

**NFRC 102-2014 THERMAL PERFORMANCE  
TEST REPORT**

**Rendered to:**

**NORTH EAST WINDOWS USA, INC.**

**SERIES/MODEL: PW4015**

**TYPE: Fixed**

<b>Summary of Results</b>		
<b>Standardized Thermal Transmittance (U-Factor)</b>		0.28
<b>Unit Size:</b>	47-1/4" x 59" (1200 mm x 1499 mm) (Model Size)	
<b>Layer 1:</b>	DS	AGC Comfort Select 28 (e=0.021*, #2)
<b>Gap 1:</b>	0.63"	P1-S: Duralite Spacer <span style="float: right;">95% Argon*</span>
<b>Layer 2:</b>	DS	Clear

Reference must be made to Report No. H0198.01-116-46, dated 04/28/17 for complete test specimen description and data.



## NFRC 102-2014 THERMAL PERFORMANCE TEST REPORT

Rendered to:

NORTH EAST WINDOWS USA, INC.  
P.O. Box 159  
Merrick, New York 11566

Report Number: H0198.01-116-46  
Test Date: 04/27/17  
Report Date: 04/28/17

### Test Sample Identification:

**Series/Model:** PW4015

**Type:** Fixed

**Overall Size:** 47-1/4" x 59" (1200 mm x 1499 mm) (Model Size)

**NFRC Standard Size:** 47.2" x 59.1" (1200 mm wide x 1500 mm high)

**Test Sample Submitted by:** Client

**Test Sample Submitted for:** Validation for Recertification (Production Line Unit) & Plant Qualification

**Test Procedure:** U-Factor tests were performed in a Guarded Hot Box in accordance with NFRC 102-2014, *Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems*.

### Test Results Summary:

Standardized U-factor ( $U_{st}$ ): 0.28 Btu/hr·ft<sup>2</sup>·F (CTS Method)

**Test Sample Description:****Frame:**

<b>Material:</b>	VY: Vinyl		
<b>Size:</b>	47-1/4" x 59" (Model Size)		
<b>Daylight Opening:</b>	43-5/8" x 55-3/8"	<b>Glazing Method:</b>	Interior
<b>Exterior Color:</b>	White	<b>Exterior Finish:</b>	Vinyl
<b>Interior Color:</b>	White	<b>Interior Finish:</b>	Vinyl
<b>Corner Joinery:</b>	Mitered / Welds / Unsealed		

**Glazing Information:**

<b>Layer 1:</b>	DS	AGC Comfort Select 28 (e=0.021*, #2)	
<b>Gap 1:</b>	0.63"	P1-S: Duralite Spacer	95% Argon*
<b>Layer 2:</b>	DS	Clear	
<b>Gas Fill Method:</b>	Dual-Probe Method*		

*\*Stated per Client/Manufacturer*

*N/A Non-Applicable*

**Test Sample Description:** (Continued)

**Weatherstripping:**

Description	Quantity	Location
No weatherstrip		

**Hardware:**

Description	Quantity	Location
No hardware		

**Drainage:**

Drainage Method	Size	Quantity	Location
Weepslot with cover	1.25" x 0.25"	2	Sill face

## Thermal Transmittance (U-factor)

### Measured Test Data

#### Heat Flows

1. Total Measured Input into Metering Box ( $Q_{total}$ )	462.87 Btu/hr
2. Surround Panel Heat Flow ( $Q_{sp}$ )	52.20 Btu/hr
3. Surround Panel Thickness	4.00 inches
4. Surround Panel Conductance	0.0461 Btu/hr·ft <sup>2</sup> ·F
5. Metering Box Wall Heat Flow ( $Q_{mb}$ )	9.53 Btu/hr
6. EMF vs Heat Flow Equation (equivalent information)	0.0124*EMF + -0.206
7. Flanking Loss Heat Flow ( $Q_{fl}$ )	13.59 Btu/hr
8. Net Specimen Heat Loss ( $Q_s$ )	387.56 Btu/hr

