



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

**Rendered to:
COEUR D'ALENE WINDOW COMPANY**

**SERIES/MODEL:
3511 Awning**

**Report Number: F3148.01-201-45
Report Date: 02/01/16**



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Rendered to:
COEUR D'ALENE WINDOW COMPANY
3808 N. Sullivan Rd.
Spokane Valley, Washington 99216

Report Number: F3148.01-201-45
Simulation Date: 02/01/16
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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 6.3.46
Center-of-Glass Modeling: WINDOW 6.3.74
Total Product Calculations: WINDOW 6.3.74
Spectral Data Library: IGDB 44.0

Simulations Specimen Description:

Series/Model: 3511 Awning
Type: Projected, Awning
Frame Material: VA Vinyl w/ All Members Reinforced
OT Vinyl w/ All Members Reinforced w/ Foam-filled Insulation
Sash Material: VA Vinyl w/ All Members Reinforced
Standard Size: 1500mm x 600mm

Modeling Assumptions/Technical Interpretations:

- 1) Nailing fin was removable and not simulated per NFRC 100-2014 section 4.2.5.A.
- 2) Dividers were not modeled for options where there was at least 3mm of air/gas space between the divider and both adjacent glazing surfaces per NFRC 100-2014, section 4.2.4.1.D.ii.a.
- 3) Multi-purpose products grouped for one validation matrix per NFRC 100-2014, section 4.2.3.2: Refer to Architectural Testing, Inc. report number F3147.01-201-45 for the test option of the Series 3411 Casement to validate this product line.
- 4) Divider grouping per NFRC 100-2014, section 4.2.4.1: 0.188" x 0.625" rectangular, 0.188" x 0.750" rectangular, 0.188" x 0.813" rectangular, 0.188" x 1.000" rectangular, and 0.217" x 0.709" contour dividers were grouped with 0.188" x 1.000" as group leader.

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 6.3.74. 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	0.006570	0.008701	0.010726
SHGC1	0.686326	0.623143	0.563080
VT0	0.000000	0.000000	0.000000
VT1	0.679756	0.614442	0.552354

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

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

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>
Series 3411 Casement	F3147.01-201-45
Series 3511 Awning	F3148.01-201-45

Spacer Option Description

<i>Spacer Type</i>	<i>Sealant</i>		<i>Code</i>
	<i>Primary</i>	<i>Secondary</i>	
Cardinal Endur	Polyisobutylene	Silicone	SS-D

Grid Option Description

<i>Grid Size</i>	<i>Grid Type</i>	<i>Grid Pattern</i>
0.188" x 0.625"	Aluminum Rectangular Grid (Painted)	NFRC Standard
0.188" x 0.750"	Aluminum Rectangular Grid (Painted)	NFRC Standard
0.188" x 1.000"	Aluminum Rectangular Grid (Painted)	NFRC Standard
0.217" x 0.708"	Aluminum Contoured Grid (Painted)	NFRC Standard

Reinforcement Option Description

<i>Location</i>	<i>Material</i>
Large Frame Cavity (Dwg# 310-A1)	Alum. (Mill)
Small Frame Cavity (Dwg# 325-A3)	Alum. (Mill)
Sash (Dwg# 310-A2)	Alum. (Mill)

Gas Filling Technique Description

<i>Fill Type</i>	<i>Method</i>
90% Argon	Vacuum Chamber

Edge-of-Glass Construction

<i>Interior Condition</i>	
	Foam Weather Stripping
<i>Exterior Condition</i>	
	Vinyl Glazing Bead

Weatherstripping

<i>Type</i>	<i>Quantity</i>	<i>Location</i>
Foam Weather Stripping	1 Row	Frame Perimeter, Sash Perimeter
Mohair	1 Row	Sash Perimeter

