

**NFRC U-FACTOR, SHGC, VT, &
CONDENSATION RESISTANCE
COMPUTER SIMULATION REPORT**

(Revised)

**Rendered to:
NORTH EAST WINDOWS USA, INC.**

**SERIES/MODEL:
SL4011**

Report Number: H0199.02-116-45
Original Report Date: 05/25/17
Revised Report Date: 06/02/17



**NFRC U-FACTOR, SHGC, VT, & CONDENSATION RESISTANCE
COMPUTER SIMULATION REPORT**

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NORTH EAST WINDOWS USA, INC.
One Kees Place
Merrick, New York 11566

Report Number: H0199.02-116-45
Simulation Date: 05/25/17
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Project Summary:

Architectural Testing, Inc., an Intertek Company (Intertek-ATI) was contracted to perform U-Factor, Solar Heat Gain Coefficient, Visible Transmittance, and Condensation Resistance* computer simulations in accordance with the National Fenestration Rating Council (NFRC). The products were evaluated in full compliance with NFRC requirements to the standards listed

**NFRC's Condensation Resistance rating is NOT equivalent to a Condensation Resistance Factor (CRF) determined in accordance with AAMA 1503.*

Standards:

ANSI/NFRC 100-2014: Procedure for Determining Fenestration Product U-Factors

ANSI/NFRC 200-2014: Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence

NFRC 500-2014: Procedure for Determining Fenestration Product Condensation Resistance Values

Software:

Frame and Edge Modeling: THERM 7.4.3
Center-of-Glass Modeling: WINDOW 7.4.8
Total Product Calculations: WINDOW 7.4.8
Spectral Data Library: IGDB 54.0

Simulations Specimen Description:

Series/Model: SL4011
Type: Horizontal Slider, Operable/Operable
Frame Material: VY Vinyl
Sash Material: VY Vinyl
Standard Size: 1500mm x 1200mm

Modeling Assumptions/Technical Interpretations:

- 1) To prevent air infiltration, tape was applied to all interior sash crack locations.
- 2) Dividers were not modeled per ANSI/NFRC 100-2014, Section 4.2.4.1.D.ii.

Specialty Products Table:

The specialty products method allow the manufacturer to determine the overall product SHGC and VT for any glazing option. The center of glass SHGC and/or VT must be determined using WINDOW 7.4.8. The method gives overall product SHGC and VT indexed on center of glass properties. All values used in the calculations are truncated to six decimal place precision.

	No Dividers	Dividers < 1	Dividers > 1
SHGC0	0.003254	0.005972	0.008530
SHGC1	0.748345	0.668545	0.593423
VT0	0.000000	0.000000	0.000000
VT1	0.745091	0.662572	0.584893

$$SHGC = SHGC0 + SHGCc (SHGC1 - SHGC0)$$

$$VT = VT0 + VTc (VT1 - VT0)$$

Validation Matrix:

The following products are part of a validation matrix. Only one is required for validation testing.

<i>Product Line</i>	<i>Report Number</i>
None	-

Spacer Option Description

<i>Spacer Type</i>	<i>Sealant</i>		<i>Code</i>
	<i>Primary</i>	<i>Secondary</i>	
Quanex Duraseal Spacer	Butyl Rubber		A8-S
Quanex Duralite Spacer	Butyl Rubber		P1-S
Quanex nXt Super Spacer	Butyl Rubber		ZE-S

Grid Option Description

<i>Grid Size</i>	<i>Grid Type</i>	<i>Grid Pattern</i>
3/16" x 5/8"	Aluminum Rectangular Grid (Painted)	NFRC Standard

Reinforcement Option Description

<i>Location</i>	<i>Material</i>
None	-

Gas Filling Technique Description

<i>Fill Type</i>	<i>Method</i>
90% Argon	Single Probe, Timed

Edge-of-Glass Construction

<i>Interior Condition</i>	Foam Weatherstripping Between Rigid PVC Sash and Glass
<i>Exterior Condition</i>	Rigid PVC Glazing Bead with Flexible Fin Against Glass

Weatherstripping

<i>Type</i>	<i>Quantity</i>	<i>Location</i>
Finpile	1 Row	Stiles, Lock Rail
Finpile	2 Rows	Top Rails, Bottom Rails, Keeper Rail

Frame/Sash Materials Finish

<i>Interior</i>	Vinyl
<i>Exterior</i>	Vinyl

**NFRC 100/200/500 Summary Sheet
SL4011**

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)				Visible Transmittance (VT) Grids (None / <1 / >=1)				
1	No Foam: CS36 / AIR / CLR (2MM/2MM) - 7/8" IG											
	0.090	0.688	0.086					AIR	0.027(#2)	CL	A8-S	N,G
	U-Factor 0.32			SHGC (N / <1) 0.28 / 0.25				VT (N / <1) 0.50 / 0.45		CR 57		
2	No Foam: CS36 / AIR / CLR (3MM/3MM) - 7/8" IG											
	0.128	0.625	0.123					AIR	0.027(#2)	CL	A8-S	N,G
	U-Factor 0.32			SHGC (N / <1) 0.27 / 0.25				VT (N / <1) 0.50 / 0.44		CR 57		
3	No Foam: CS36 / ARG90 / CLR (2MM/2MM) - 7/8" IG											
	0.090	0.688	0.086					ARG90	0.027(#2)	CL	A8-S	N,G
	U-Factor 0.29			SHGC (N / <1) 0.27 / 0.25				VT (N / <1) 0.50 / 0.45		CR 60		
4	No Foam: CS36 / ARG90 / CLR (3MM/3MM) - 7/8" IG											
	0.128	0.625	0.123					ARG90	0.027(#2)	CL	A8-S	N,G
	U-Factor 0.29			SHGC (N / <1) 0.27 / 0.24				VT (N / <1) 0.50 / 0.44		CR 60		
5	No Foam: RLE 71/38 / ARG90 / CLR (2MM/2MM) - 7/8" IG											
	0.090	0.688	0.090					ARG90	0.027(#2)	CL	A8-S	N,G
	U-Factor 0.29			SHGC (N / <1) 0.29 / 0.26				VT (N / <1) 0.53 / 0.47		CR 60		
6	No Foam: RLE 71/38 / ARG90 / CLR (3MM/3MM) - 7/8" IG											
	0.117	0.625	0.117					ARG90	0.027(#2)	CL	A8-S	N,G
	U-Factor 0.29			SHGC (N / <1) 0.29 / 0.26				VT (N / <1) 0.53 / 0.47		CR 60		
7	No Foam: E366 / ARG90 / CLR (2MM/2MM) - 7/8" IG											
	0.087	0.688	0.087					ARG90	0.022(#2)	CL	A8-S	N,G
	U-Factor 0.29			SHGC (N / <1) 0.21 / 0.19				VT (N / <1) 0.49 / 0.43		CR 61		
8	No Foam: E366 / ARG90 / CLR (3MM/3MM) - 7/8" IG											
	0.117	0.625	0.118					ARG90	0.022(#2)	CL	A8-S	N,G
	U-Factor 0.29			SHGC (N / <1) 0.21 / 0.19				VT (N / <1) 0.48 / 0.43		CR 61		
9	No Foam: CLR / AIR / CLR (3MM/3MM) - 7/8" IG											
	0.123	0.625	0.123					AIR		CL	P1-S	N,G
	U-Factor 0.44			SHGC (N / <1) 0.59 / 0.53				VT (N / <1) 0.61 / 0.54		CR 46		
10	No Foam: CS36 / AIR / CLR (2MM/2MM) - 7/8" IG											
	0.090	0.688	0.086					AIR	0.027(#2)	CL	P1-S	N,G
	U-Factor 0.31			SHGC (N / <1) 0.28 / 0.25				VT (N / <1) 0.50 / 0.45		CR 60		