#### Areas

1. Test Specimen Projected Area ( $A_s$ )	19.36 ft <sup>2</sup>
2. Test Specimen Interior Total (3-D) Surface Area ( $A_h$ )	22.83 ft <sup>2</sup>
3. Test Specimen Exterior Total (3-D) Surface Area ( $A_c$ )	21.05 ft <sup>2</sup>
4. Metering Box Opening Area ( $A_{mb}$ )	36.11 ft <sup>2</sup>
5. Metering Box Baffle Area ( $A_{b1}$ )	33.94 ft <sup>2</sup>
6. Surround Panel Interior Exposed Area ( $A_{sp}$ )	16.75 ft <sup>2</sup>

#### Test Conditions

1. Average Metering Room Air Temperature ( $t_h$ )	69.80 F
2. Average Cold Side Air Temperature ( $t_c$ )	-0.38 F
3. Average Guard/Environmental Air Temperature	72.27 F
4. Metering Room Average Relative Humidity	4.87 %
5. Metering Room Maximum Relative Humidity	5.11 %
6. Metering Room Minimum Relative Humidity	4.64 %
7. Measured Cold Side Wind Velocity (Perpendicular Flow)	12.66 mph
8. Measured Warm Side Wind Velocity (Parallel Flow)	NA mph
9. Measured Static Pressure Difference Across Test Specimen	0.00" ± 0.04"H <sub>2</sub> O

#### Average Surface Temperatures

1. Metering Room Surround Panel	67.60 F
2. Cold Side Surround Panel	0.04 F

#### Results

1. Thermal Transmittance of Test Specimen ( $U_s$ )	0.29 Btu/hr·ft <sup>2</sup> ·F
2. Standardized Thermal Transmittance of Test Specimen ( $U_{st}$ )	0.28 Btu/hr·ft <sup>2</sup> ·F

## Thermal Transmittance (U-factor)

### Calculated Test Data

#### CTS Method

1. Warm Side Emittance of Glass ( $e_i$ )	0.84
2. Cold Side Emittance of Glass	0.84
3. Warm Side Frame Emittance*	0.90
4. Cold Side Frame Emittance*	0.90
5. Warm Side Sash/Panel/Vent Emittance*	N/A
6. Cold Side Sash/Panel/Vent Emittance*	N/A
7. Warm Side Baffle Emittance ( $e_{b1}$ )	0.92
8. Cold Side Baffle Emittance ( $e_{b2}$ )	N/A
9. Equivalent Warm Side Surface Temperature	55.34 F
10. Equivalent Cold Side Surface Temperature	3.29 F
11. Warm Side Baffle Surface Temperature	68.54 F
12. Cold Side Baffle Surface Temperature	N/A F
13. Measured Warm Side Surface Conductance ( $h_h$ )	1.38 Btu/hr·ft <sup>2</sup> ·F
14. Measured Cold Side Surface Conductance ( $h_c$ )	5.45 Btu/hr·ft <sup>2</sup> ·F
15. Test Specimen Thermal Conductance ( $C_s$ )	0.38 Btu/hr·ft <sup>2</sup> ·F
16. Convection Coefficient ( $K_c$ )	0.35 Btu/(hr·ft <sup>2</sup> ·F <sup>1.25</sup> )
17. Radiative Test Specimen Heat Flow ( $Q_{ri}$ )	194.46 Btu/hr
18. Conductive Test Specimen Heat Flow ( $Q_{ci}$ )	193.10 Btu/hr
19. Radiative Heat Flux of Test Specimen ( $q_{ri}$ )	10.04 Btu/hr·ft <sup>2</sup> ·F
20. Convective Heat Flux of Test Specimen ( $q_{ci}$ )	9.97 Btu/hr·ft <sup>2</sup> ·F
21. Standardized Warm Side Surface Conductance ( $h_{sth}$ )	1.21 Btu/hr·ft <sup>2</sup> ·F
22. Standardized Cold Side Surface Conductance ( $h_{stc}$ )	5.28 Btu/hr·ft <sup>2</sup> ·F
23. Standardized Thermal Transmittance ( $U_{st}$ )	0.28 Btu/hr·ft <sup>2</sup> ·F

#### Test Duration

1. The environmental systems were started at 06:53 hours, 04/26/17.
2. The test parameters were considered stable for two consecutive four hour test periods from 08:04 hours, 04/27/17 to 16:04 hours, 04/27/17.
3. The thermal performance test results were derived from 12:04 hours, 04/27/17 to 16:04 hours, 04/27/17.

The reported Standardized Thermal Transmittance ( $U_{st}$ ) was determined using CTS Method, per Section 9.2(A) of NFRC 102.

