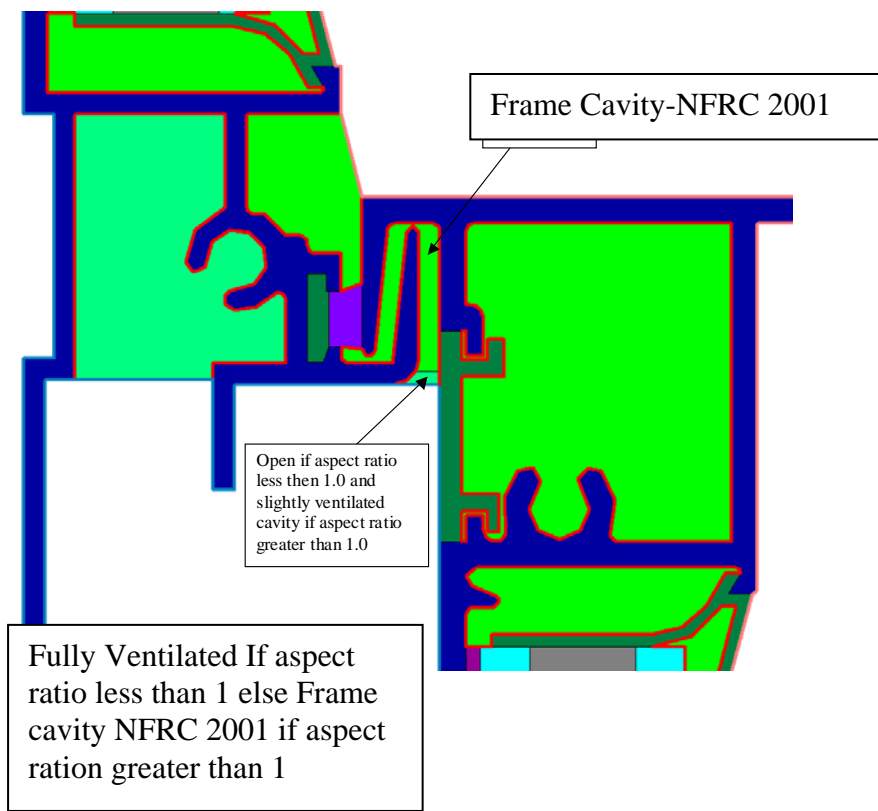


Figure 2.

Technical Committee Revisions to Initial Interpretation:



TI-2003-25 11/11/03

NFRC Technical Interpretation-2001

Interpretation Requested:
Can an Air Leakage rating for a casement be used on the awning?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
10/24/2003	11/11/03	11/11/03

Pertinent Document:	
NFRC 400 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 400 - Section 3.1	Page 1

Interpretation :
<p>No. The current NFRC 400 section 3.1 states: "A series of fenestration products specific to operator type (see Table 1 of NFRC 100) and framing material." No groupings of product lines are allowed under the NFRC 400 procedure.</p>

Technical Committee Revisions to Initial Interpretation:



TI-2003-26 12/08/03

NFRC Technical Interpretation-2001

Interpretation Requested:
How do we model the trapped air spaces within TruSeal's DuraSeal spacer?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
10/30/2003	12/08/03	12/08/03

Pertinent Document:	
NFRC 100 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 100 - Section 1.5.1	Page 1-17

Interpretation :
<p>Create a new solid material called "still air cavity" with a conductivity of 0.024 W/m-K. Use this material for the air that is trapped between the aluminum corrugated strip and the butyl.</p> <p>Note: The 0.024 W/m-K is the same conductivity used in the 3-D modeling calculation for Bolts, etc.</p>

Technical Committee Revisions to Initial Interpretation:



TI-2004-02 03/30/04

NFRC Technical Interpretation-2001

Interpretation Requested:
If manufacturer makes flush or panel doors of the size 36” wide by 80” high and provides drawings for the same, which section of the door needs to be scaled in order to simulate the NFRC standard model size door 1000mm wide by 2000mm high?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
02/10/04	02/29/04	02/29/04

Pertinent Document:	
NFRC 100 (2001), NFRC 200 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 100 (2001) section 1.5.3, NFRC 200(2001) section 5.1	NFRC 100 (2001) Page1-21, NFRC 200 (2001) Page6

Interpretation :
The stile and rail (PFD) dimensions are held constant and the panel (PFD) dimensions are equally adjusted to account for the difference between the as built and as rated sizes.

Technical Committee Revisions to Initial Interpretation:



TI-2004-04 03/10/04

NFRC Technical Interpretation-2001

Interpretation Requested:
Can a fenestration product listed in Section 2.2.1 of the NFRC 200-2001 be simulated for Certification?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
01/03/2004	03/10/2004	03/10/2004

Pertinent Document:	
NFRC 200 (2001); NFRC 201 (November 2002)	
Referenced Sections:	Referenced Pages:
NFRC 200 sec. 2.2.1, 6.2 NFRC 201 sec. 7.2.2.1	NFRC 200 page 2, 10; NFRC 201 page 34

Interpretation :
The COG SHGC derived from an NFRC 201 test may be used in an NFRC 200 calculation to determine SHGC for the total fenestration product. As shown in section 6.2 of NFRC 200 (2001).

Technical Committee Revisions to Initial Interpretation:



TI-2004-05 03/10/04

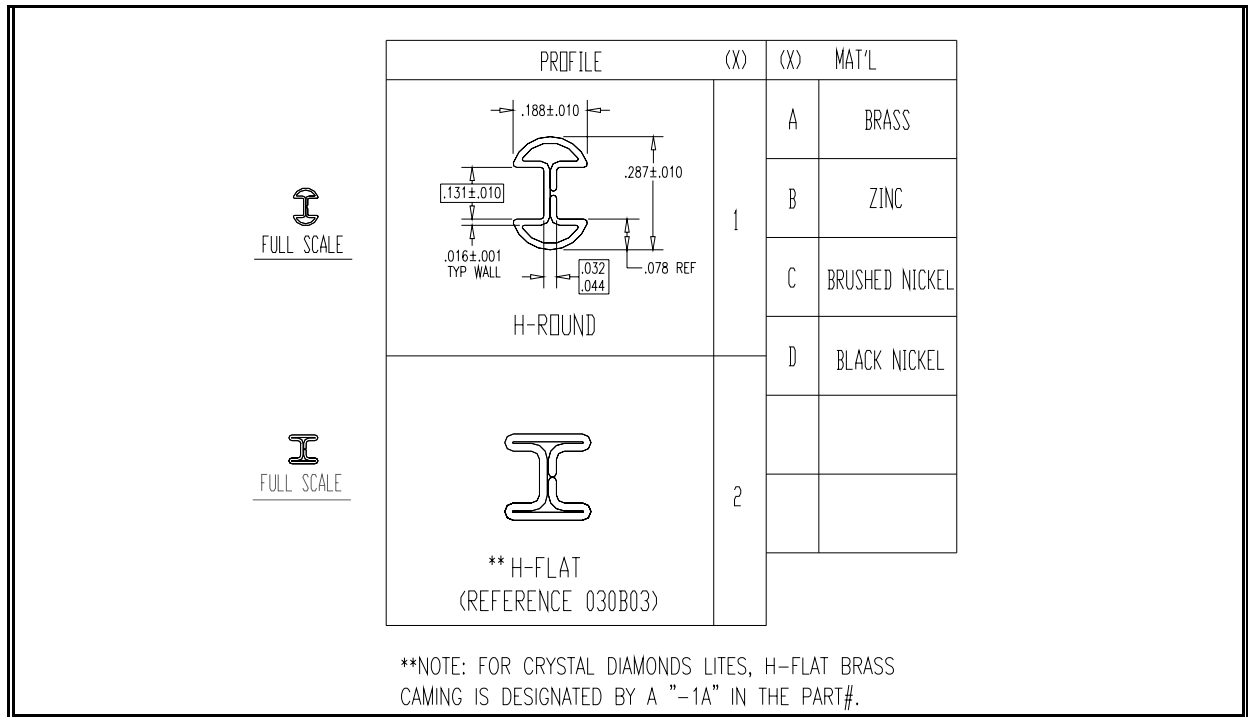
NFRC Technical Interpretation-2001

Interpretation Requested:
When using the NFRC default caming for swing door simulations which shape and material is considered the default configuration?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
02/24/2004	03/10/04	03/10/04

Pertinent Document:	
NFRC 100 (2001), NFRC 200 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 100 section 3.4 NFRC 200 Section 6.1.1	NFRC 100 page 3-2 NFRC 200 page 8

Interpretation :
<p>The flat caming (H -Bar) shall be used as the default shape. Lacquered Yellow Brass conductivity = 119 w/m-k, e = 0.9 (source ASHRAE Handbook of Fundamentals) shall be the default material.</p> <p>Caming drawing dxf file is available from the NFRC website. Drawing attached</p>



Technical Committee Revisions to Initial Interpretation:



TI-2004-06 03/31/04

NFRC Technical Interpretation-2001

Interpretation Requested:
If a manufacturer does not build an embossed sidelight or raised panel sidelight product in a size near the NFRC Table 1 size how does the simulator determine the Day light opening/Panel width and height dimensions for the standard NFRC size?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
02/23/2004	03/29/04	03/29/04

Pertinent Document:	
NFRC 100(2001) and NFRC 200(2001)	
Referenced Sections:	Referenced Pages:
NFRC 100 Table 1, NFRC 100 Figures 5 and 7	NFRC 100 pg 1-21, 7-5, 7-7

Interpretation :
The stile and rail (PFD) dimensions are held constant and the panel (PFD) dimensions are equally adjusted to account for the difference between the as built and as rated sizes.