**NFRC 100/200/500 Summary Sheet
SL4011**

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Width 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)					Visible Transmittance (VT) Grids (None / <1 / >=1)			Condensation Resistance	
	No Foam: CS36 / AIR / CLR (3MM/3MM) - 7/8" IG												
	0.128	0.625	0.123						AIR	0.027(#2)	CL	P1-S	N,G
	U-Factor 0.31			SHGC (N / <1) 0.27 / 0.25					VT (N / <1) 0.50 / 0.44			CR 60	
7	No Foam: RLE 71/38 / AIR / CLR (2MM/2MM) - 7/8" IG												
	0.090	0.688	0.090						AIR	0.027(#2)	CL	P1-S	N,G
	U-Factor 0.31			SHGC (N / <1) 0.29 / 0.27					VT (N / <1) 0.53 / 0.47			CR 60	
	No Foam: RLE 71/38 / AIR / CLR (3MM/3MM) - 7/8" IG												
	0.117	0.625	0.117						AIR	0.027(#2)	CL	P1-S	N,G
	U-Factor 0.31			SHGC (N / <1) 0.29 / 0.26					VT (N / <1) 0.53 / 0.47			CR 60	
8	No Foam: E366 / AIR / CLR (2MM/2MM) - 7/8" IG												
	0.087	0.688	0.087						AIR	0.022(#2)	CL	P1-S	N,G
	U-Factor 0.31			SHGC (N / <1) 0.21 / 0.19					VT (N / <1) 0.49 / 0.43			CR 60	
	No Foam: E366 / AIR / CLR (3MM/3MM) - 7/8" IG												
	0.117	0.625	0.118						AIR	0.022(#2)	CL	P1-S	N,G
	U-Factor 0.31			SHGC (N / <1) 0.21 / 0.19					VT (N / <1) 0.48 / 0.43			CR 60	
9	No Foam: CLR / ARG90 / CS28 (2MM/2MM) - 7/8" IG												
	0.086	0.688	0.087						ARG90	0.023(#3)	CL	P1-S	N,G
	U-Factor 0.27			SHGC (N / <1) 0.30 / 0.27					VT (N / <1) 0.48 / 0.42			CR 64	
10	No Foam: CS28 / ARG90 / CS73 (2MM/2MM) - 7/8" IG												
	0.087	0.688	0.087						ARG90	0.023(#2) / 0.148(#4)	CL	P1-S	N,G
	U-Factor 0.24			SHGC (N / <1) 0.20 / 0.18					VT (N / <1) 0.44 / 0.40			CR 52	
11	No Foam: CS36 / ARG90 / CLR (2MM/2MM) - 7/8" IG												
	0.090	0.688	0.086						ARG90	0.027(#2)	CL	P1-S	N,G
	U-Factor 0.28			SHGC (N / <1) 0.27 / 0.25					VT (N / <1) 0.50 / 0.45			CR 64	
	No Foam: CS36 / ARG90 / CLR (3MM/3MM) - 7/8" IG												
	0.128	0.625	0.123						ARG90	0.027(#2)	CL	P1-S	N,G
	U-Factor 0.28			SHGC (N / <1) 0.27 / 0.24					VT (N / <1) 0.50 / 0.44			CR 64	
	No Foam: CLR / ARG90 / CS36 (2MM/2MM) - 7/8" IG												
	0.086	0.688	0.090						ARG90	0.027(#3)	CL	P1-S	N,G
	U-Factor 0.28			SHGC (N / <1) 0.36 / 0.32					VT (N / <1) 0.50 / 0.45			CR 64	

**NFRC 100/200/500 Summary Sheet
SL4011**

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)				Visible Transmittance (VT) Grids (None / <1 / >=1)			Condensation Resistance	
	No Foam: CLR / ARG90 / CS36 (3MM/3MM) - 7/8" IG											
	0.123	0.625	0.128					ARG90	0.027(#3)	CL	P1-S	N,G
	U-Factor 0.28			SHGC (N / <1) 0.35 / 0.32				VT (N / <1) 0.50 / 0.44			CR 64	
12	No Foam: RLE 70/36 / ARG90 / CLR (2MM/2MM) - 7/8" IG											
	0.090	0.688	0.090					ARG90	0.036(#2)	CL	P1-S	N,G
	U-Factor 0.28			SHGC (N / <1) 0.29 / 0.26				VT (N / <1) 0.53 / 0.47			CR 64	
	No Foam: RLE 70/36 / ARG90 / CLR (3MM/3MM) - 7/8" IG											
	0.117	0.625	0.117					ARG90	0.036(#2)	CL	P1-S	N,G
	U-Factor 0.28			SHGC (N / <1) 0.29 / 0.26				VT (N / <1) 0.52 / 0.47			CR 64	
13	No Foam: CLR / ARG90 / RLE 70/36 (2MM/2MM) - 7/8" IG											
	0.090	0.688	0.090					ARG90	0.036(#3)	CL	P1-S	N,G
	U-Factor 0.28			SHGC (N / <1) 0.37 / 0.33				VT (N / <1) 0.53 / 0.47			CR 64	
	No Foam: CLR / ARG90 / RLE 70/36 (3MM/3MM) - 7/8" IG											
	0.117	0.625	0.117					ARG90	0.036(#3)	CL	P1-S	N,G
	U-Factor 0.28			SHGC (N / <1) 0.37 / 0.33				VT (N / <1) 0.52 / 0.47			CR 64	
14	No Foam: E366 / ARG90 / CLR (2MM/2MM) - 7/8" IG											
	0.087	0.688	0.087					ARG90	0.022(#2)	CL	P1-S	N,G
	U-Factor 0.27			SHGC (N / <1) 0.21 / 0.19				VT (N / <1) 0.49 / 0.43			CR 64	
	No Foam: E366 / ARG90 / CLR (3MM/3MM) - 7/8" IG											
	0.117	0.625	0.118					ARG90	0.022(#2)	CL	P1-S	N,G
	U-Factor 0.27			SHGC (N / <1) 0.21 / 0.19				VT (N / <1) 0.48 / 0.43			CR 64	
15	No Foam: CLR / AIR / CLR (3MM/3MM) - 7/8" IG											
	0.123	0.625	0.123					AIR		CL	ZE-S	N,G
	U-Factor 0.45			SHGC (N / <1) 0.59 / 0.53				VT (N / <1) 0.61 / 0.54			CR 46	
16	No Foam: CS36 / AIR / CLR (2MM/2MM) - 7/8" IG											
	0.090	0.688	0.086					AIR	0.027(#2)	CL	ZE-S	N,G
	U-Factor 0.32			SHGC (N / <1) 0.28 / 0.25				VT (N / <1) 0.50 / 0.45			CR 59	
	No Foam: CS36 / AIR / CLR (3MM/3MM) - 7/8" IG											
	0.128	0.625	0.123					AIR	0.027(#2)	CL	ZE-S	N,G
	U-Factor 0.32			SHGC (N / <1) 0.27 / 0.25				VT (N / <1) 0.50 / 0.44			CR 59	

**NFRC 100/200/500 Summary Sheet
SL4011**

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Width 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)					Visible Transmittance (VT) Grids (None / <1 / >=1)			Condensation Resistance	
17	No Foam: CS36 / ARG90 / CLR (2MM/2MM) - 7/8" IG												
	0.090	0.688	0.086						ARG90	0.027(#2)	CL	ZE-S	N,G
	U-Factor 0.28			SHGC (N / <1) 0.27 / 0.25					VT (N / <1) 0.50 / 0.45			CR 62	
	No Foam: CS36 / ARG90 / CLR (3MM/3MM) - 7/8" IG												
	0.128	0.625	0.123						ARG90	0.027(#2)	CL	ZE-S	N,G
	U-Factor 0.28			SHGC (N / <1) 0.27 / 0.24					VT (N / <1) 0.50 / 0.44			CR 62	
18	No Foam: E366 / ARG90 / CLR (2MM/2MM) - 7/8" IG												
	0.087	0.688	0.087						ARG90	0.022(#2)	CL	ZE-S	N,G
	U-Factor 0.28			SHGC (N / <1) 0.21 / 0.19					VT (N / <1) 0.49 / 0.43			CR 63	
	No Foam: E366 / ARG90 / CLR (3MM/3MM) - 7/8" IG												
	0.117	0.625	0.118						ARG90	0.022(#2)	CL	ZE-S	N,G
	U-Factor 0.28			SHGC (N / <1) 0.21 / 0.19					VT (N / <1) 0.48 / 0.43			CR 63	
19	Foam: CS28 / ARG95 / CS73 (3MM/3MM) - 7/8" IG												
	0.125	0.625	0.123						ARG95	0.021(#2) / 0.148(#4)	CL	A8-S	N,G
	U-Factor 0.23			SHGC (N / <1) 0.20 / 0.18					VT (N / <1) 0.43 / 0.38			CR 41	
20	Foam: E366 / ARG95 / CS73 (2MM/2MM) - 7/8" IG												
	0.087	0.688	0.087						ARG95	0.022(#2) / 0.148(#4)	CL	A8-S	N,G
	U-Factor 0.24			SHGC (N / <1) 0.20 / 0.18					VT (N / <1) 0.45 / 0.40			CR 49	
	Foam: E366 / ARG95 / CS73 (3MM/3MM) - 7/8" IG												
	0.117	0.625	0.123						ARG95	0.022(#2) / 0.148(#4)	CL	A8-S	N,G
	U-Factor 0.24			SHGC (N / <1) 0.19 / 0.18					VT (N / <1) 0.44 / 0.39			CR 49	
21	Foam: CS28 / ARG95 / CS73 (3MM/3MM) - 7/8" IG												
	0.125	0.625	0.123						ARG95	0.021(#2) / 0.148(#4)	CL	P1-S	N,G
	U-Factor 0.22			SHGC (N / <1) 0.20 / 0.18					VT (N / <1) 0.43 / 0.38			CR 43	
22	Foam: E366 / ARG90 / CS73 (2MM/2MM) - 7/8" IG												
	0.087	0.688	0.087						ARG90	0.022(#2) / 0.148(#4)	CL	P1-S	N,G
	U-Factor 0.22			SHGC (N / <1) 0.20 / 0.18					VT (N / <1) 0.45 / 0.40			CR 52	
	Foam: E366 / ARG90 / CS73 (3MM/3MM) - 7/8" IG												
	0.117	0.625	0.123						ARG90	0.022(#2) / 0.148(#4)	CL	P1-S	N,G
	U-Factor 0.22			SHGC (N / <1) 0.19 / 0.18					VT (N / <1) 0.44 / 0.39			CR 52	

The Condensation Resistance results obtained from this procedure are for controlled laboratory conditions and do not include the effects of air movement through the specimen, solar radiation, and the thermal bridging that may occur due to the specific design and construction of the fenestration system opening.