*\*Stated per NFRC 101*

**Glazing Deflection:**

	<b>Frame</b>
Edge Gap Width	0.63"
Estimated center gap width upon receipt of specimen in laboratory (after stabilization)	0.75"
Center gap width at laboratory ambient conditions on day of testing	0.75"
Center gap width at test conditions	0.69"

*Glass collapse determined using a digital glass and air space meter*

The sample was inspected for the formation of frost or condensation, which may influence the surface temperature measurements. The sample showed no evidence of condensation/frost at the conclusion of the test.

“This test method does not include procedures to determine the heat flow due to either air movement through the specimen or solar radiation effects. As a consequence, the thermal transmittance results obtained do not reflect performances which are expected from field installations due to not accounting for solar radiation, air leakage effects, and the thermal bridge effects that have the potential to occur due to the specific design and construction of the fenestration system opening. The latter can only be determined by in-situ measurements. Therefore, it is important to recognize that the thermal transmittance results obtained from this test method are for ideal laboratory conditions and should only be used for fenestration product comparisons and as input to thermal performance analyses which also include solar, air leakage and thermal bridge effects.”

The test sample was installed in a vertical orientation, the exterior of the specimen was exposed to the cold side. The direction of heat transfer was from the interior (warm side) to the exterior (cold side) of the specimen. The ratings were rounded in accordance to NFRC 601, NFRC Unit and Measurement Policy. The data acquisition frequency is 5 minutes.

ANSI/NCSL Z540-2-1997 type B uncertainty for this test was 2.12%.

Required annual calibrations for the Architectural Testing Inc., an Intertek company ("Intertek-ATI"), 'thermal test chamber' (ICN 000001) in York, Pennsylvania were last conducted in May 2016 in accordance with Intertek-ATI calibration procedure. A CTS Calibration verification was performed April 2017. A Metering Box Wall Transducer and Surround Panel Flanking Loss Characterization was performed December 2016.

"Ratings included in this report are for submittal to an NFRC licensed IA for certification purposes and are not meant to be used for labeling purposes. Only those values identified on a valid Certification Authorization Report (CAR) are to be used for labeling purposes."

Intertek-ATI will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Intertek-ATI for the entire test record retention period. The test record retention end date for this report is April 27, 2022.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen tested. This report may not be reproduced, except in full, without the written approval of Intertek-ATI.

For INTERTEK-ATI

Tested By:

Reviewed By:

---

Ryan P. Moser  
Senior Technician

---

Shon W. Einsig  
Technician Team Leader  
Individual-In-Responsible-Charge

RPM:pan  
H0198.01-116-46

Attachments (pages): This report is complete only when all attachments listed are included.

- Appendix-A: CTS Calibration Data (1)
- Appendix-B: Surround Panel Wiring Diagram (1)
- Appendix-C: Baffle Wiring Diagram (1)
- Appendix-D: Submittal Form and Drawings (5)