Frame/Sash Materials Finish

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

NFRC 100/200/500 Summary Sheet 3511 Awning

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 (IDs 1-44)														
1	2mm Arg 2mm - 7/8"														
	0.087	0.687	0.087					ARG90		CL	SS-D	N,G,S			
	U-Factor		0.42	SHGC (N / <1 / >1)					0.55 / 0.50 / 0.45		VT (N / <1 / >1)		0.57 / 0.51 / 0.46	CR	45
2	2mm 270 Arg 2mm - 7/8"														
	0.087	0.687	0.087					ARG90	0.037(#2)		CL	SS-D	N,G,S		
	U-Factor		0.29	SHGC (N / <1 / >1)					0.26 / 0.23 / 0.21		VT (N / <1 / >1)		0.48 / 0.43 / 0.39		CR
3	2mm 366 Arg 2mm - 7/8"														
	0.087	0.687	0.087					ARG90	0.022(#2)		CL	SS-D	N,G,S		
	U-Factor		0.29	SHGC (N / <1 / >1)					0.19 / 0.18 / 0.16		VT (N / <1 / >1)		0.45 / 0.40 / 0.36		CR
4	2mm Arg 270 2mm - 7/8"														
	0.087	0.687	0.087					ARG90	0.037(#3)		CL	SS-D	N,G,S		
	U-Factor		0.29	SHGC (N / <1 / >1)					0.32 / 0.30 / 0.27		VT (N / <1 / >1)		0.48 / 0.43 / 0.39		CR
5	2mm Arg 366 2mm - 7/8"														
	0.087	0.687	0.087					ARG90	0.022(#3)		CL	SS-D	N,G,S		
	U-Factor		0.29	SHGC (N / <1 / >1)					0.27 / 0.25 / 0.23		VT (N / <1 / >1)		0.45 / 0.40 / 0.36		CR
6	2mm 366 Arg 180 2mm - 7/8"														
	0.087	0.687	0.087					ARG90	0.022(#2) / 0.068(#3)		CL	SS-D	N,G,S		
	U-Factor		0.28	SHGC (N / <1 / >1)					0.19 / 0.17 / 0.16		VT (N / <1 / >1)		0.43 / 0.39 / 0.35		CR
7	2mm 270 Arg 270 2mm - 7/8"														
	0.087	0.687	0.087					ARG90	0.037(#2) / 0.037(#3)		CL	SS-D	N,G,S		
	U-Factor		0.28	SHGC (N / <1 / >1)					0.24 / 0.22 / 0.20		VT (N / <1 / >1)		0.41 / 0.37 / 0.33		CR
8	3mm Arg 3mm - 7/8"														
	0.118	0.625	0.118					ARG90			CL	SS-D	N,G,S		
	U-Factor		0.42	SHGC (N / <1 / >1)					0.54 / 0.49 / 0.44		VT (N / <1 / >1)		0.56 / 0.51 / 0.45		CR
9	3mm 180 Arg 3mm - 7/8"														
	0.118	0.625	0.118					ARG90	0.068(#2)		CL	SS-D	N,G,S		
	U-Factor		0.30	SHGC (N / <1 / >1)					0.44 / 0.40 / 0.37		VT (N / <1 / >1)		0.54 / 0.49 / 0.44		CR
10	3mm 340 Arg 3mm - 7/8"														
	0.118	0.625	0.118					ARG90	0.028(#2)		CL	SS-D	N,G,S		
	U-Factor		0.28	SHGC (N / <1 / >1)					0.13 / 0.12 / 0.11		VT (N / <1 / >1)		0.26 / 0.24 / 0.21		CR