Ratings values included in this report are for submittals to an NFRC-licensed IA and are not meant to be used directly for labeling purposes. Only those values identified on a valid Certification Authorization Report (CAR) by an NFRC accredited Inspection Agency (IA) are to be used for labeling purposes. The ratings values were rounded in accordance to NFRC 601, NFRC Unit and Measurement Policy.

Intertek-ATI is an NFRC accredited simulation laboratory and all simulations were conducted in full compliance with NFRC approved procedures and specifications. The values included in this report are not considered in compliance with ANSI/NFRC 100, ANSI/NFRC 200, and/or NFRC 500 unless the associated validation test requirements have been satisfied, as applicable.

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 May 25, 2022.

Results obtained are simulated values and were secured by using the designated test methods. 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 product simulated. This report may not be reproduced, except in full, without the written approval of Intertek-ATI

For INTERTEK-ATI:

SIMULATED BY:

REVIEWED BY:

Eric S. Leitner
Simulation Technician Team Leader
NFRC Certified Simulator

Kristen L. Louder
Senior Simulation Technician
Simulator-In-Responsible-Charge

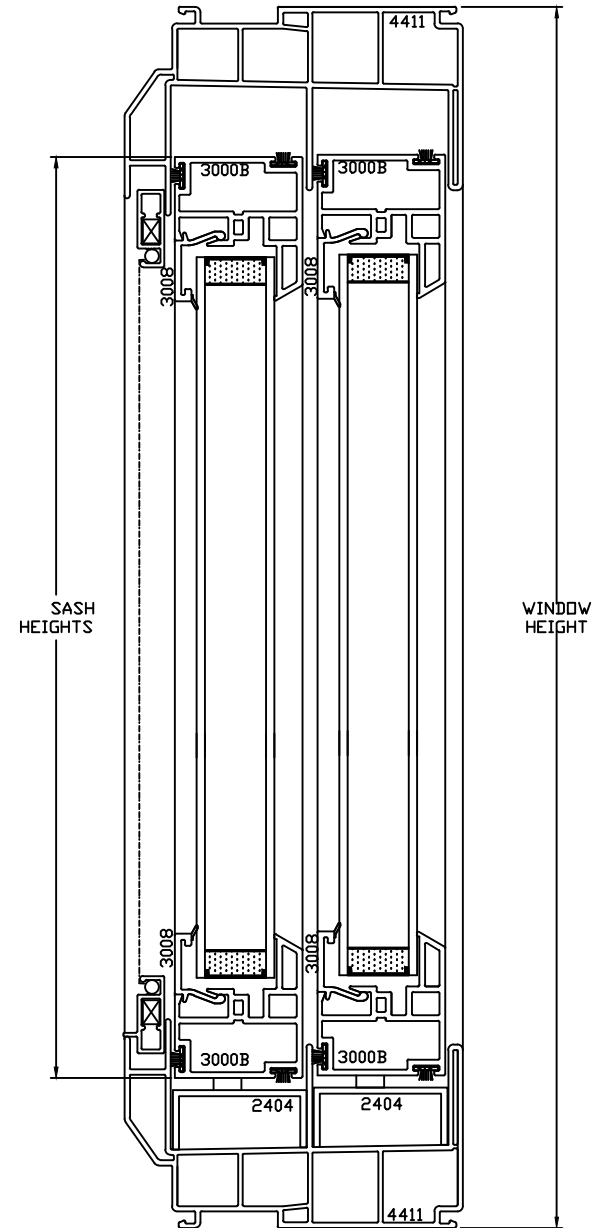
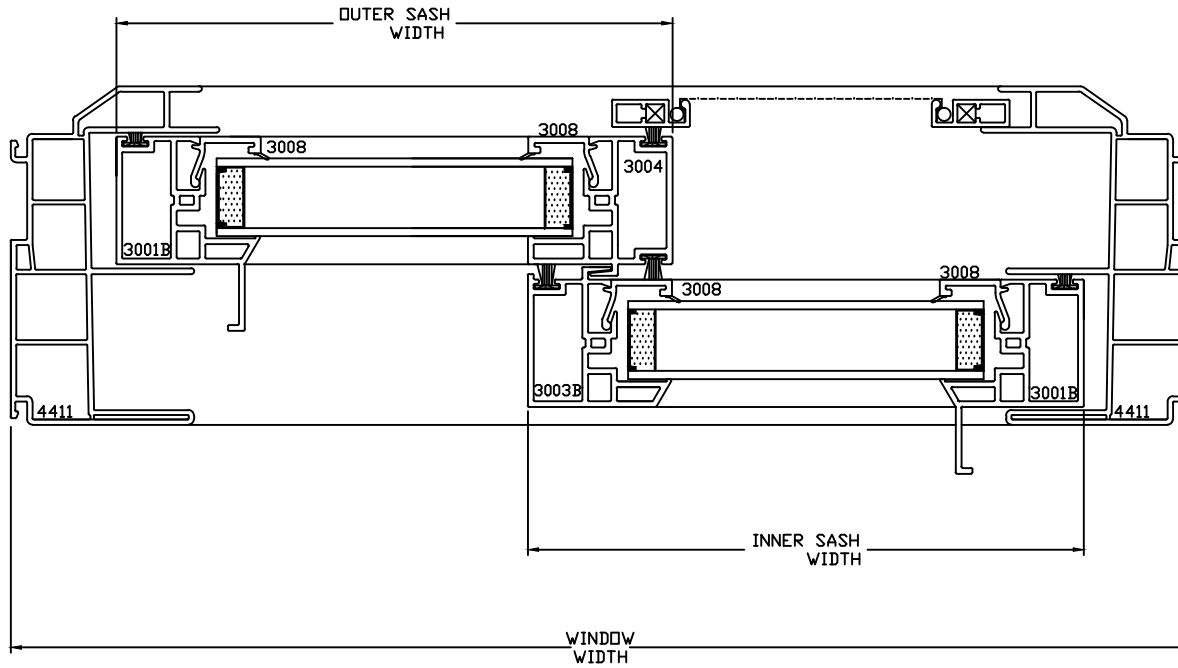
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H0199.02-116-45

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix A: Drawings and Bills of Material (15)

Revision Log


<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
.01R0	5/25/2017	All	- Original Report Issued to North East Windows USA, Inc..
.02R0	6/2/2017	All	- Add LowE on #3 surface on Option #11