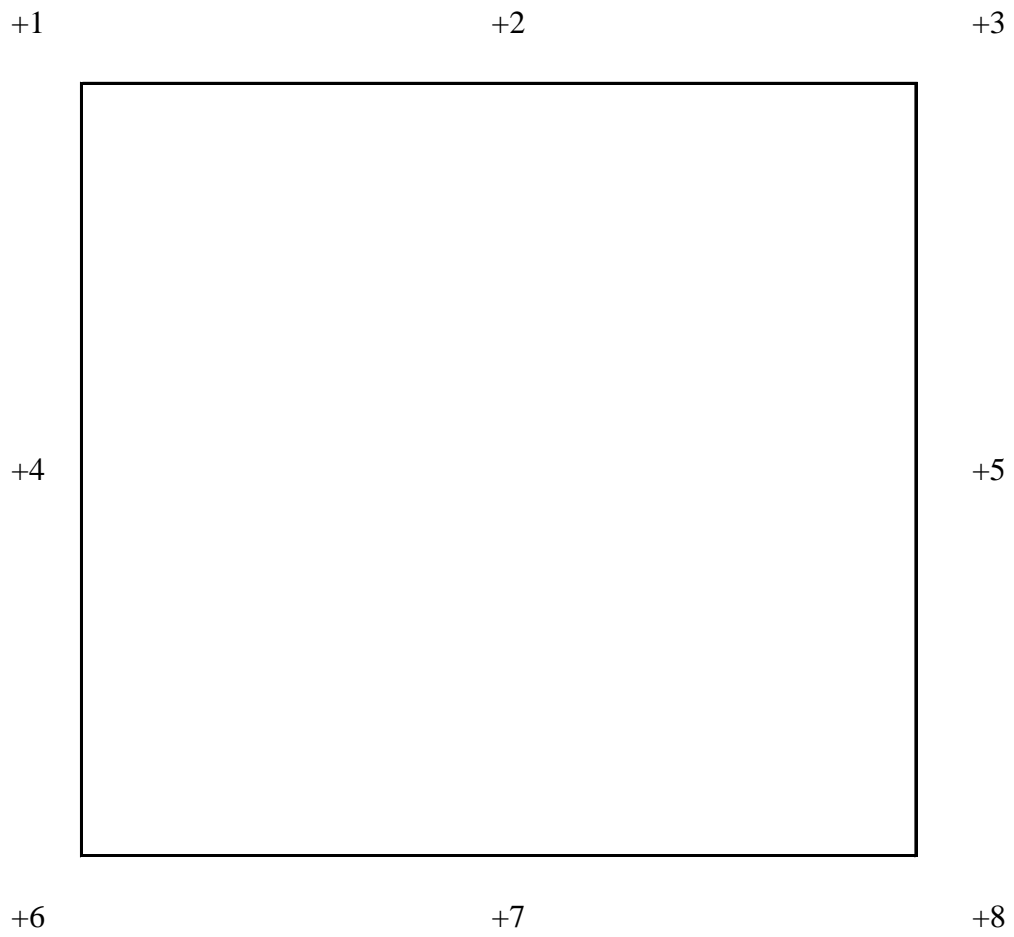
### Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
.01R0	04/28/17	All	Original Report Issue. Work requested by Phil Reid of North East Windows USA, Inc.

**Appendix A: CTS Calibration Data**

1. CTS Test Date	12/02/16
2. CTS Size	21.53 ft <sup>2</sup>
3. CTS Glass/Core Conductance	0.42 Btu/hr·ft <sup>2</sup> ·F
4. Warm Side Air Temperature	69.80 F
5. Cold Side Air Temperature	-0.40 F
6. Warm Side Average Surface Temperature	54.41 F
7. Cold Side Average Surface Temperature	3.52 F
8. Convection Coefficient (K <sub>c</sub> )	0.35 Btu/(hr·ft <sup>2</sup> ·F <sup>1.25</sup> )
9. Measured Cold Side Surface Conductance (h <sub>c</sub> )	5.46 Btu/hr·ft <sup>2</sup> ·F
10. Measured Thermal Transmittance	0.31 Btu/hr·ft <sup>2</sup> ·F

### Appendix B: Surround Panel Wiring Diagram



### Appendix C: Baffle Wiring Diagram



**Appendix D: Submittal Form and Drawings**

# NFRC PRODUCT CERTIFICATION PROGRAM

## Submittal Form for Test Samples



For use by Manufacturers, Lineal Suppliers and Fabricators

1. Information on Production of the Test Sample (complete **ALL** fields):

Manufacturer: NORTH EAST WINDOWS USA Date of sample manufacture: 3/20/17  
 Plant Address where manufactured: 1 KEES PLACE  
 City: MERRICK State: NY Zip Code: 11566  
 Name of IA: ASSOC. LABS LLC Phone: 214-565-0593 Fax: \_\_\_\_\_

2. Product Information (complete **APPLICABLE** fields):

Existing Product Line ID (CPD) No.: NEW A 22 Product/Operator Type (Table 4-3 of NFRC 100): FIXED  
 Series/Model: PW 4015

3. Test sample is being submitted for (select **ONE**):

- a.  Validation for Initial Certification (prototype only) no plant qualification
- b.  Validation for Initial Certification or Recertification (production line unit) & plant qualification
- c.  Plant Qualification Only (production line unit)
- d.  Test Only Alternative (production line unit) & plant qualification

I, \_\_\_\_\_, as the designated agent for \_\_\_\_\_ do hereby attest that the foregoing information is true to the best of my information, knowledge, and belief. Further, if the unit is identified in Section 3 as a production line unit, I hereby authorize the NFRC-accredited testing laboratory to send a copy of the test report to the IA identified above for plant qualification purposes pursuant to the NFRC Product Certification Program.