Technical Committee Revisions to Initial Interpretation:



TI-2004-07 03/26/04

NFRC Technical Interpretation-2001

Interpretation Requested:
What size does one use for the least deviation formula of section 7.2.2.1 of NFRC 201?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
02/17/04	03/23/04	03/23/04

Pertinent Document:	
NFRC 200 (2001), NFRC 201(2001)	
Referenced Sections:	Referenced Pages:
NFRC 200 (2001) section 6.2 NFRC 201 (2001) Section 7.2.2.1	NFRC 200 (2001) Page 10, NFRC 201 (2001) Page 34

Interpretation :
Use the procedure in NFRC 100 to determine the least deviation from 1m by 1m (39" by 39")

Technical Committee Revisions to Initial Interpretation:



TI-2004-08 03/26/04

NFRC Technical Interpretation-2001

Interpretation Requested:
What are the guidelines regarding the size of a glazing specimen submitted for ASTM C 1363 Center-Of-Glazing Component testing?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
02/17/04	03/23/04	03/23/04

Pertinent Document:	
NFRC 100 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 100 (2001) section 1.6.1.2	Page 1-24

Interpretation :
Use the procedure in NFRC 100 to determine the least deviation from 1meter by 1 meter (39" by 39"). Resultant conductance value can be used for all product types specified in Table 1 of NFRC 100.

Technical Committee Revisions to Initial Interpretation:



TI-2004-09
03/29/04

NFRC Technical Interpretation-2001

Interpretation Requested:

The calculation of entry door SHGC for opaque components of the door is not well defined. The equation from ISO 15099 for frame SHGC is:

$$SHGC_f = \alpha_f \cdot \frac{U_f}{\frac{A_{surf}}{A_f} h_{out}}$$

The unknown in this equation is the h_{out} convection coefficient. The h_{out} term cannot be calculated by Window or Therm. Approximating the door core construction in Window 5.2 resulted in h_{out} values between 29.2 and 29.4 W/m²C. The NFRC 102 test procedure standardizes h_{out} a 30 W/m²C. Can the SHGC coefficient for opaque components of door be calculated with an h_{out} of 30 W/m²C.

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
03/29/04	03/29/04	03/29/04

Pertinent Document:	
NFRC 100 (2001), NFRC 200 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 100 (2001) Section 1.5.1 NFRC 200 (2001) section 5.1.3	NFRC 100 (2001) Page 1-17 NFRC 200 (2001) Page 6

Interpretation :

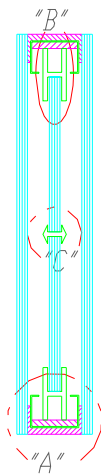
Yes.

Technical Committee Revisions to Initial Interpretation:

NFRC Technical Interpretation-2001

Interpretation Requested:

How is the IG unit with intermediate pane having lead divider and insert frame modeled? For U-factor and SHGC?



<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
April 04, 2004	5/20/04	5/20/04

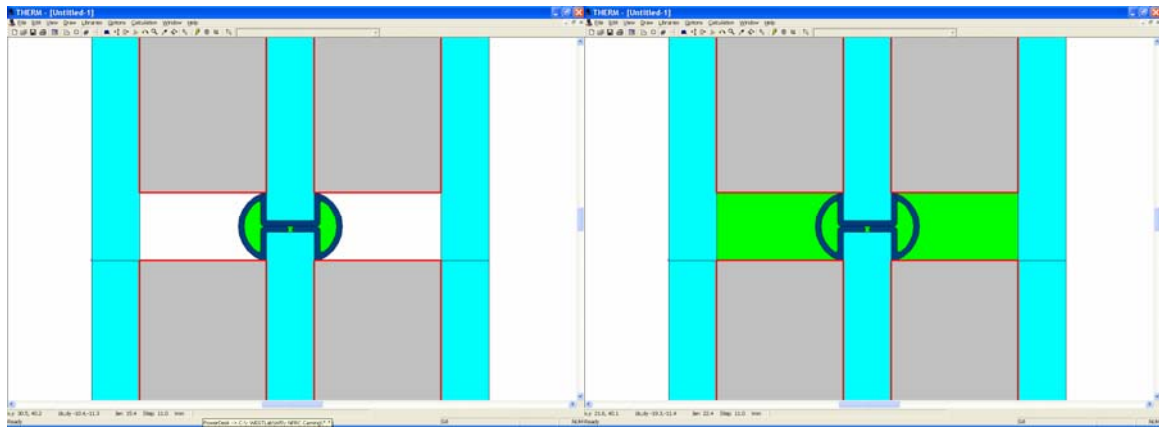
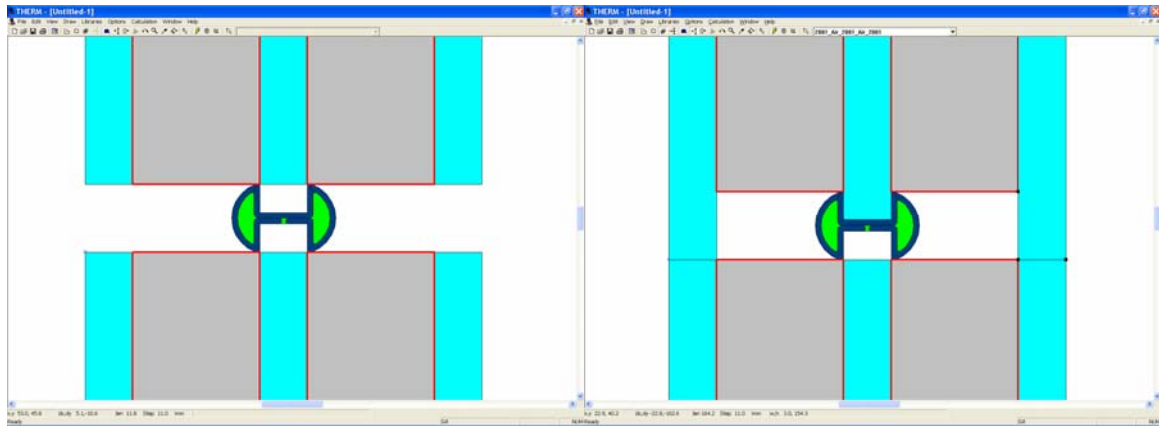
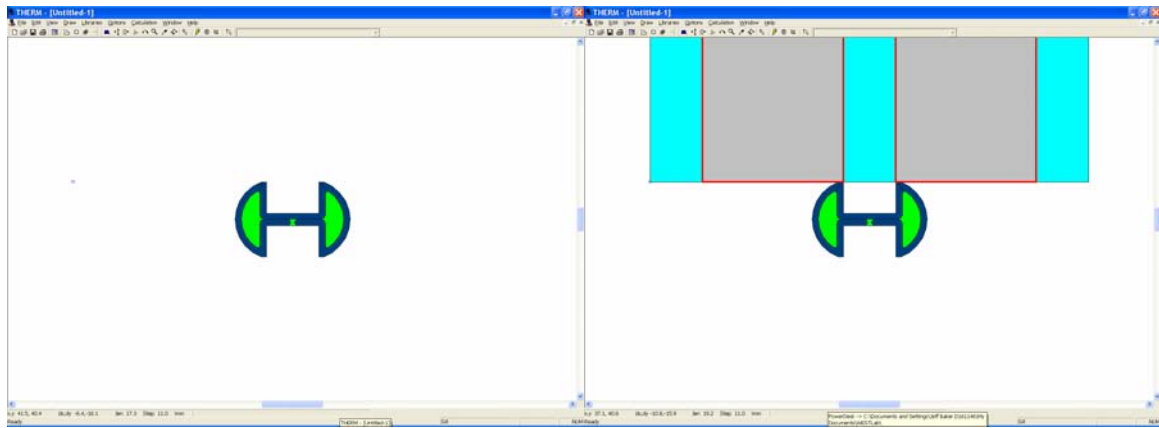
Pertinent Document:

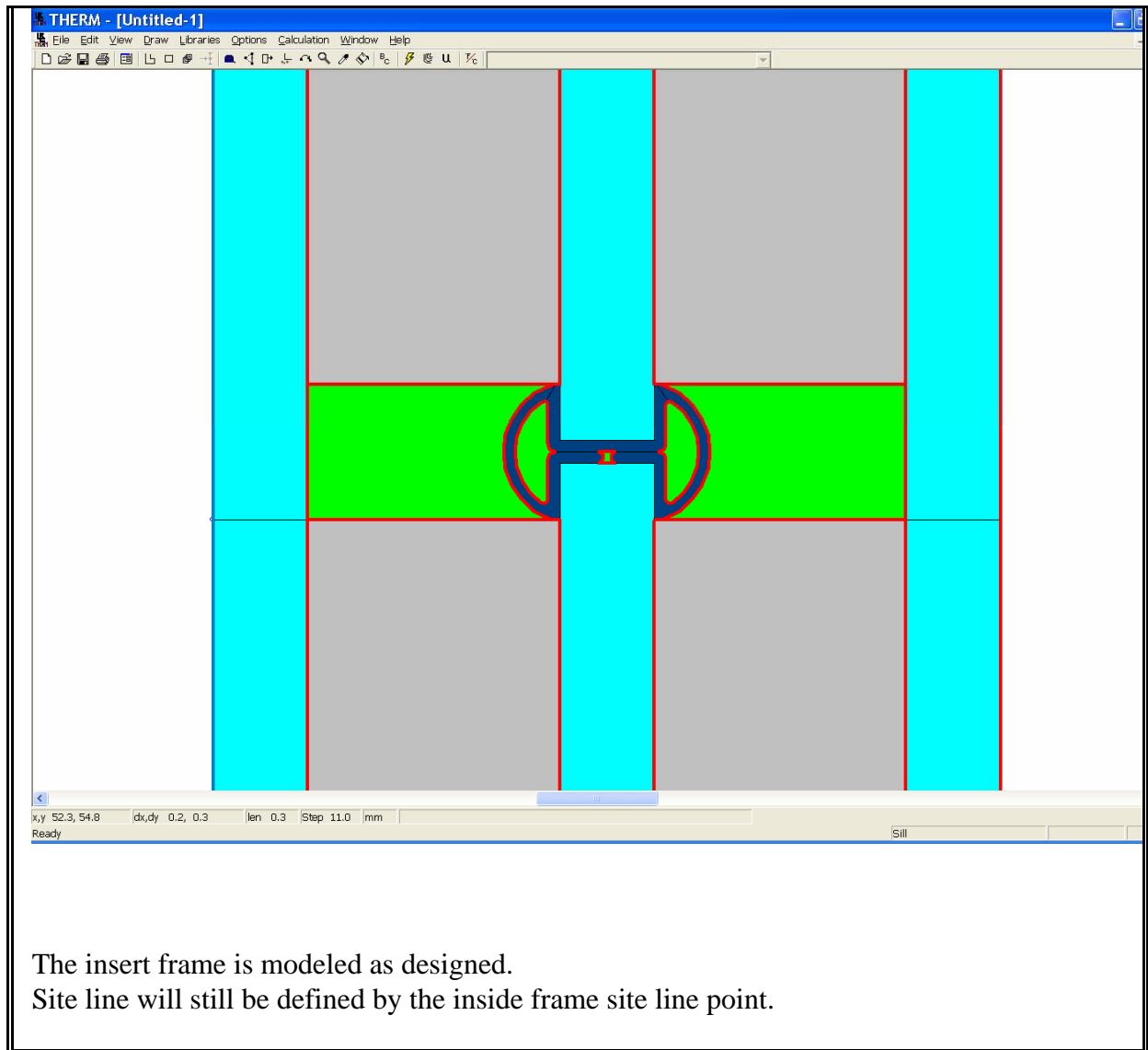
NFRC Simulation Manual (June 2003)

<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
Sec. 8.3	Page 8-10

Interpretation :

Camming shall be modeled in accordance with section 8.3.1 of NFRC simulation manual and as per steps defined below.





Technical Committee Revisions to Initial Interpretation:



TI-2004-11 04/13/04

NFRC Technical Interpretation-2001

Interpretation Requested:
What nominal glass thickness needs to be selected for glass not covered by the range for nominal glass thickness given in NFRC 100 (2001).

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
12/23/03	04/16/04	04/16/04

Pertinent Document:	
NFRC 100 (2001)	
Referenced Sections:	Referenced Pages:
Section 1.4.4. in NFRC 100 (2001) and Section 6 in ASTM C 1036	NFRC 100 (2001) page 1-14 in and Table 1 in ASTM C 1036

Interpretation :
Use actual thickness for the glasses, which are not covered by the nominal glass thickness range specified.

Technical Committee Revisions to Initial Interpretation:



TI-2004-12 04/13/04

NFRC Technical Interpretation-2001

Interpretation Requested:
Can centerline-to centerline modeling used to model curtain wall be applied to sloped glazed wall systems?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
04/06/04	04/16/04	04/16/04

Pertinent Document:	
Technical Interpretation Manual (2001) TI-2003-12	
Referenced Sections:	Referenced Pages:
TI-manual 2001 - TI-2003-12	TI-2003-12

Interpretation :
No. See NFRC 100(2001) Table 1 note 4.

Technical Committee Revisions to Initial Interpretation:



TI-2004-13 05/20/04

NFRC Technical Interpretation-2001

Interpretation Requested:
Can a Center-of-Glazing Component Test for a dome skylight also be used for a pyramidal dome which utilizes the same material for the dome to determine the COG U-factor?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
4/2/04	5/20/04	5/20/04

Pertinent Document:	
NFRC 100 (2001)	
Referenced Sections:	Referenced Pages:
1.5.2.2	1-19

Interpretation :
No. Separate testing is required.

Technical Committee Revisions to Initial Interpretation:



TI-2004-17 04/16/04

NFRC Technical Interpretation-2001

Interpretation Requested:
How many thermocouples (TCs) shall we attach on the Surround Panel (SP) surface during an NFRC 102-2001 test? In section 5.1.4.2(A) of NFRC 102-2001, there is no equation where the second paragraph starts with “This Equation”. In section 6.5.2.1(A) mentions 8 TCs minimum with exact locations. Which requirement shall we follow?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
04/12/04	04/16/04	04/16/04

Pertinent Document:	
NFRC 102 (2001)	
Referenced Sections:	Referenced Pages:
Section 6.5.2.1 (A)	Page 8

Interpretation :
NFRC 102 section 6.5.2.1 (A), minimum of 8 temperature sensors, shall be followed.

Technical Committee Revisions to Initial Interpretation:



TI-2004-19 05/20/04

NFRC Technical Interpretation-2001

<i>Interpretation Requested:</i>
<p>Nu number of frame cavity in the THERM 5.2 program is not known in advance, because the temperatures and heat flow directions are calculated during the program execution. However, simulation manual does not point this out and it suggests checking Nu number during the modeling (drawing) process, which would result in incorrect Nu value. This may result in many unnecessary subdivisions of the frame cavity, even though the Nu can be 1.0 or very close to that value once the temperatures are calculated. Current procedure requires to subdivide cavities based on the “Nu” number that is displayed before the run in order “to preserve simplicity”. I think that this approach is more cumbersome and it is incorrect. Should cavities be broken after performing the first simulation run?</p>

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
11/11/03	5/20/04	5/20/04

<i>Pertinent Document:</i>	
NFRC simulation manual section 6.3.6	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
Section 6.3.6	6-12

<i>Interpretation :</i>
<p>The simulation modeling procedure pertaining to the Nu value is well defined in the NFRC simulation manual.</p>

<i>Technical Committee Revisions to Initial Interpretation:</i>



TI-2004-22 06/24/04

NFRC Technical Interpretation-2001

Interpretation Requested:
Are the glazing sizes listed in the second column of the two tables on page 3-3 of section 3 in NFRC 100 (2001) the day light opening size?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
4/20/2004	6/24/04	6/24/04

Pertinent Document:	
NFRC 100 (2001), Simulation Manual	
Referenced Sections:	Referenced Pages:
Section 3.4	3-3

Interpretation :
Yes

Technical Committee Revisions to Initial Interpretation:



Withdrawn on 11-07-2005
See TI-2004-12

NFRC Technical Interpretation-2001

Interpretation Requested:

1. For products requiring the center-of-glazing test procedure, can obscure, patterned, and tinted versions of the glass be represented by clear versions for U-Factor?
2. For products requiring the center-of-glazing test procedure, can obscure, patterned, and tinted versions of the glass be represented by clear versions for SHGC?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
05/24/04	06/24/04	06/24/04

Pertinent Document:

NFRC 100 (2001), NFRC 200 (2001)

<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
NFRC 100 (2001) Section 1.6.1.2	NFRC 100 (2001) Page 1-24
NFRC 200 (2001) Section 6.2	NFRC 200 (2001) Page 10

Interpretation :

1. Yes, for products requiring center-of-glazing test procedure, obscure, patterned, and tinted versions of the glass can be represented by clear versions for U-Factor
2. No. Each product must be tested independently, as the SHGC values may be different

Technical Committee Revisions to Initial Interpretation:

Withdrawn 11-07-05



TI-2004-25 07/30/04

NFRC Technical Interpretation-2001

Interpretation Requested:
Please clarify the ambient test temperature conditions.