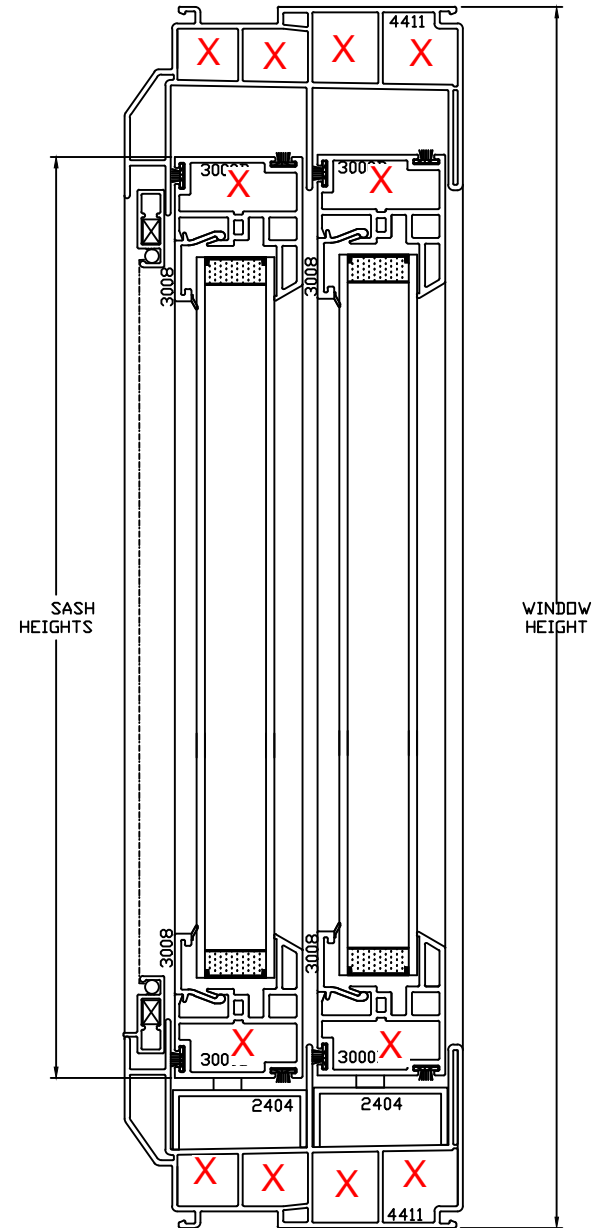
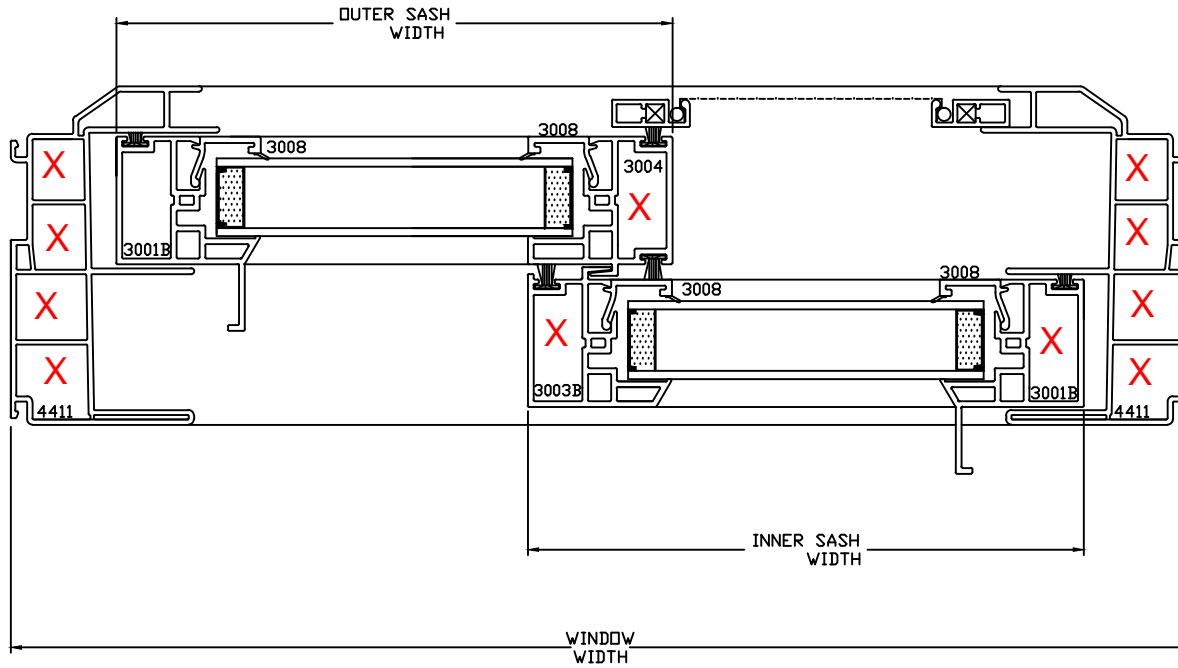
All drawings and Bills of Material used to simulate this product are enclosed in this Appendix



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		1) MATERIAL RIGID PVC 2) CAPSTOCK 3) UNSPECIFIED WALLS 4) BREAK ALL CORNERS .015R 5) AREA SQ. IN. 6) WT/FT LBS/FT	
"OUR NAME SAYS IT ALL"		TITLE: SL4011 2 LITE SLIDER w/BEVEL SASH	
DWN BY DDS	SCALE	DATE 05/12	CHKD BY APPD BY
COMPUTER NO		DWG NO SL4011 2 LITE CROSS CUT	

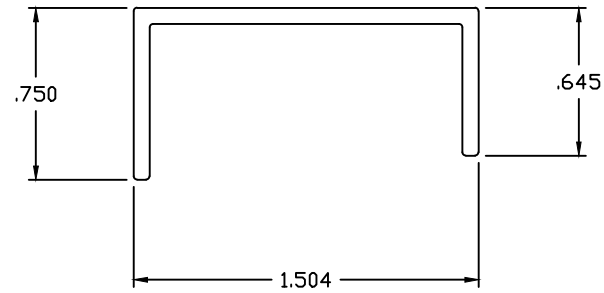


X = Expanded Polystyrene Foam (EPS)

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	TITLE: SL4011 2 LITE SLIDER w/BEVEL SASH	
DRAWN FOR  BY DDS DESIGNS	1) MATERIAL RIGID PVC 2) CAPSTOCK 3) UNSPECIFIED WALLS 4) BREAK ALL CORNERS .015R 5) AREA SQ. IN. 6) WT/FT LBS/FT	DWN BY DDS	SCALE DATE 05/12 CHKD BY APPD BY
	"OUR NAME SAYS IT ALL"	COMPUTER NO DWG NO SL4011 2 LITE CROSS CUT	DATE 05/12 CHKD BY APPD BY

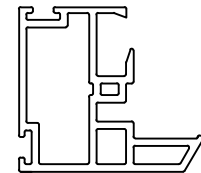
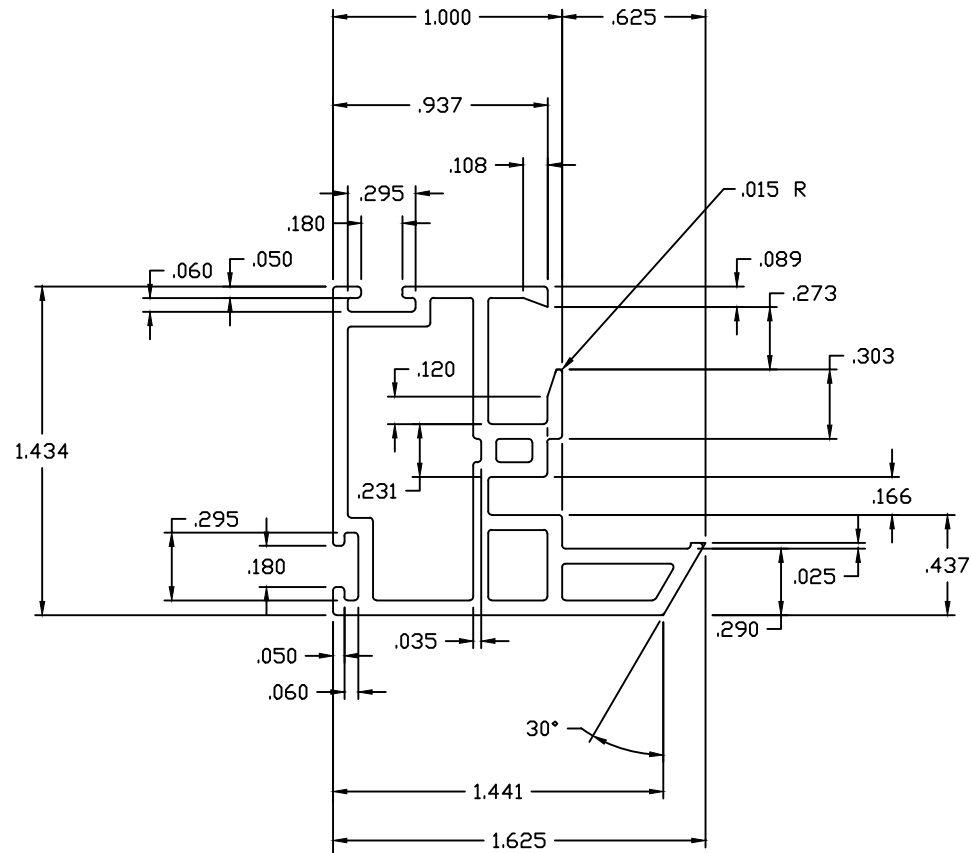


Material: Rigid PVC

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 <u> </u> 3) UNSPECIFIED WALLS .070 4) BREAK ALL CORNERS .015 R 5) AREA .193 SQ. IN. 6) WT/FT .120 LBS/FT.