Signature: [Signature] Date: 4/16/17

### For Laboratory Use Only

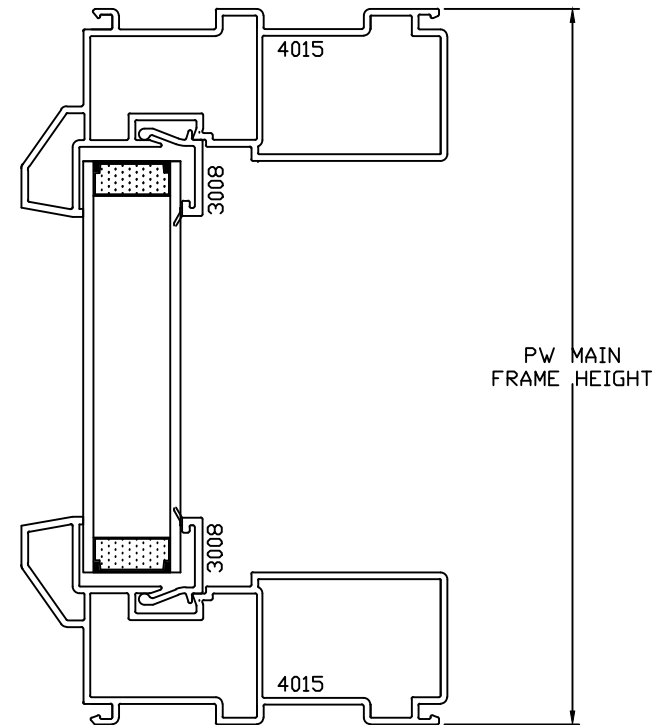
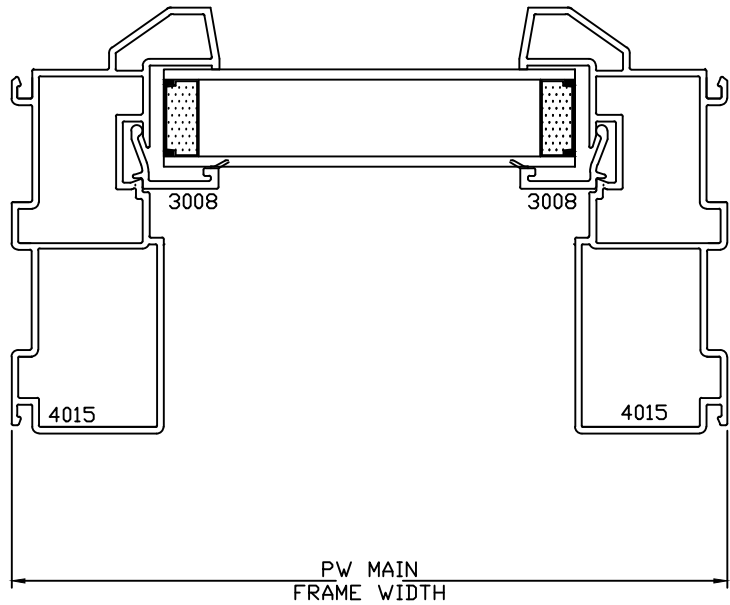
1. Laboratory: Interkalc  
 2. Date Sample Received: 4/17/17 Test Report #: H0198  
 3. Date Sample Tested: 4/27/17 By: RPM  
 4. Modifications made: \_\_\_\_\_



Report #: H0198-116-46

Date: 04/27/17

Verified by: *Bryan E. Moser*



DO NOT SCALE DRAWING

NO.	REVISION	BY	DATE

LOCATION FOR IMPACT TEST SPECIFICATION—LENGTHS TO 3/8"

ALLOWABLE BOW MAX. 1" PER 14'  
ANGULARITY TO BE ± 1/2"