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
7/06/2004	7/30/04	7/30/04

Pertinent Document:	
NFRC 102 (2001)	
Referenced Sections:	Referenced Pages:
4.2(a) Number 2	4

Interpretation :
<p>Clarification</p> <p>The following temperature conditions shall be used:</p> <p>Interior Temperature: 21.0 C (69.8 F) +/- 0.3C (+/- 0.5 F)</p> <p>Exterior Temperature: -18.0 C (-0.4 F) +/- 0.3C (+/- 0.5 F)</p> <p>NFRC 102 defined the interior temperature as 21.1 C, this was a typographical error.</p>

Technical Committee Revisions to Initial Interpretation:



TIR-2004-26 07/30/04

NFRC Technical Interpretation-2001

Interpretation Requested:
How are corrugated plastic panels that are manufactured and installed without frames rated for U-factor and SHGC?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
June 21, 2004		

Pertinent Documents:	
NFRC 100 (2001), NFRC 102 (2001), NFRC 200 (2001), NFRC 201 (2001)	
Referenced Sections:	Referenced Pages:
NFRC 100 (2001)-1.21-c NFRC 200 (2001)-2.1-e	NFRC 100 (2001) -1.1, NFRC 200 (2001)-1

Interpretation :
<p>1-U-factor-A specimen sized per TI-2004-08 shall be tested per ASTM C1363 and NFRC 102 as center-of-glazing. The Ust (standardized thermal transmittance) shall be U-factor for the product.</p> <p>2- SHGC-A specimen sized per TI-2004-07 shall be tested per NFRC 201 as center-of-glazing. The SHGC of the product shall be the tested center-of-glazing.</p>

Technical Committee Revisions to Initial Interpretation:



TI-2004-27 10/14/04

NFRC Technical Interpretation-2001

Interpretation Requested:
How are factory assembled horizontal and vertical slider storm windows modeled for; a) The cavities between two operable and fix/operable sashes? b) The cavity between two mullions treated while modeling the cross-section?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
08/18/04		

Pertinent Documents:	
NFRC 100-2001, Therm5/Window 5 NFRC Simulation Manual	
Referenced Sections:	Referenced Pages:
Section 1.2.1	NFRC 100 Pg1-1
Section 8.4	NFRC Simulation Manual Pg 8-21

Interpretation :
<ul style="list-style-type: none"> a) Cavities between sashes are treated in similar manner as cavities between the storm and the IG unit; they are filled and linked to the glazing cavity above or below. b) Cavities between two mullions are treated as a glazing cavity. Link the air cavity to the glazing cavity above or below. <p>The storms are modeled assuming no air leakage.</p>

Technical Committee Revisions to Initial Interpretation:



TI-2004-28 03/17/05

NFRC Technical Interpretation-2001

Interpretation Requested:
How to calculate U-Factor, SHGC and VT for a product having glazing system with 6 glass layers?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
11/29/2004	03/17/05	03/17/05

Pertinent Document:	
NFRC 100-2001	
Referenced Sections:	Referenced Pages:
Section 2.2, 1.5.1	2-1, 2-2, 1-17, 1-8

Interpretation :
<p>The calculations shall be performed using a methodology presented in the document entitled, “Calculation Methodology for Heat Transfer and Solar Hat Gain of a 6-Layer Glazing Unit”.</p> <p>This document can be obtained from NFRC website www.nfrc.org under NFRC resources.</p>

Technical Committee Revisions to Initial Interpretation:



TI-2005-01
03/17/05

NFRC Technical Interpretation-2004

Interpretation Requested:
Can a Pet door in combination window be rated per NFRC 100-2004?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
1/29/2004	03/17/05	03/17/05

<i>Pertinent Document:</i>	
NFRC 100-2004	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
Section 4.4	Pages 21 and 22

Interpretation :

One cannot rate a pet door per a TIPC request.

Technical Committee Revisions to Initial Interpretation:



TI-2005-02 03/17/05

NFRC Technical Interpretation-2004

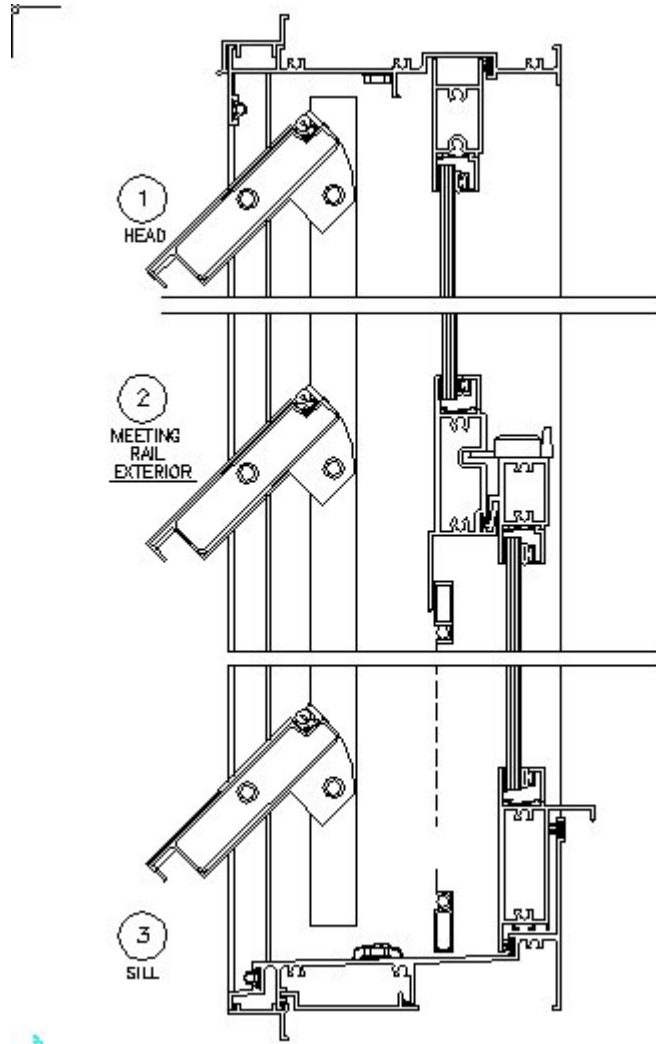
Interpretation Requested:
Can with permanently attached louvers be rated in accordance with NFRC 100-2004, NFRC 200-2004

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
1/29/2004	03/17/05	03/17/05

Pertinent Document:	
NFRC 100-2004, NFRC 200-2004	
Referenced Sections:	Referenced Pages:
Section 4.4	Pages 21 and 22

Interpretation :
The Louvers are considered as an attachment and can not be rated. The window could be rated without the louvers.

Technical Committee Revisions to Initial Interpretation:





TI-2005-03 06/20/05

NFRC Technical Interpretation-2004

Interpretation Requested:
Clarify whether default door frames may be used with sidelites to be used alongside doors?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
04/15/2005	06/20/05	06/20/05

Pertinent Document:	
NFRC 100 (2001, 2004), Section 3.0; NFRC Simulation Manual section 8.7	
Referenced Sections:	Referenced Pages:
NFRC 100 (2001, 2004)- Section 3.0 NFRC Simulation Manual-section 8.7	Section 3.0 3-1 to 3-5 and NFRC Simulation Manual 8-63

Interpretation :
The NFRC approved default frame used for slab doors shall also be permitted to be used for slab sidelites.