NO.	REVISION	BY	DATE



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 .065
- 4) BREAK ALL CORNERS .015 R
- 5) AREA 4.97 SQ.IN.
- 6) WT/FT .310 LBS/FT

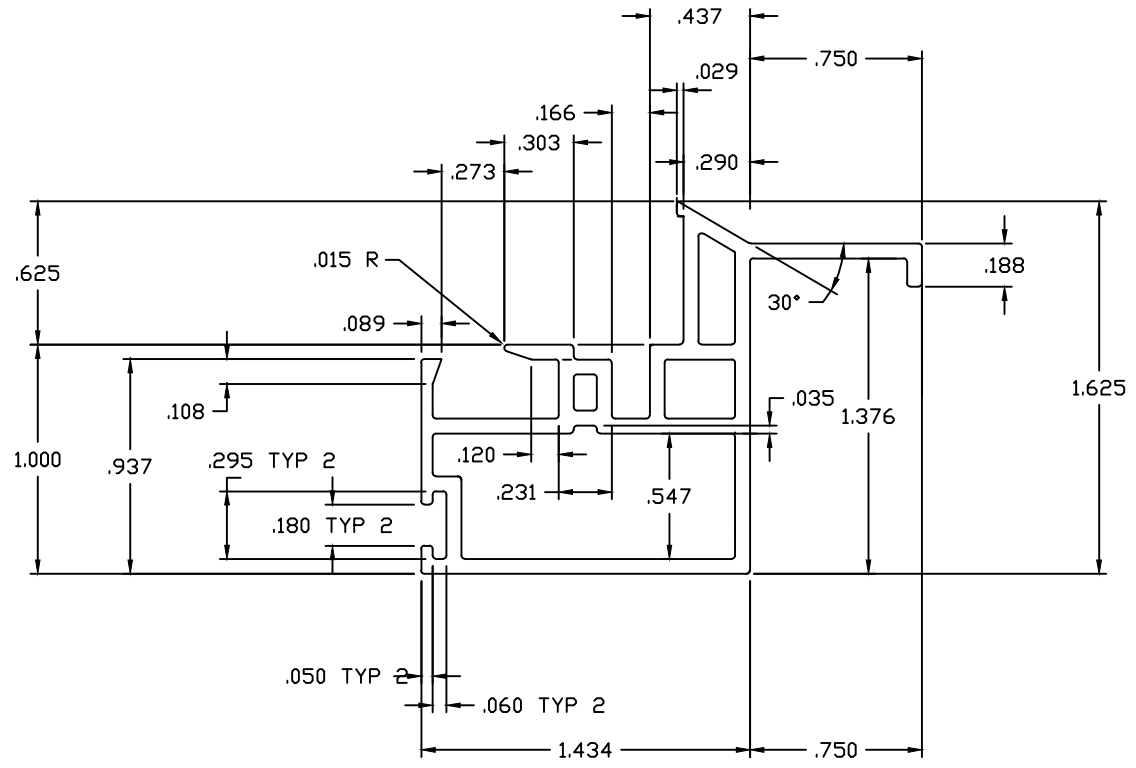
TITLE WELDED DOUBLE HUNG
SLOPED SASH

DWN BY DDS	SCALE 2:1	DATE 11/13/11	CHKD BY	APPD BY
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COMPUTER NO


DWG NO **3000B**

NO.	REVISION	BY	DATE

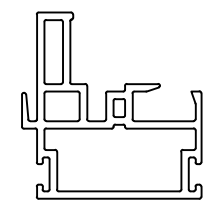
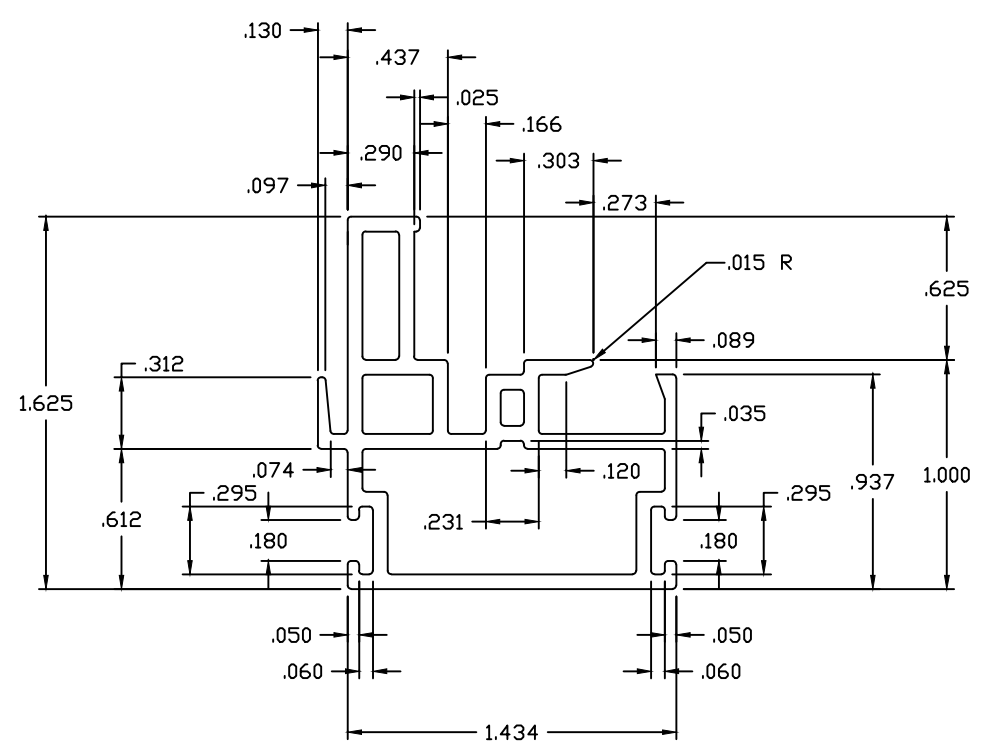


Material: Rigid PVC

DO NOT SCALE DRAWING


<input checked="" type="checkbox"/> 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 .065 4) BREAK ALL CORNERS .015 R 5) AREA .540 SQ.IN. 6) WT/FT .340 LBS/FT				
TITLE WELDED DOUBLE HUNG BEVEL SASH-LIFT HANDLE		DWN BY DDS	SCALE 2:1	DATE 06-29-11	CHKD BY	APPD BY
COMPUTER NO		DWG NO 3001B				

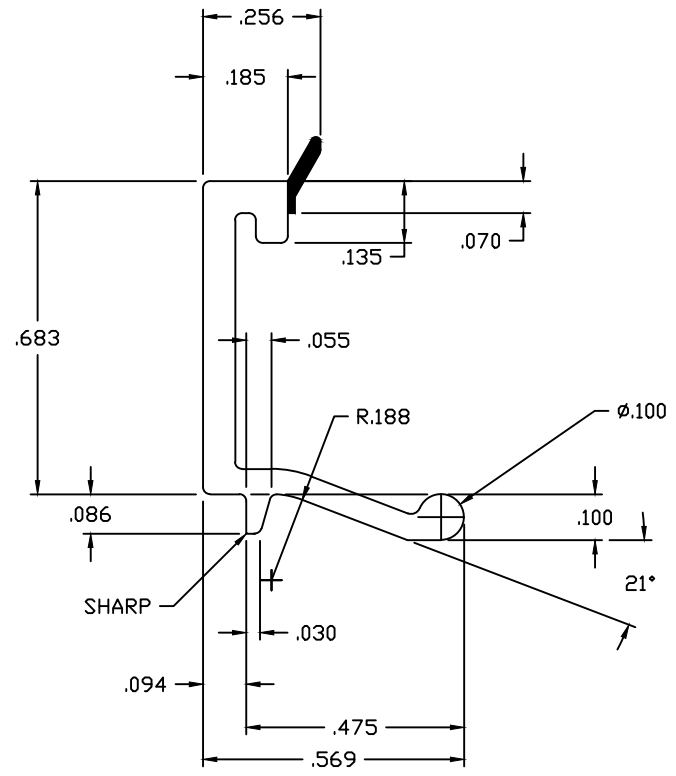
1	REMOVED WSPT GROOVE; REVISED AREA & WT/FT	DDS	08/19/12
NO.	REVISION	BY	DATE



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 .065 4) BREAK ALL CORNERS .015 R 5) AREA 528 SQ.IN. 6) WT/FT 332 LBS/FT		TITLE WELDED DOUBLE HUNG MALE
	NO. REVISION BY DATE	DWN BY DDS	SCALE 2:1
		COMPUTER NO	CHKD BY APPD BY
		DWG NO 3004	