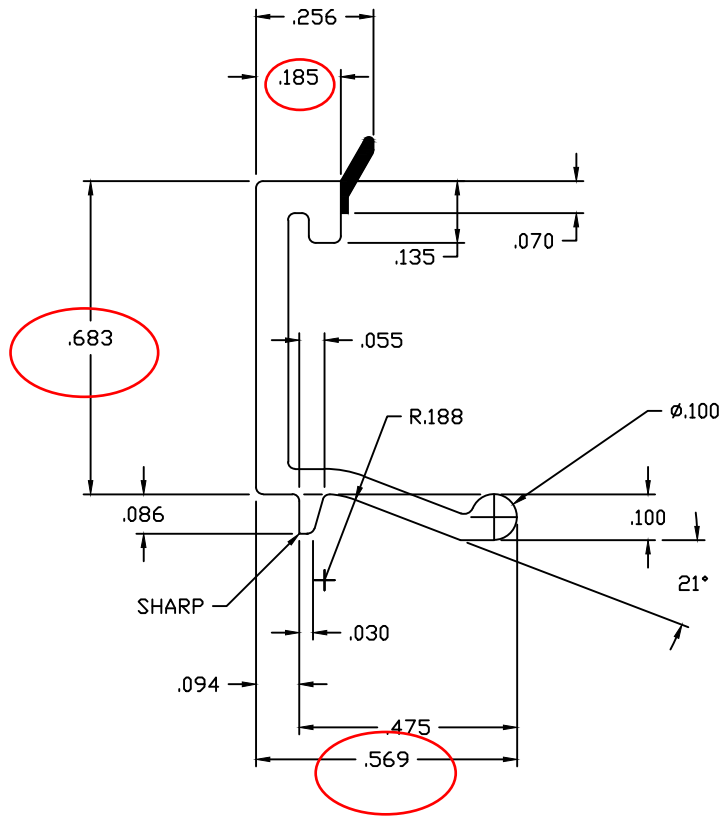
DRAWN FOR

BY DDS DESIGNS

"OUR NAME SAYS IT ALL"

- 1) MATERIAL RIGID PVC .....
- 2) CAPSTOCK .....
- 3) UNSPECIFIED WALLS .....
- 4) BREAK ALL CORNERS ..... R
- 5) AREA ..... SQ.IN.
- 6) WT/FT ..... LBS/FT


TITLE PW 4015 WELD MAIN FRAME				
DWN BY DDS	SCALE	DATE 01/03/12	CHKD BY	APPD BY
COMPUTER NO				
DWG NO PW4015 CROSS SECTION				