Technical Committee Revisions to Initial Interpretation:



TI-2005-06 08/18/05

NFRC Technical Interpretation-2004

Interpretation Requested:
For glazing matrix consisting of double pane and triple pane glazing configuration how does one perform divider grouping?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
07/21/05	07/21/05	08/18/05

Pertinent Document:	
NFRC 100-2004	
Referenced Sections:	Referenced Pages:
Section 4.2.4.3	Page 15

Interpretation :
<p>For the purpose of determining U-factors, divider groups shall consist only of variations in divider materials, size and shapes. After all divider options have been identified within a product line, the frame and edge-of-glazing heat loss shall be simulated for each divider option in the appropriate glazing category (double pane or triple pane) with the lowest center-of-glazing U-factor in the glazing category. Divider group leaders for double pane and triple pane configuration shall represent the double pane group and triple pane groups respectively.</p>

Technical Committee Revisions to Initial Interpretation:



TIR-2005-07 08/18/05

NFRC Technical Interpretation-2004

Interpretation Requested:
For glazing matrix consisting of double pane and triple pane glazing configuration how does one perform spacer grouping?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
07/21/05	07/21/05	08/18/05

Pertinent Document:	
NFRC 100-2004	
Referenced Sections:	Referenced Pages:
Section 4.2.4.2	Page 15

Interpretation :
<p>For the purpose of determining U-factors, spacer groups shall consist only of variations in spacer materials, size and shapes. After all spacer options have been identified within a product line, the frame and edge-of-glazing heat loss shall be simulated for each spacer option in the appropriate glazing category (double pane or triple pane) with the lowest center-of-glazing U-factor in the glazing category. Spacer group leaders for double pane and triple pane configuration shall represent the double pane group and triple pane groups respectively.</p>

Technical Committee Revisions to Initial Interpretation:



TI-2005-08 08/11/05

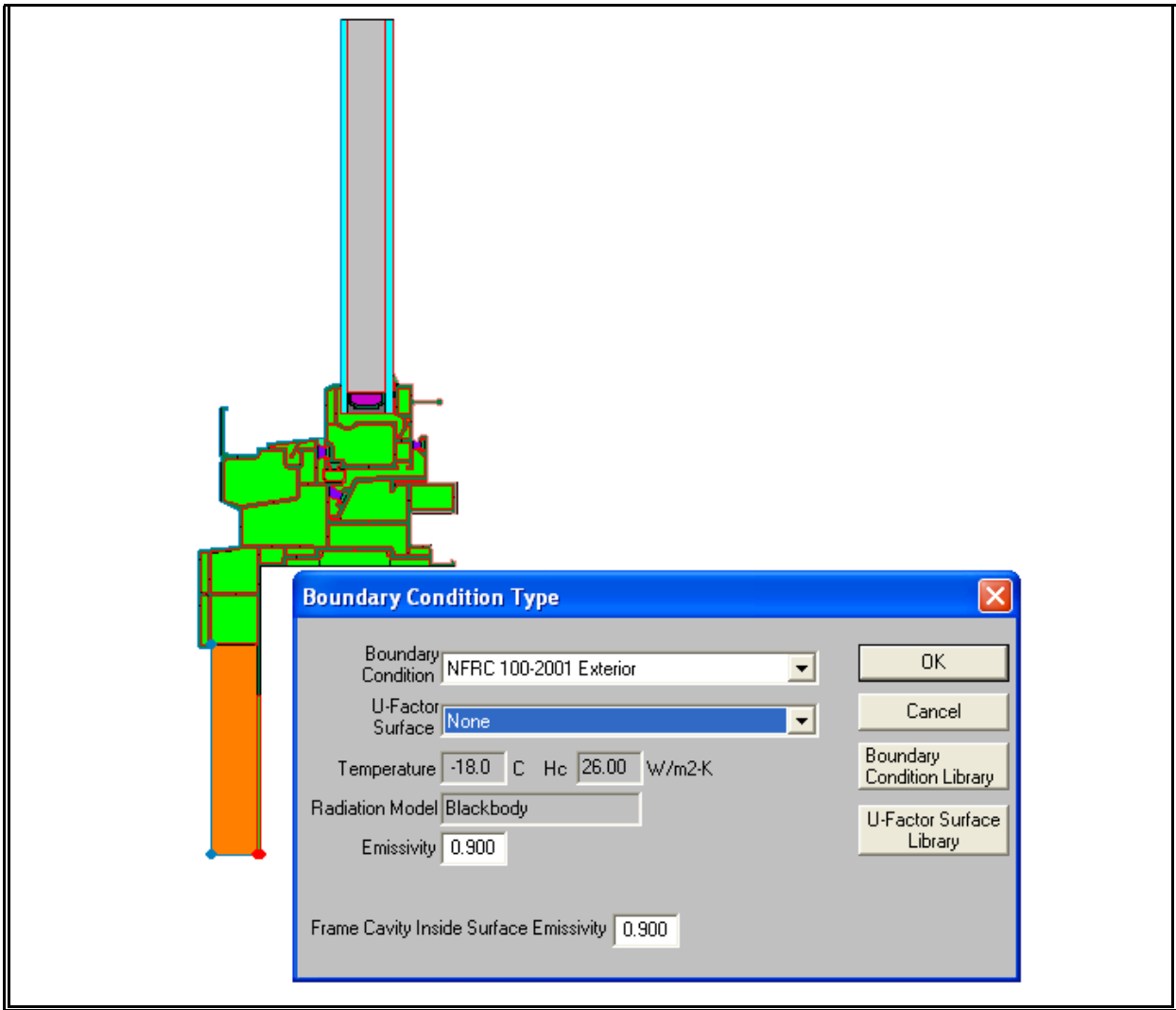
NFRC Technical Interpretation-2004

<i>Interpretation Requested:</i>
What tag is applied for Exterior Boundary condition applied to 1” by 4” nominal fir trim applied on non-removable nail on fin?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
07/21/05	7/25/05	8/11/05

<i>Pertinent Document:</i>	
NFRC 100-2004	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
Section 4.2.5	Page 16

<i>Interpretation :</i>
Boundary condition applied shall be NFRC 100-2001 Exterior and the Tag = none. (See figure below)



Technical Committee Revisions to Initial Interpretation:



TI-2005-09 08/18/05

NFRC Technical Interpretation-2004

Interpretation Requested:
Which Center-of-glazing value is used for the determination of SHGC and VT values of 0.0 and 1.0?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
07/21/05	07/21/05	08/18/05

Pertinent Document:	
NFRC 200 - 2004	
Referenced Sections:	Referenced Pages:
Section 4.5.D	Page 10

Interpretation :
For determination of the SHGC and VT values of 0.0 and 1.0 use the lowest center-of-glazing option from the Product Line. Should the Lowest center-of-glazing option be included in a group then the group leader option shall be used to determine the SHGC and VT of 0 and 1.

Technical Committee Revisions to Initial Interpretation:



TI-2005-11 08/11/05

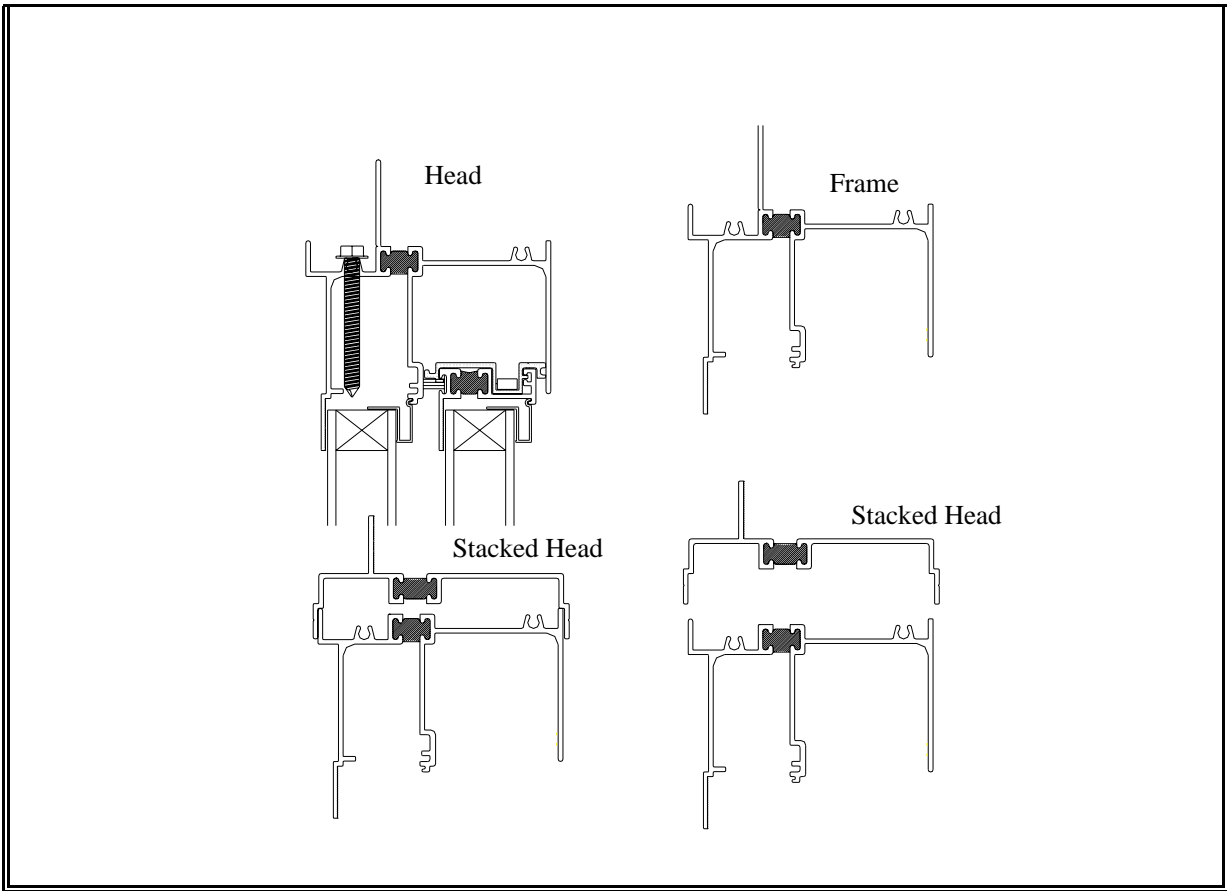
NFRC Technical Interpretation-2004

<i>Interpretation Requested:</i>
Are additional profiles attached to the perimeter of a window frame to be modeled as part of the same product line? Is it an individual product within a product line?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
07/21/05	7/25/05	08/11/05

<i>Pertinent Document:</i>	
NFRC 100-2004	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
Section 4.2.5.B	Page 16

<i>Interpretation :</i>
No. The fenestration product with the additional attached profile is to be treated as a separate product line. (See the example below)



Technical Committee Revisions to Initial Interpretation:



TI-2004-12
08/17/2005

NFRC Technical Interpretation-2004

Interpretation Requested:
How is a dome skylight which does not include a frame or flashing to be simulated and tested?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
7/21/2005	07/21/05	08/18/05

Pertinent Document:	
NFRC 100-2004, NFRC 102-2004, NFRC 200-2004, NFRC 201-2004	
Referenced Sections:	Referenced Pages:
100 (Section 4.1.2), 200 (Section 4.1.2)	100 (10), 200 (6)

Interpretation :
A dome skylight which does not include a frame or flashing shall be considered a test only option in accordance with Section 4.1.2.
No simulation or Center-of-Glazing component test is required.

Technical Committee Revisions to Initial Interpretation:



TI-2004-13 11-07-05

NFRC Technical Interpretation-2004

Interpretation Requested:
<ol style="list-style-type: none"> 1. For products requiring the center-of-glazing test procedure, can obscure, patterned, and tinted versions of the glass be represented by clear versions for U-Factor? 2. For products requiring the center-of-glazing test procedure, can obscure, and patterned, versions of the glass be represented by clear versions for SHGC? 3. For products requiring the center-of-glazing test procedure, can tinted versions of the glass be represented by clear versions for SHGC?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
10/13/05	11/07/05	11/07/05

Pertinent Document:	
NFRC 100 (2004), NFRC 200 (2004)	
Referenced Sections:	Referenced Pages:
NFRC 100 (2004) Section 4.2.5.F.i NFRC 200 (2004) Section 4.5.G.ii	NFRC 100 (2004) Page 17 NFRC 200 (2004) Page 11

Interpretation :
<ol style="list-style-type: none"> 1. Yes, as long as the emissivity does not change. 2. Yes, as long as the emissivity does not change. 3. No. Tinted version product shall be tested independently for the SHGC value.

Technical Committee Revisions to Initial Interpretation:



TI-2006-01 1/10/06

NFRC Technical Interpretation-2004

Interpretation Requested:
How are (dual skin with air gap or insulated gap) translucent panels rated for SHGC? How can different skin/infill attached to the panels be grouped?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
12/20/2005	01/06/06	01/06/06

Pertinent Document:	
NFRC 200-2004	
Referenced Sections:	Referenced Pages:
Section 2.1.E, 4.5	Page 1 and 9

Interpretation :
Manufacture can group thickness of translucent panes (skins) only in accordance with table 6.2 of NFRC 200-2004. Different tints of the translucent panes (skins) and different infill are not allowed to be grouped, therefore are treated as individual products in the same product line.

Technical Committee Revisions to Initial Interpretation:



TI-2006-02 1/10/06

NFRC Technical Interpretation-2004

Interpretation Requested:
Clarify whether the sidelite products with same panel and different frames shall be treated as individual products within one Product Line?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
12/27/05	01/06/06	01/06/06

Pertinent Document:	
NFRC 100-2004	
Referenced Sections:	Referenced Pages:
5.2	Page 35

Interpretation :
The slab sidelite products with same panel and different frames shall be treated as individual products within one product line. This means that each frame option would need to be individually modeled or grouped. Generic frames shall not be used instead of real frames.

Technical Committee Revisions to Initial Interpretation:



TI-2006-03 01/19/06

NFRC Technical Interpretation-2004

<i>Interpretation Requested:</i>
What are the differences (if any) in the simulation procedure for Tubular Daylighting Devices which have a square bottom diffuser section? Is there any variation to account for the diffuser section being larger than the tube diameter?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
1/19/2006	03/15/06	03/15/06

<i>Pertinent Document:</i>	
NFRC 100 and 200	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
Table 4-3, Section 5.4	Page 22, 55

<i>Interpretation :</i>
For non circular diffuser, for simulation use the circular diffuser with surface area equal to actual non circular diffuser surface area.

<i>Technical Committee Revisions to Initial Interpretation:</i>



TI-2006-04 02/06/06

NFRC Technical Interpretation-2004

Interpretation Requested:
SHGC & VT for unspecified glazing unit for site built products?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
02-06-06	3-15-06	3-15-06

Pertinent Document:	
NFRC 100 and 200	
Referenced Sections:	Referenced Pages:
NFRC 100- Sec. 5.6.4.1, NFRC 200- Sec 4.5	NFRC 100- Page 64, NFRC 200- page 9

Interpretation :
Language as specified to determine SHGC ₀ and SHGC ₁ , VT ₀ and VT ₁ as specified in NFRC document shall be applicable.

Technical Committee Revisions to Initial Interpretation:



TI-2006-05 02/19/06

NFRC Technical Interpretation-2004

Interpretation Requested:
What procedure should be followed for component or spacer substitution with respect to simulation procedures?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
2/19/06	3-15-06	3-15-06

Pertinent Document:	
NFRC 100-2004	
Referenced Sections:	Referenced Pages:
Section 4.3.2.3	Page 21

Interpretation :
Spacer substitution as is written in this paragraph is applicable for testing section only. Spacer grouping for simulation is covered under section 4.2.4.2.

Technical Committee Revisions to Initial Interpretation:



TI-2006-06 03/15/06

NFRC Technical Interpretation-2004

Interpretation Requested:
Can one group the test-only COG options including between-glass shades based on the known COG properties without between-glass shades?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
03-13-06	03-15-06	03-15-06

Pertinent Document:	
NFRC 100–2004 and NFRC 200–2004	
Referenced Sections:	Referenced Pages:
4.2.4.1 (100)	15 (100)
4.2.3 (200)	7 (200)

Interpretation :
<p>Yes.</p> <p>U-Factor: For each group, the group leader shall be the tested COG option including the between-glass shade corresponding to the simulated COG option (without the between-glass shade) with the highest COG U-value in accordance with the section 4.2.4.1 in NFRC 100.</p> <p>SHGC: For each group, the group leader shall be the tested COG option including the between-glass shade corresponding to the simulated COG option (without the between-glass shade) in accordance with the Section 4.2.3 and rules of Table 4-1 in NFRC 200.</p>

Technical Committee Revisions to Initial Interpretation:



TI-2006-07 04/13/06

NFRC Technical Interpretation-2004

Interpretation Requested:
Which Center-of-glazing value is used for the determination of Frame, Spacer and Divider grouping?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
03/15/06	4/13/06	4/13/06

Pertinent Document:	
NFRC 100-2004	
Referenced Sections:	Referenced Pages:
NFRC 100 Section 4.2.4	Page 14-16

Interpretation :
For determination of the frame, spacer and divider grouping, use the lowest center-of glazing option from the Product Line. Should the Lowest center-of-glazing option be included in a group then the group leader option shall be used to determine the frame, spacer and divider grouping.