NFRC 100/200/500 Summary Sheet 3511 Awning

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	
11	3mm 270 Arg 3mm - 7/8"											
	0.118	0.625	0.118					ARG90	0.037(#2)		CL	SS-D N,G,S
	U-Factor 0.29		SHGC (N / <1 / >1) 0.26 / 0.23 / 0.21					VT (N / <1 / >1) 0.48 / 0.43 / 0.39		CR 55		
12	3mm 366 Arg 3mm - 7/8"											
	0.117	0.625	0.118					ARG90	0.022(#2)		CL	SS-D N,G,S
	U-Factor 0.28		SHGC (N / <1 / >1) 0.19 / 0.18 / 0.16					VT (N / <1 / >1) 0.44 / 0.40 / 0.36		CR 56		
13	3mm 180 Arg 3mm i89 - 7/8"											
	0.118	0.625	0.117					ARG90	0.068(#2) / 0.149(#4)		CL	SS-D N,G,S
	U-Factor 0.26		SHGC (N / <1 / >1) 0.43 / 0.39 / 0.36					VT (N / <1 / >1) 0.53 / 0.48 / 0.43		CR 43		
14	3mm 340 Arg 3mm i89 - 7/8"											
	0.118	0.625	0.117					ARG90	0.028(#2) / 0.149(#4)		CL	SS-D N,G,S
	U-Factor 0.25		SHGC (N / <1 / >1) 0.12 / 0.11 / 0.10					VT (N / <1 / >1) 0.26 / 0.23 / 0.21		CR 44		
15	3mm 270 Arg 3mm i89 - 7/8"											
	0.118	0.625	0.117					ARG90	0.037(#2) / 0.149(#4)		CL	SS-D N,G,S
	U-Factor 0.25		SHGC (N / <1 / >1) 0.25 / 0.23 / 0.21					VT (N / <1 / >1) 0.47 / 0.42 / 0.38		CR 43		
16	3mm 366 Arg 3mm i89 - 7/8"											
	0.117	0.625	0.117					ARG90	0.022(#2) / 0.149(#4)		CL	SS-D N,G,S
	U-Factor 0.25		SHGC (N / <1 / >1) 0.19 / 0.17 / 0.16					VT (N / <1 / >1) 0.43 / 0.39 / 0.35		CR 44		
17	3mm BZ Arg 3mm - 7/8"											
	0.129	0.625	0.118					ARG90			BZ	SS-D N,G,S
	U-Factor 0.42		SHGC (N / <1 / >1) 0.43 / 0.39 / 0.36					VT (N / <1 / >1) 0.41 / 0.37 / 0.34		CR 46		
18	3mm GY Arg 3mm - 7/8"											
	0.129	0.625	0.118					ARG90			GY	SS-D N,G,S
	U-Factor 0.42		SHGC (N / <1 / >1) 0.40 / 0.37 / 0.33					VT (N / <1 / >1) 0.37 / 0.34 / 0.30		CR 46		
19	3mm BZ Arg 270 3mm - 7/8"											
	0.129	0.625	0.118					ARG90	0.037(#3)		BZ	SS-D N,G,S
	U-Factor 0.29		SHGC (N / <1 / >1) 0.25 / 0.23 / 0.21					VT (N / <1 / >1) 0.35 / 0.32 / 0.29		CR 56		
20	3mm GY Arg 270 3mm - 7/8"											
	0.129	0.625	0.118					ARG90	0.037(#3)		GY	SS-D N,G,S
	U-Factor 0.29		SHGC (N / <1 / >1) 0.24 / 0.22 / 0.20					VT (N / <1 / >1) 0.32 / 0.29 / 0.26		CR 56		