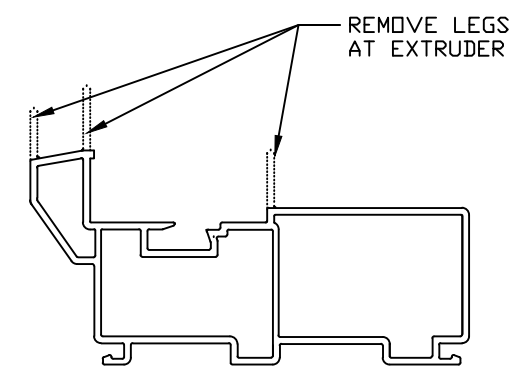
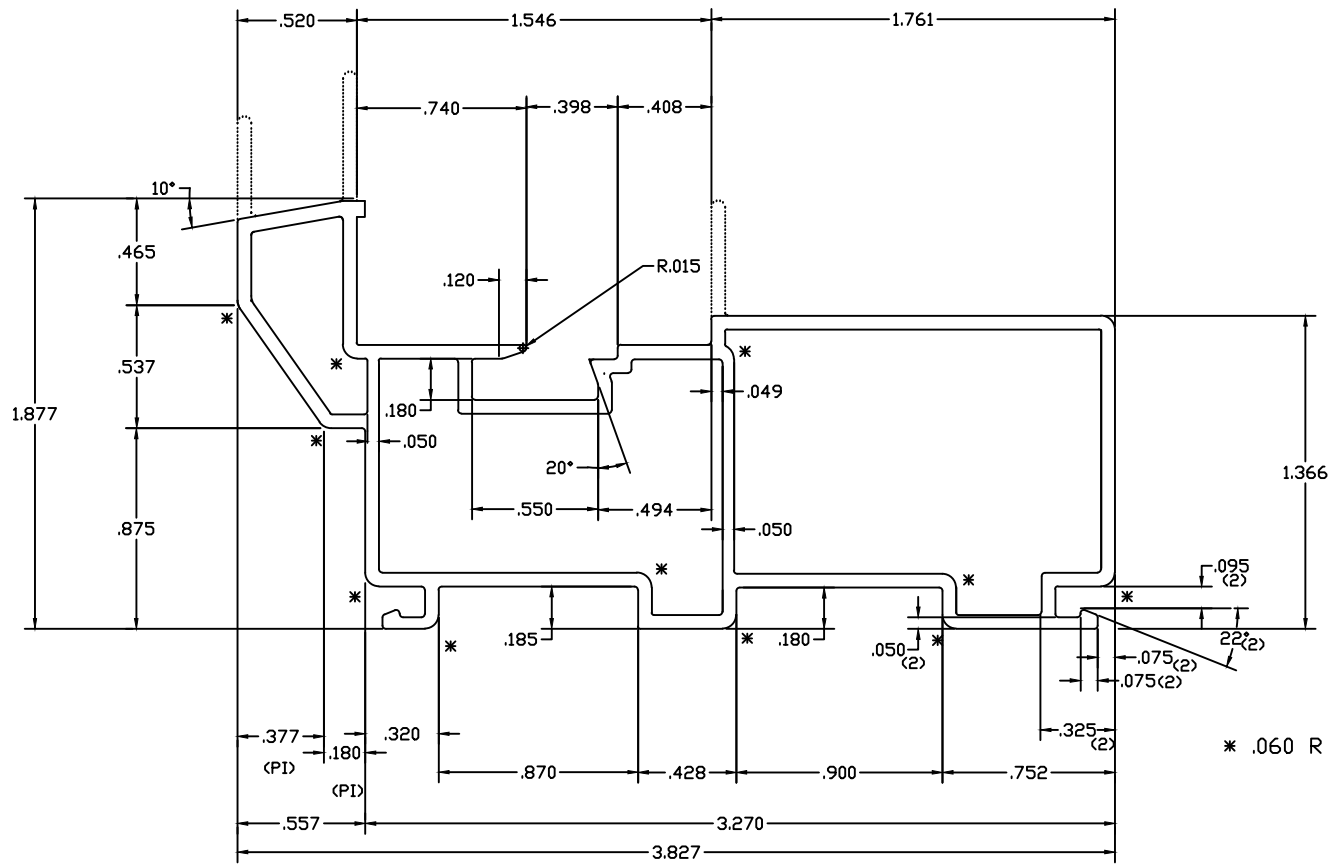
AREA OF RIGID PVC = .096
 AREA OF SOFT PVC = .004
 WT/FT OF RIGID PVC = .060
 WT/FT OF SOFT PVC = .003

Material: Rigid/Flexible PVC

DO NOT SCALE DRAWING

LOCATION FOR IMPACT TEST SPECIFICATION—LENGTHS TO 3/8"		ALLOWABLE BOW MAX. 1" PER 14' ANGULARITY TO BE ± 1/2	
DRAWN FOR QUALITY LINEALS BY DDS DESIGNS "OUR NAME SAYS IT ALL"	1) MATERIAL RIGID PVC 2) CAPSTOCK 3) UNSPECIFIED WALLS .070 4) BREAK ALL CORNERS .015 R 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
COMPUTER NO			DWG NO 3008

NO.	REVISION	BY	DATE



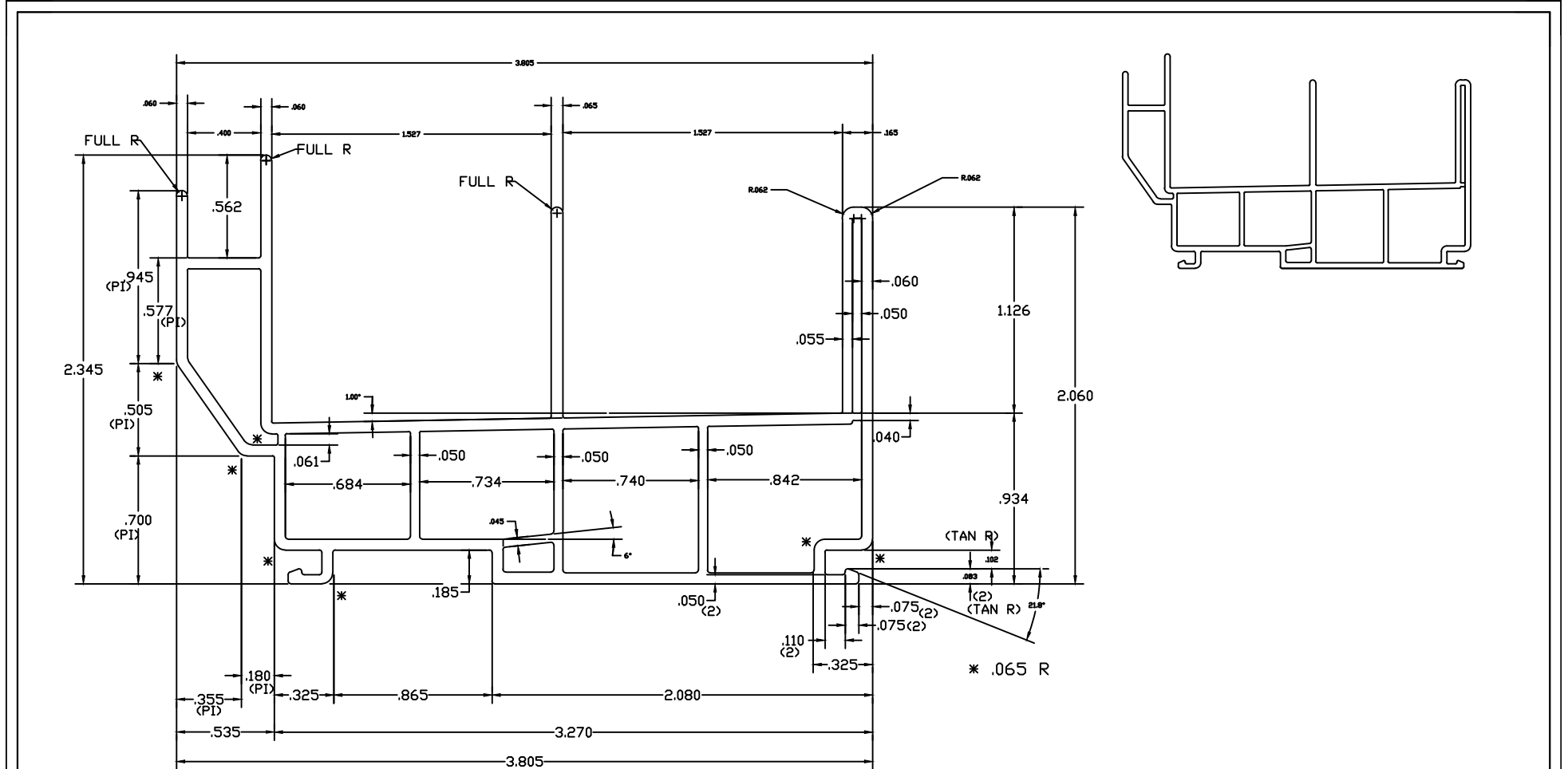
AREA BEFORE LEG REMOVAL = .912 IN SQ
 AREA AFTER LEG REMOVAL = .823 IN SQ
 WT/FT BEFORE LEG REMOVAL = .574 LBS/FT
 WT/FT AFTER LEG REMOVAL = .518 LBS/FT
 * .060 R

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 	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
	"OUR NAME SAYS IT ALL"	DWN BY DDS	SCALE 2:1
		COMPUTER NO	CHKD BY
		APPD BY	
		DWG NO 4015	


NO.	REVISION	BY	DATE

Material: Rigid PVC

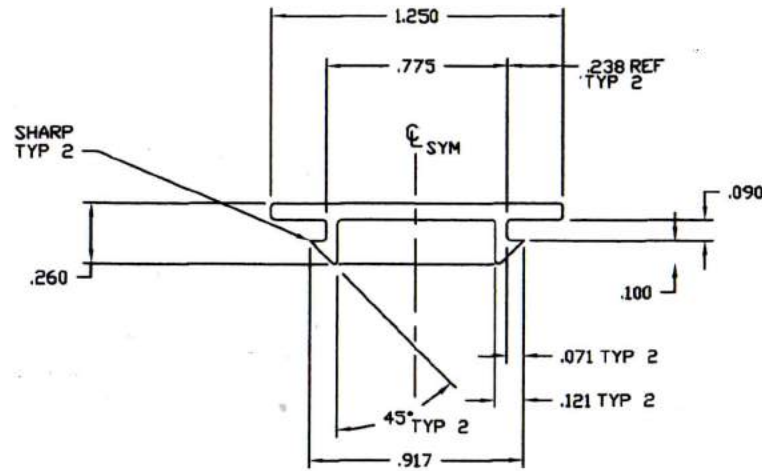
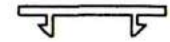