AREA OF RIGID PVC = .096  
 AREA OF SOFT PVC = .004  
 WT/FT OF RIGID PVC = .060  
 WT/FT OF SOFT PVC = .003

**Material: Rigid/Flexible PVC**

DO NOT SCALE DRAWING

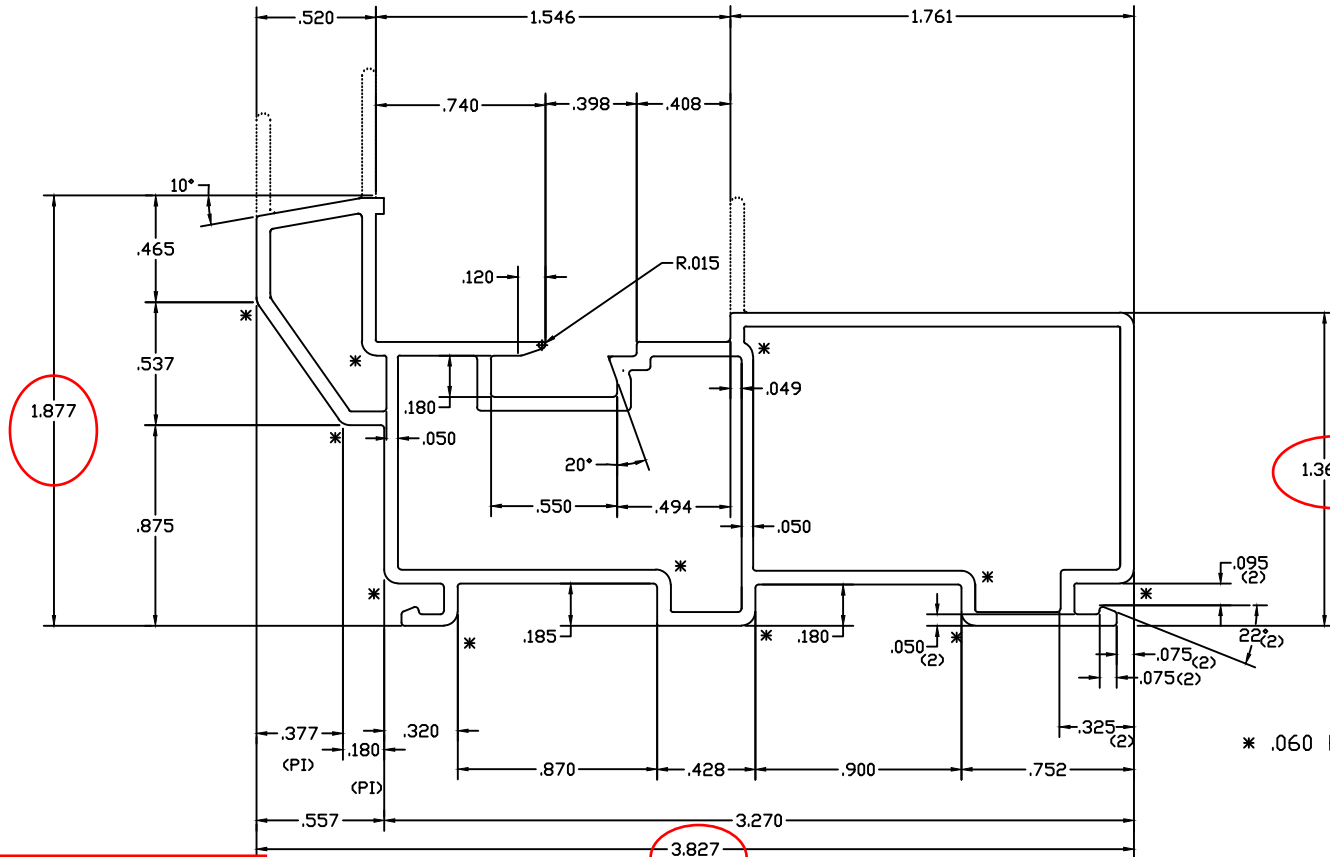
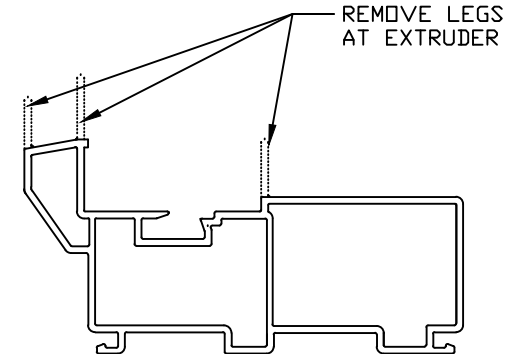
 BY DDS DESIGNS "OUR NAME SAYS IT ALL"		1) MATERIAL RIGID PVC 2) CAPSTOCK 3) UNSPECIFIED WALLS .070 4) BREAK ALL CORNERS .015R 5) AREA .100 SQ.IN. 6) WT/FT .063 LBS/FT	TITLE WELDED DOUBLE HUNG GLAZING BEAD DWN BY DDS SCALE 4:1 DATE 11/20/02 CHKD BY APPD BY COMPUTER NO DWG NO 3008
--	--	--	--

NO.	REVISION	BY	DATE

LOCATION FOR IMPACT TEST  
 SPECIFICATION—LENGTHS TO 3/8"

ALLOWABLE BOW MAX. 1" PER 14'  
 ANGULARITY TO BE ± 1/2





1.366

AREA BEFORE LEG REMOVAL = .912 IN SQ  
 AREA AFTER LEG REMOVAL = .823 IN SQ

WT/FT BEFORE LEG REMOVAL = .574 LBS/FT  
 WT/FT AFTER LEG REMOVAL = .518 LBS/FT  
 \* .060 R

Material: Rigid PVC

DO NOT SCALE DRAWING

LOCATION FOR IMPACT TEST SPECIFICATION—LENGTHS TO 3/8"