NFRC 100/200/500 Summary Sheet 3511 Awning

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	
21	3mm Arg 180 3mm - 7/8"											
	0.118	0.625	0.118					ARG90	0.068(#3)	CL	SS-D	N,G,S
	U-Factor		0.30	SHGC (N / <1 / >1) 0.47 / 0.43 / 0.39					VT (N / <1 / >1) 0.54 / 0.49 / 0.44		CR 55	
22	3mm Arg 340 3mm - 7/8"											
	0.118	0.625	0.118					ARG90	0.028(#3)	CL	SS-D	N,G,S
	U-Factor		0.28	SHGC (N / <1 / >1) 0.29 / 0.27 / 0.24					VT (N / <1 / >1) 0.26 / 0.24 / 0.21		CR 56	
23	3mm Arg 270 3mm - 7/8"											
	0.118	0.625	0.118					ARG90	0.037(#3)	CL	SS-D	N,G,S
	U-Factor		0.29	SHGC (N / <1 / >1) 0.32 / 0.29 / 0.27					VT (N / <1 / >1) 0.48 / 0.43 / 0.39		CR 56	
24	3mm Arg 366 3mm - 7/8"											
	0.118	0.625	0.117					ARG90	0.022(#3)	CL	SS-D	N,G,S
	U-Factor		0.28	SHGC (N / <1 / >1) 0.27 / 0.25 / 0.23					VT (N / <1 / >1) 0.44 / 0.40 / 0.36		CR 56	
25	3mm 270 Arg 3mm BZ - 7/8"											
	0.118	0.625	0.129					ARG90	0.037(#2)	BZ	SS-D	N,G,S
	U-Factor		0.29	SHGC (N / <1 / >1) 0.25 / 0.23 / 0.21					VT (N / <1 / >1) 0.35 / 0.32 / 0.29		CR 55	
26	3mm 270 Arg 3mm GY - 7/8"											
	0.118	0.625	0.129					ARG90	0.037(#2)	GY	SS-D	N,G,S
	U-Factor		0.29	SHGC (N / <1 / >1) 0.25 / 0.23 / 0.21					VT (N / <1 / >1) 0.32 / 0.29 / 0.26		CR 55	
27	3mm 180 Arg 5mm - 7/8"											
	0.118	0.562	0.185					ARG90	0.068(#2)	CL	SS-D	N,G,S
	U-Factor		0.29	SHGC (N / <1 / >1) 0.44 / 0.40 / 0.37					VT (N / <1 / >1) 0.53 / 0.48 / 0.43		CR 46	
28	3mm 340 Arg 5mm - 7/8"											
	0.118	0.562	0.185					ARG90	0.028(#2)	CL	SS-D	N,G,S
	U-Factor		0.28	SHGC (N / <1 / >1) 0.13 / 0.12 / 0.11					VT (N / <1 / >1) 0.26 / 0.24 / 0.21		CR 57	
29	3mm 270 Arg 5mm - 7/8"											
	0.118	0.562	0.185					ARG90	0.037(#2)	CL	SS-D	N,G,S
	U-Factor		0.29	SHGC (N / <1 / >1) 0.26 / 0.23 / 0.21					VT (N / <1 / >1) 0.47 / 0.43 / 0.38		CR 57	
30	3mm 366 Arg 5mm - 7/8"											
	0.117	0.562	0.185					ARG90	0.022(#2)	CL	SS-D	N,G,S
	U-Factor		0.28	SHGC (N / <1 / >1) 0.19 / 0.18 / 0.16					VT (N / <1 / >1) 0.44 / 0.39 / 0.35		CR 58	

NFRC 100/200/500 Summary Sheet

3511 Awning

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)					Visible Transmittance (VT)		Condensation Resistance	
				Grids (None / <1 / >=1)					Grids (None / <1 / >=1)			
31	3mm 366 Arg 180 3mm - 7/8"											
	0.117	0.625	0.118					ARG90	0.022(#2) / 0.068(#3)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.19 / 0.17 / 0.16					VT (N / <1 / >1) 0.42 / 0.38 / 0.34		CR	56
32	3mm 270 Arg 270 3mm - 7/8"											
	0.118	0.625	0.118					ARG90	0.037(#2) / 0.037(#3)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.24 / 0.22 / 0.20					VT (N / <1 / >1) 0.41 / 0.37 / 0.33		CR	56
33	4mm Arg 4mm - 7/8"											
	0.154	0.563	0.154					ARG90			CL	SS-D N,G,S
	U-Factor 0.42			SHGC (N / <1 / >1) 0.52 / 0.47 / 0.43					VT (N / <1 / >1) 0.56 / 0.50 / 0.45		CR	45
34	4mm 180 Arg 4mm - 7/8"											
	0.160	0.563	0.154					ARG90	0.068(#2)		CL	SS-D N,G,S
	U-Factor 0.29			SHGC (N / <1 / >1) 0.43 / 0.39 / 0.36					VT (N / <1 / >1) 0.53 / 0.48 / 0.43		CR	57
35	4mm 270 Arg 4mm - 7/8"											
	0.157	0.563	0.154					ARG90	0.037(#2)		CL	SS-D N,G,S
	U-Factor 0.29			SHGC (N / <1 / >1) 0.25 / 0.23 / 0.21					VT (N / <1 / >1) 0.47 / 0.43 / 0.38		CR	58
36	4mm 366 Arg 4mm - 7/8"											
	0.153	0.563	0.154					ARG90	0.022(#2)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.19 / 0.18 / 0.16					VT (N / <1 / >1) 0.44 / 0.39 / 0.35		CR	58
37	4mm SCBZ Arg 4mm - 7/8"											
	0.154	0.563	0.154					ARG90			BZ	SS-D N,G,S
	U-Factor 0.42			SHGC (N / <1 / >1) 0.25 / 0.23 / 0.21					VT (N / <1 / >1) 0.15 / 0.14 / 0.12		CR	45
38	4mm SCBZ Arg 270 4mm - 7/8"											
	0.154	0.563	0.157					ARG90	0.037(#3)		BZ	SS-D N,G,S
	U-Factor 0.29			SHGC (N / <1 / >1) 0.12 / 0.11 / 0.10					VT (N / <1 / >1) 0.13 / 0.12 / 0.10		CR	58
39	4mm Arg 180 4mm - 7/8"											
	0.154	0.563	0.160					ARG90	0.068(#3)		CL	SS-D N,G,S
	U-Factor 0.29			SHGC (N / <1 / >1) 0.46 / 0.42 / 0.38					VT (N / <1 / >1) 0.53 / 0.48 / 0.43		CR	57
40	4mm Arg 270 4mm - 7/8"											
	0.154	0.563	0.157					ARG90	0.037(#3)		CL	SS-D N,G,S
	U-Factor 0.29			SHGC (N / <1 / >1) 0.31 / 0.29 / 0.26					VT (N / <1 / >1) 0.47 / 0.43 / 0.38		CR	58