DO NOT SCALE DRAWING

NO.	REVISION	BY	DATE

 <p> DRAWN FOR BY DDS DESIGNS "OUR NAME SAYS IT ALL" </p>	<p> LOCATION FOR IMPACT TEST SPECIFICATION-LENGTHS TO 3/8" </p>	<p> ALLOWABLE BOW MAX. 1" PER 14' ANGULARITY TO BE ± 1/2 </p>	<p> 1) MATERIAL RIGID PVC 2) CAPSTOCK 3) UNSPECIFIED WALLS .065 4) BREAK ALL CORNERS .015 R 5) AREA 1.060 SQ.IN. 6) WT/FT .667 LBS/FT </p>	<p> TITLE WELDED DOUBLE HUNG SLIDER MF NO FIN NO J </p>
<p> DWN BY DDS SCALE 2:1 COMPUTER NO </p>	<p> DATE 08-05-11 </p>	<p> CHKD BY APPD BY </p>	<p> DWG NO 4411 </p>	

Material: Rigid PVC

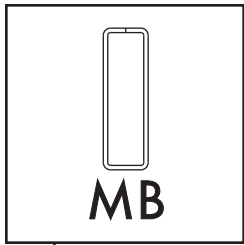


Material: Rigid PVC | VALIDATION OPTION

DO NOT SCALE DRAWING

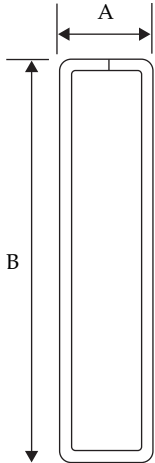
NO.	REVISION	BY	DATE

<input checked="" type="checkbox"/> LOCATION FOR IMPACT TEST SPECIFICATION LENGTHS TO ± 3/8"	ALLOWABLE BOW MAX. 1" PER 14' ANGULARITY TO BE ± 1/2 °	TOLERANCES - .XX = ± .010 .XXX = ± .005
DRAWN FOR BY DDS DESIGNS "OUR NAME SAYS IT ALL"	1) MATERIAL RIGID PVC 2) CAPSTOCK 3) UNSPECIFIED WALLS .070 4) BREAK ALL CORNERS .015 R 5) AREA .111 SQ. IN. 6) WT/FT .070 LBS/FT.	TITLE MECHANICAL DOUBLE HUNG SASH STOP DWN BY DDS SCALE 2:1 DATE 11/16/02 CHKD BY APPD BY COMPUTER NO DWG NO B-DHSS-2006



Muntin Bar

Aluminum: Painted, Mill Finish, Clear & Color In™ Anodized



TOLERANCE
 A, ± .005 (.127mm)
 B, ± .005 (.127mm)

	Report #:	H0199-116-45
	Date:	05/25/17
	Verified by:	Allison M. Ford

SPECIAL NOTICE
Cleaning and Handling of Muntin Bar

We recommend muntin bar to be wiped clean before installation into an insulating glass unit. A household grade liquid cleaner may be used for this purpose.

To avoid breakdown of painted surfaces, do not use M.E.K., Triethane, Alcohol or like substances for the cleaning of painted muntin bar.

When machining and processing muntin bar in your plant, keep saw tables and work areas free of saw cut filings to avoid scratching the painted surfaces.

Packaging Information			
Muntin Bar Size	Part #	Pieces Per Shipping Carton 12' 8" Lengths	Lineal Feet Per Shipping Carton 12' 8" Lengths
1/8 x .610	219697	200	2533
3/16 x 9/16 [†]	119320	150	1900
3/16 x .610 [†]	119705	125	1583
3/16 x 5/8 [†]	120874	125	1583
3/16 x 3/4	122909	110	1393
3/16 x 13/16	123618	110	1393
3/16 x 1	123823	85	1076
1/4 x 9/16	119427	135	1710
1/4 x 5/8 [†]	121410	120	1520
1/4 x 3/4	123063	95	1203
1/4 x 13/16	215017	95	1203
1/4 x 1	123836	70	887
1/4 x 1 1/4	123856	51	646
5/16 x 1	210318	60	684
3/8 x 5/8	121468	90	1140
3/8 x 3/4	123088	75	950
3/8 x 13/16	215016	70	887
3/8 x 7/8	123797	55	697
3/8 x 1	201968	55	696
3/8(.375) x 3/8	205591	140	1773
7/16 x 3/8	119016	115	1457
7/16 x 3/8	216500**	115	1457
7/16 x 1/2	213045	88	1115
7/16 x 5/8 ^Δ	214621	65	823
1/2 x 3/4 [*]	201043	50	633
1/2 x 1	203710	40	506

Specification In Inches		
Muntin Bar Size	A	B
1/8 x .610	.125	.610
3/16 x 9/16 [†]	.187	.551
3/16 x .610 [†]	.187	.610
3/16 x 5/8 [†]	.187	.630
3/16 x 3/4 [†]	.187	.775
3/16 x 13/16 [†]	.187	.801
3/16 x 1	.187	1.000
1/4 x 9/16	.235	.562
1/4 x 5/8 [†]	.235	.625
1/4 x 3/4	.235	.765
1/4 x 13/16	.235	.801
1/4 x 1	.235	1.000
1/4 x 1 1/4	.235	1.250
5/16 x 1	.312	1.000
3/8 x 5/8 [†]	.325	.625
3/8 x 3/4	.325	.750
3/8 x 13/16	.325	.801
3/8 x 7/8	.325	.875
3/8 x 1	.325	1.000
3/8(.375) x 3/8	.375	.375
7/16 x 3/8	.438	.375
7/16 x 3/8	.438	.375
7/16 x 1/2	.438	.500
7/16 x 5/8 ^Δ	.438	.625
1/2 x 3/4 [*]	.500	.750
1/2 x 1	.500	1.000

Part numbers shown are standard white color.

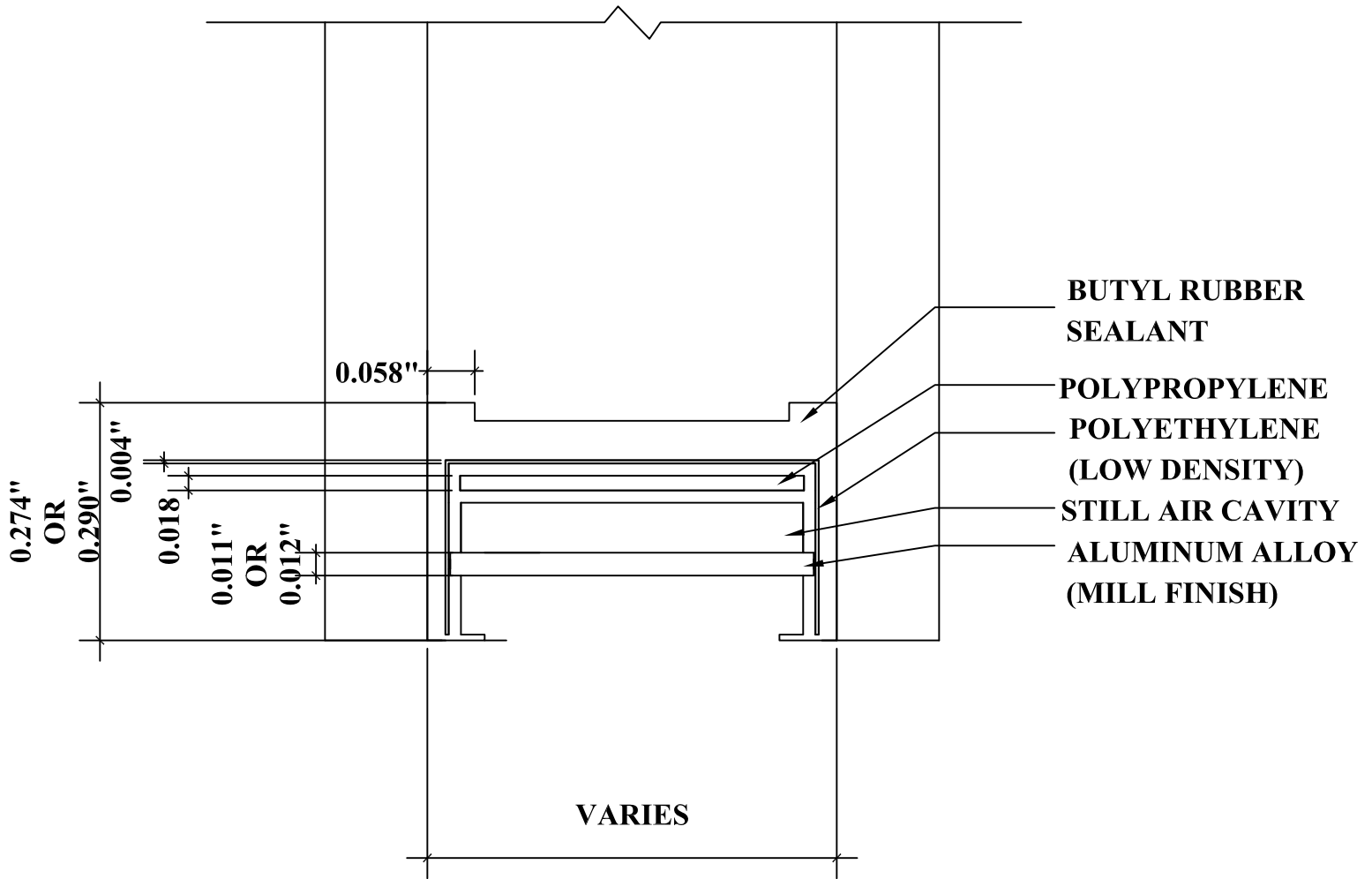
Material thickness: .0185

[†] Available in tutone. Please see Color Selection Chart located in front of catalog.