Technical Committee Revisions to Initial Interpretation:



TI-2006-08
04/13/06

NFRC Technical Interpretation-2004

<i>Interpretation Requested:</i>	
When rating dynamic glazed products with between-glass shading devices for U-Factor and SHGC, and the shading device is retractable, can the product be rated in the OPEN position by computer simulation?	

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
04/10/06	04/13/06	04/13/06

<i>Pertinent Document:</i>	
NFRC 100–2004 and NFRC 200–2004	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
2.1.H and 4.3.2.2 (NFRC 100) 2.1.1.A and 4.3.3.1 (NFRC 200)	1 and 21 (NFRC 100) 2 and 8 (NFRC 200)

<i>Interpretation :</i>
<p>Yes, shading device shall be ignored provided that the fully retracted shading device occupies no more than 45mm (1.75 in.) of the daylight opening as measured from the site line.</p> <p>If the fully retracted shading device occupies more than 45mm (1.75 in.) of the daylight opening as measured from the site line than product shall be simulated as an individual product within a product line.</p> <p>(Note: based on OAVA in section 4.2.2.c of NFRC-100-2004).</p>

<i>Technical Committee Revisions to Initial Interpretation:</i>
<i>Suspended as 01/19/07 – See Technical Bulletin 2007-01</i>



TI-2006-09 06/20/2006

NFRC Technical Interpretation-2004

Interpretation Requested:
How is a skylight which is sold with an interior diffuser rated?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
June 9, 2006	06/19/06	06/19/06

Pertinent Document:	
NFRC 100-2004	
Referenced Sections:	Referenced Pages:
5.4.4.5	Pg. 54

Interpretation :
Only the exterior mounted portion of the skylight is rated. Any interior tube or diffuser which is not an integral part of the skylight is omitted from the calculation.

Technical Committee Revisions to Initial Interpretation:



TI-2006-10 06/20/2006

NFRC Technical Interpretation-2004

Interpretation Requested:
What is the size for the large Calibration Transfer Standards (CTS) if a lab has to test 2000mm by 2000mm size sample?

Date Requested:	Initial Interpretation Date:	Final TIPC Approval Date:
May 23, 2006	June 19, 2006	July 10, 2006

Pertinent Document:	
NFRC 102-2004	
Referenced Sections:	Referenced Pages:
5.1.3(A)	8

Interpretation :
For the largest CTS the minimum width shall be 72” and the minimum height shall be 80”. A laboratory is allowed to build a larger size CTS at their discretion.

Technical Committee Revisions to Initial Interpretation:



TI-2006-11 06/20/2006

NFRC Technical Interpretation-2004

<i>Interpretation Requested:</i>
How is a skylight with a solar tracking device (mirror) installed in it rated for U-Factor and SHGC?

<i>Date Requested:</i>	<i>Initial Interpretation Date:</i>	<i>Final TIPC Approval Date:</i>
June 9, 2006	June 19, 2006	July 10, 2006

<i>Pertinent Document:</i>	
NFRC 100-2004	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>

<i>Interpretation :</i>
The skylight is rated with the entire solar tracking device removed. (Drawings attached for clarification about a solar tracking device)



TI-2006-12 09/25/2006

NFRC Technical Interpretation – 2004

<p>Interpretation Requested:</p> <p>Please provide a general clarification of how a glazed wall system must be simulated when the system is applied as either a single or multiple story system.</p> <p>Also, answer the following clarifying questions:</p> <ol style="list-style-type: none"> 1. If a glazed wall system has intermediate horizontal members on a particular floor, does that mean that the product is automatically classified as a “curtain wall”? 2. Can a single-story system be classified as a “curtain wall”? 3. If there is a glazed wall system with a “head” and “sill” frame member on an individual floor, is this system considered a “window wall”?

<i>Date Requested</i>	<i>Initial Interpretation Date</i>	<i>Final TIPC Approval Date</i>
08/02/2006	08/11/2006	09/25/2006

Pertinent Document:	
NFRC 100-2004	
Referenced Sections:	Referenced Pages:
Table 4-3 – Footnote #5; 5.6	23; 62 – 64

<p>Interpretation:</p> <p>GENERAL CLARIFICATION</p> <p>A single story system shall be simulated as a window wall and a multi-story system shall be simulated as a curtain wall in accordance with Table 4-3 footnote #5.</p> <p style="margin-left: 40px;">⁵Two lites with one vertical mullion. Curtain walls shall be simulated and tested with intermediate verticals as jambs and intermediate horizontals as head/sill frame members. Window walls shall be simulated and tested with intermediate verticals as jambs and standard head and sill members. For rating of curtain walls and window walls, area weight intermediate members based on centerline dimensions. Glazed wall and sloped glazing shall be simulated and tested with standard jamb, head, and sill members (see Section 5.6).</p> <p>If a system is capable of being applied as either operator type, the system shall be simulated and rated as both operator types – a window wall and a curtain wall. Products modeled as both</p>

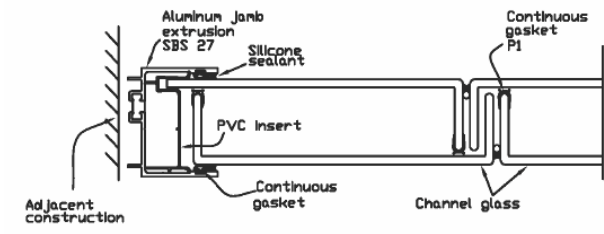
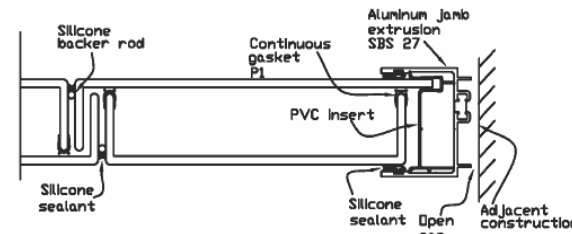
operator types shall be separate products lines and shall be permitted to be validated by either operator type.

SPECIFIC CLARIFICATIONS

1. No, both “curtain walls” and “window walls” can have intermediate horizontal members.
2. No, as previously stated in the General Clarification a “curtain wall” system must extend over multiple stories.
3. Yes, as previously stated in General Clarification the use of a “head” and “sill” frame member on an individual floor categorizes that portion of the glazed wall system as a “window wall” and will be modeled in accordance with footnote #5 of Table 4-3 in NFRC 100-2004.

Technical Committee Revisions to Initial Interpretation:

NFRC Technical Interpretation – 2004

Interpretation Requested:	
<p>Please provide a general clarification of how a glazed wall system must be simulated to rate a glazed wall system with a U-channel glazing system, which does not require intermediate vertical or horizontal framing members due to its unique U-channel glazing system construction?</p>	
	

Date Requested	Initial Interpretation Date	Final TIPC Approval Date
06/12/2006	07/24/2006	01/04/2007

Pertinent Document:	
NFRC 100-2004	
Referenced Sections:	Referenced Pages:
5.6	62 – 64

Interpretation:
<p>The NFRC standard configuration for glazed wall systems requires a two-lite system with an intermediate vertical mullion. If the manufacturer has a standard intermediate mullion available, it should be used. If an intermediate mullion is not available, the intermediate mullion should be created by using two frame jambs back-to-back. The center-of-glass U-factor is determined by ASTM E1363 testing.</p>

Technical Committee Revisions to Initial Interpretation:



TI-2006-14 01/04/2007

NFRC Technical Interpretation – 2004

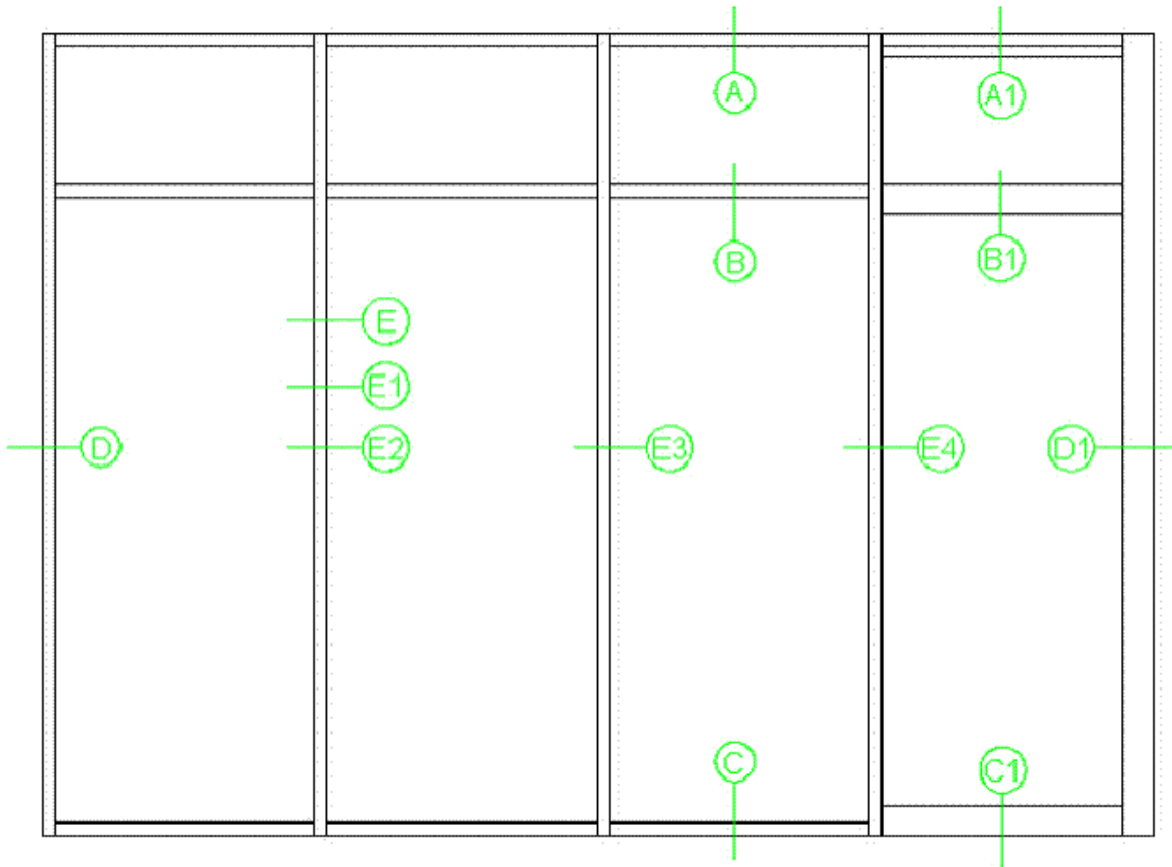
<i>Interpretation Requested:</i>
Please provide general clarification on modeling a store front system given in Figure 1 and how to select a typical cross section for modeling the intermediate verticals as jamb in a window wall system.

<i>Date Requested</i>	<i>Initial Interpretation Date</i>	<i>Final TIPC Approval Date</i>
10/05/2006	10/25/2006	01//04/2007

<i>Pertinent Document:</i>	
NFRC 100-2004	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
Table 4-3 – Footnote #5; 5.6	23; 62 – 64

<i>Interpretation:</i>
The store front system shall be simulated as Window Walls system. As per footnote #5, Window walls shall be simulated and tested with intermediate verticals as jamb (using half of jamb for U-factor tag) and standard head and sill members. If the intermediate verticals are not the same, then they can either be simulated as different product lines, or grouped, if applicable. The horizontals in the storefront system, other than the door transom, shall be ignored. The door and transom, if present shall be each simulated separately. For door and transom use standard jamb definition (i.e., full U-factor tag).

Figure 1



Technical Committee Revisions to Initial Interpretation:



TI-2006-15 01/04/2007

NFRC Technical Interpretation – 2004

<i>Interpretation Requested:</i>
For doors with integral shading devices, how do we rate the multiple sizes - 1/4, 1/2, 3/4, and full?

<i>Date Requested</i>	<i>Initial Interpretation Date</i>	<i>Final TIPC Approval Date</i>
12/01/2006	01/04/2007	01/04/2007

<i>Pertinent Document:</i>	
NFRC 100 and NFRC 200	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
NFRC 100 2.1.H; 4.2.2.D NFRC 200 2.1.1.A	1, 14; 2

<i>Interpretation:</i>
The procedure described in TI-2004-08 shall be used for the U-Factor and SHGC cog values. NOTE: The simulation procedure for fully-retracted shades is being developed at this time.

<i>Technical Committee Revisions to Initial Interpretation:</i>



TI-2007-01 02/06/2007

NFRC Technical Interpretation – 2004

<i>Interpretation Requested:</i>
Are the sightline changes limited to 4.2.1 (I) for products to be within the same product line?

<i>Date Requested</i>	<i>Initial Interpretation Date</i>	<i>Final TIPC Approval Date</i>
01/09/2007	02/06/2007	02/06/2007

<i>Pertinent Document:</i>	
NFRC 100	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
4.2.1	11 & 12

<i>Interpretation:</i>
No, sightline changes are not limited to 4.2.1 (I). The sightline change due to language in section 4.2.1 shall also be allowed. For example, the sightline change due to a change in the glazing bead shall be allowed per Section 4.2.1 (D).

<i>Technical Committee Revisions to Initial Interpretation:</i>



TI-2007-02 03/01/2007

NFRC Technical Interpretation – 2004

<i>Interpretation Requested:</i>
Please provide the guidelines to determine the “sightline change” referenced in section 4.2.1 of NFRC 100-2004.

<i>Date Requested</i>	<i>Initial Interpretation Date</i>	<i>Final TIPC Approval Date</i>
02/26/2007	03/01/2007	03/01/2007

<i>Pertinent Document:</i>	
NFRC 100-2004, NFRC Glossary and Terminology	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
Section 4.2.1 Product Line and Figure 4-4 Sightline Examples	12, 13, 32 (NFRC 100)

<i>Interpretation:</i>
A change in sightline will result in a change in the projected frame dimension (PFD) between frame profiles of individual products within a product line.

<i>Technical Committee Revisions to Initial Interpretation:</i>



TI-2007-03 08/20/2007

NFRC Technical Interpretation – 2004

<i>Interpretation Requested:</i>
<p>The previous version of Therm5.2/Window5.2 Simulation Manual (June 2003), demonstrated how to model internal dividers only. The new Simulation Manual (July 2006) provided instructions to simulate exterior applied grilles.</p> <p>Simulation Manual Section 6.3.4: What is not modeled – Removable grilles applied to the interior or exterior surface that are removable shall not be modeled.</p> <p>NFRC 100 Section 4.2.5.F.ii: Products with removable or non-removable dividers or decorative tapes, that are applied to glazing to simulate the appearance of dividers applied to the room side and/or exterior side glazing surface, shall be permitted to be assumed to have the same U-factors as identical products without such dividers.</p> <p>These sections do not require the simulation of components applied to the interior or exterior of the glazing surface; however, the simulation manual does provide a methodology. What are the criteria to model removable or non-removable dividers (SDL) that are applied to the interior or exterior surface?</p>

<i>Date Requested</i>	<i>Initial Interpretation Date</i>	<i>Final TIPC Approval Date</i>
07/31/07	08/20/07	08/20/07

<i>Pertinent Document:</i>	
Therm5.2/Window5.2 Simulation Manual (July 2006) and NFRC 100-2004	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
Simulation Manual (July 2006), section 8.3.2 NFRC 100-2004, Section 4.2.5.F.ii	Pages 8-23 through 8-31 Page 18

<i>Interpretation:</i>
<p>Removable or non-removable grilles (SDL) attached to the interior or exterior surface are not required to be modeled and may assume to have the same U-factors as identical products without such dividers; however, any component (shadow bar) of a SDL that is within the cavity of the IGU shall be treated as a normal internal divider.</p> <p>At the discretion of a manufacturer a simulator shall be permitted to model SDL in accordance with Section 8.3.2 of the NFRC Simulation Manual.</p>

<i>Technical Committee Revisions to Initial Interpretation:</i>



TI-2007-04 08/20/2007

NFRC Technical Interpretation – 2004

<i>Interpretation Requested:</i>
Can a pet door be rated and modeled as a swing door?

<i>Date Requested</i>	<i>Initial Interpretation Date</i>	<i>Final TIPC Approval Date</i>
08/07/07	08/20/07	08/20/07

<i>Pertinent Document:</i>	
NFRC 100-2004	
<i>Referenced Sections:</i>	<i>Referenced Pages:</i>
NFRC 100-2004, Table 4-3	23

<i>Interpretation:</i>
A pet door is considered an attachment to a fenestration product and cannot be rated or modeled as a swing door.

<i>Technical Committee Revisions to Initial Interpretation:</i>