NFRC 100/200/500 Summary Sheet

3511 Awning

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	
41	4mm Arg 366 4mm - 7/8"											
	0.154	0.563	0.153					ARG90	0.022(#3)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.27 / 0.25 / 0.22					VT (N / <1 / >1) 0.44 / 0.39 / 0.35		CR 58	
42	4mm 270 Arg SCBZ 4mm - 7/8"											
	0.157	0.563	0.154					ARG90	0.037(#2)		BZ	SS-D N,G,S
	U-Factor 0.29			SHGC (N / <1 / >1) 0.21 / 0.20 / 0.18					VT (N / <1 / >1) 0.13 / 0.12 / 0.10		CR 58	
43	4mm 366 Arg 180 4mm - 7/8"											
	0.153	0.563	0.160					ARG90	0.022(#2) / 0.068(#3)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.19 / 0.17 / 0.16					VT (N / <1 / >1) 0.42 / 0.38 / 0.34		CR 59	
44	4mm 270 Arg 270 4mm - 7/8"											
	0.157	0.563	0.157					ARG90	0.037(#2) / 0.037(#3)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.23 / 0.21 / 0.19					VT (N / <1 / >1) 0.40 / 0.36 / 0.32		CR 59	
With Foam (IDs 45-92)												
45	2mm Arg 2mm - 7/8"											
	0.087	0.687	0.087					ARG90		CL	SS-D N,G,S	
	U-Factor 0.42			SHGC (N / <1 / >1) 0.55 / 0.50 / 0.45					VT (N / <1 / >1) 0.57 / 0.51 / 0.46		CR 45	
46	2mm 270 Arg 2mm - 7/8"											
	0.087	0.687	0.087					ARG90	0.037(#2)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.26 / 0.23 / 0.21					VT (N / <1 / >1) 0.48 / 0.43 / 0.39		CR 56	
47	2mm 366 Arg 2mm - 7/8"											
	0.087	0.687	0.087					ARG90	0.022(#2)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.19 / 0.18 / 0.16					VT (N / <1 / >1) 0.45 / 0.40 / 0.36		CR 56	
48	2mm Arg 270 2mm - 7/8"											
	0.087	0.687	0.087					ARG90	0.037(#3)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.32 / 0.30 / 0.27					VT (N / <1 / >1) 0.48 / 0.43 / 0.39		CR 56	
49	2mm Arg 366 2mm - 7/8"											
	0.087	0.687	0.087					ARG90	0.022(#3)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.27 / 0.25 / 0.23					VT (N / <1 / >1) 0.45 / 0.40 / 0.36		CR 57	
50	2mm 366 Arg 180 2mm - 7/8"											
	0.087	0.687	0.087					ARG90	0.022(#2) / 0.068(#3)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.19 / 0.17 / 0.16					VT (N / <1 / >1) 0.43 / 0.39 / 0.35		CR 57	