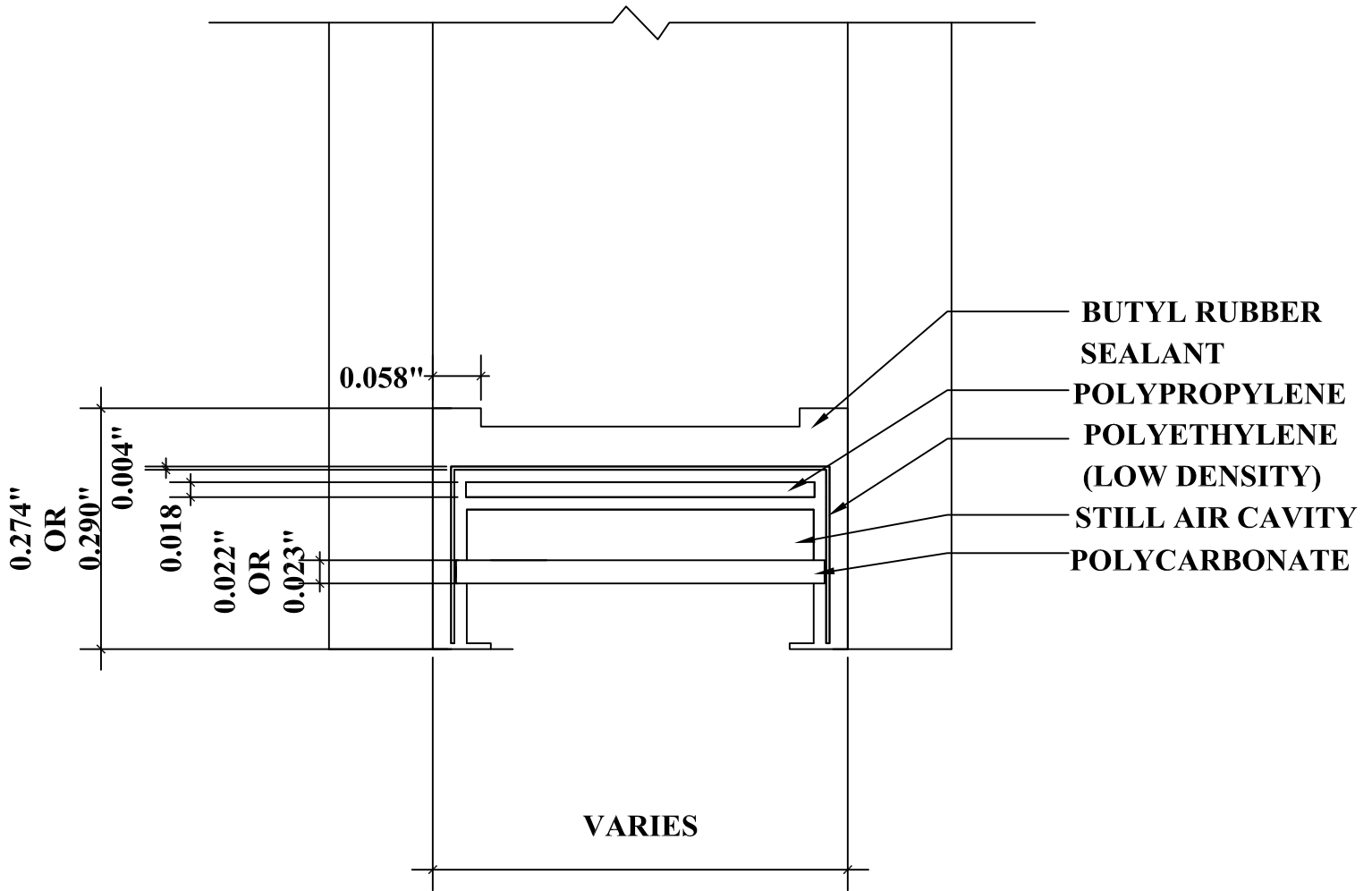
^Δ Part number shown is Dark Bronze Anodized Color.

* Part number shown is Clear Anodized. **Part number shown is white welded.

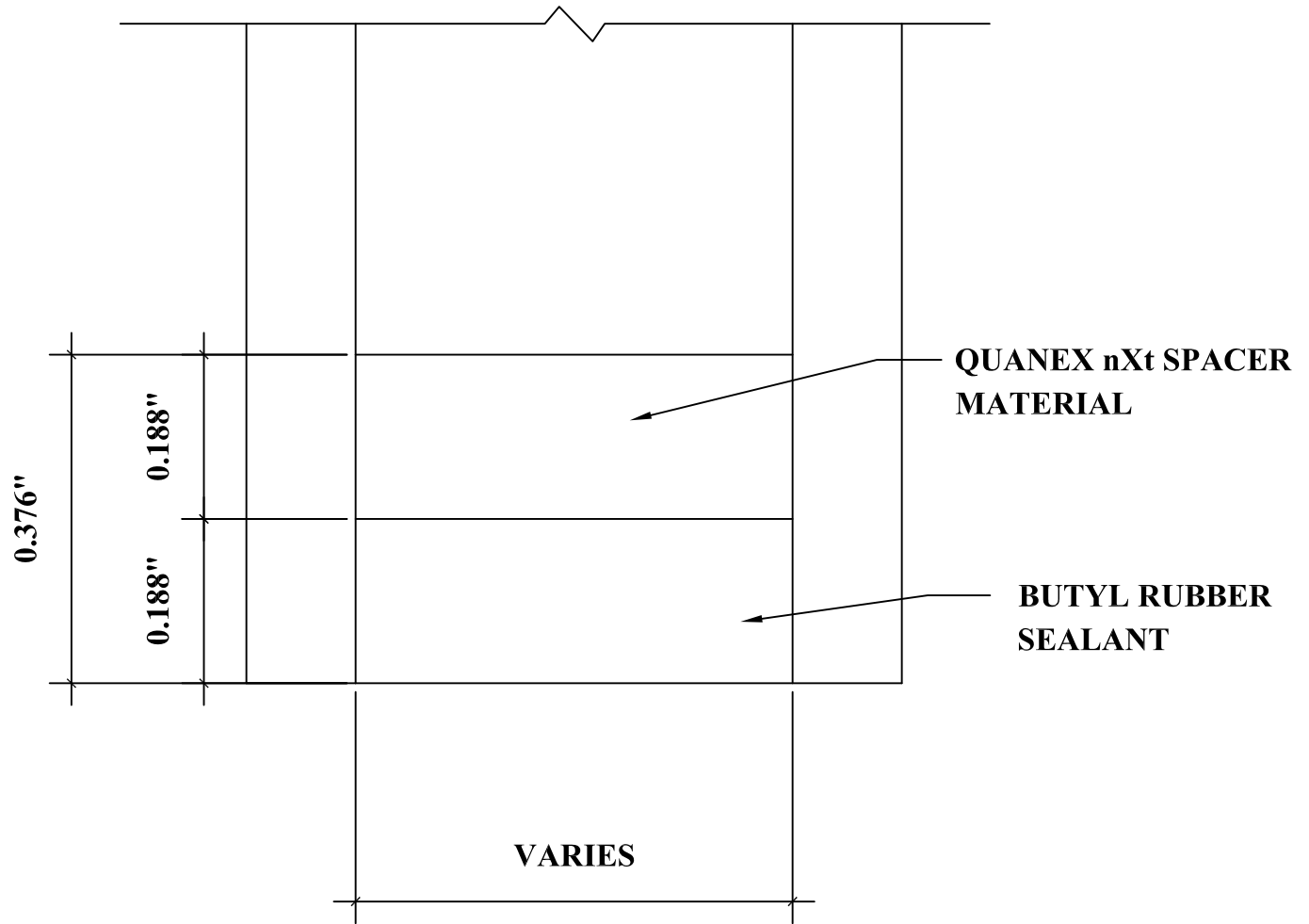
Note: Available in pre-cut lengths and pre-notched; tutone and post-painted. Custom colors also available.



DETAIL FOR THERMAL MODELING OF
QUANEX DURASEAL SPACER (A8-S)



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



DETAIL FOR THERMAL MODELING OF
QUANEX SUPER SPACER nXt (ZE-S)