ALLOWABLE BOW MAX. 1" PER 14' ANGULARITY TO BE ± 1/2

DRAWN FOR



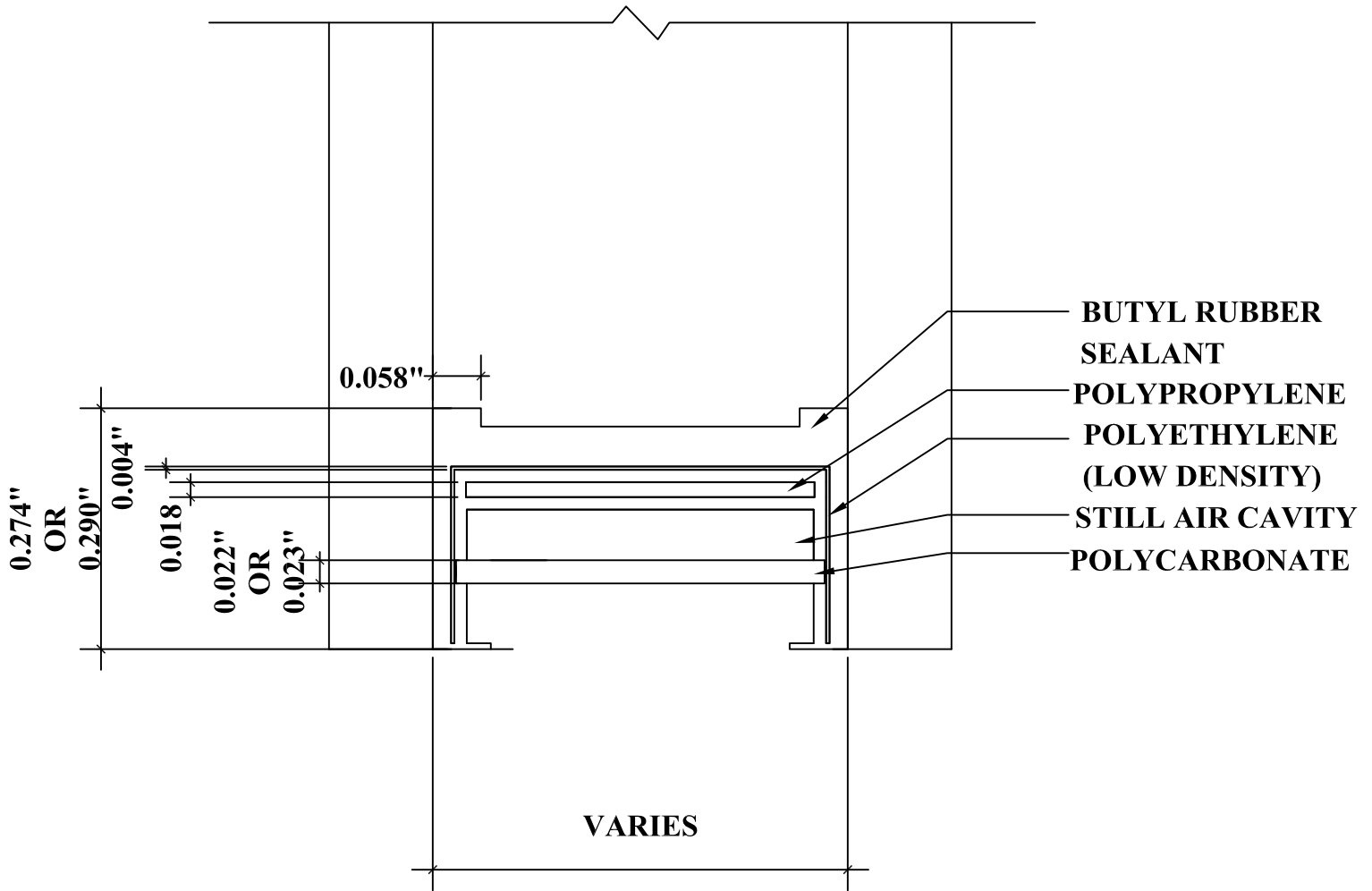
BY  DDS DESIGNS

"OUR NAME SAYS IT ALL"

- 1) MATERIAL RIGID PVC
- 2) CAPSTOCK
- 3) UNSPECIFIED WALLS .060
- 4) BREAK ALL CORNERS .015R
- 5) AREA .823 SQ.IN.
- 6) WT/FT .518 LBS/FT

TITLE WELDED PW				
PW MF NO FIN NO J				
DWN BY	SCALE	DATE	CHKD BY	APPD BY
DDS	2:1	08-05-11		
COMPUTER NO				
DWG NO 4015				

NO.	REVISION	BY	DATE



DETAIL FOR THERMAL MODELING OF  
QUANEX DURALITE SPACER (P1-S)