NFRC 100/200/500 Summary Sheet 3511 Awning

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)					Visible Transmittance (VT)		Condensation Resistance	
				Grids (None / <1 / >=1)					Grids (None / <1 / >=1)			
51	2mm 270 Arg 270 2mm - 7/8"											
	0.087	0.687	0.087					ARG90	0.037(#2) / 0.037(#3)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.24 / 0.22 / 0.20					VT (N / <1 / >1) 0.41 / 0.37 / 0.33		CR	57
52	3mm Arg 3mm - 7/8"											
	0.118	0.625	0.118					ARG90			CL	SS-D N,G,S
	U-Factor 0.42			SHGC (N / <1 / >1) 0.54 / 0.49 / 0.44					VT (N / <1 / >1) 0.56 / 0.51 / 0.45		CR	46
53	3mm 180 Arg 3mm - 7/8"											
	0.118	0.625	0.118					ARG90	0.068(#2)		CL	SS-D N,G,S
	U-Factor 0.29			SHGC (N / <1 / >1) 0.44 / 0.40 / 0.37					VT (N / <1 / >1) 0.54 / 0.49 / 0.44		CR	55
54	3mm 340 Arg 3mm - 7/8"											
	0.118	0.625	0.118					ARG90	0.028(#2)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.13 / 0.12 / 0.11					VT (N / <1 / >1) 0.26 / 0.24 / 0.21		CR	55
55	3mm 270 Arg 3mm - 7/8"											
	0.118	0.625	0.118					ARG90	0.037(#2)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.26 / 0.23 / 0.21					VT (N / <1 / >1) 0.48 / 0.43 / 0.39		CR	55
56	3mm 366 Arg 3mm - 7/8"											
	0.117	0.625	0.118					ARG90	0.022(#2)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.19 / 0.18 / 0.16					VT (N / <1 / >1) 0.44 / 0.40 / 0.36		CR	56
57	3mm 180 Arg 3mm i89 - 7/8"											
	0.118	0.625	0.117					ARG90	0.068(#2) / 0.149(#4)		CL	SS-D N,G,S
	U-Factor 0.25			SHGC (N / <1 / >1) 0.43 / 0.39 / 0.36					VT (N / <1 / >1) 0.53 / 0.48 / 0.43		CR	43
58	3mm 340 Arg 3mm i89 - 7/8"											
	0.118	0.625	0.117					ARG90	0.028(#2) / 0.149(#4)		CL	SS-D N,G,S
	U-Factor 0.25			SHGC (N / <1 / >1) 0.12 / 0.11 / 0.10					VT (N / <1 / >1) 0.26 / 0.23 / 0.21		CR	44
59	3mm 270 Arg 3mm i89 - 7/8"											
	0.118	0.625	0.117					ARG90	0.037(#2) / 0.149(#4)		CL	SS-D N,G,S
	U-Factor 0.25			SHGC (N / <1 / >1) 0.25 / 0.23 / 0.21					VT (N / <1 / >1) 0.47 / 0.42 / 0.38		CR	43
60	3mm 366 Arg 3mm i89 - 7/8"											
	0.117	0.625	0.117					ARG90	0.022(#2) / 0.149(#4)		CL	SS-D N,G,S
	U-Factor 0.25			SHGC (N / <1 / >1) 0.19 / 0.17 / 0.16					VT (N / <1 / >1) 0.43 / 0.39 / 0.35		CR	44

NFRC 100/200/500 Summary Sheet

3511 Awning

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)					Visible Transmittance (VT)		Condensation Resistance	
				Grids (None / <1 / >=1)					Grids (None / <1 / >=1)			
61	3mm BZ Arg 3mm - 7/8"											
	0.129	0.625	0.118					ARG90		BZ	SS-D	N,G,S
	U-Factor 0.42			SHGC (N / <1 / >1) 0.43 / 0.39 / 0.36					VT (N / <1 / >1) 0.41 / 0.37 / 0.34		CR 45	
62	3mm GY Arg 3mm - 7/8"											
	0.129	0.625	0.118					ARG90		GY	SS-D	N,G,S
	U-Factor 0.42			SHGC (N / <1 / >1) 0.40 / 0.37 / 0.33					VT (N / <1 / >1) 0.37 / 0.34 / 0.30		CR 45	
63	3mm BZ Arg 270 3mm - 7/8"											
	0.129	0.625	0.118					ARG90	0.037(#3)	BZ	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.25 / 0.23 / 0.21					VT (N / <1 / >1) 0.35 / 0.32 / 0.29		CR 56	
64	3mm GY Arg 270 3mm - 7/8"											
	0.129	0.625	0.118					ARG90	0.037(#3)	GY	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.24 / 0.22 / 0.20					VT (N / <1 / >1) 0.32 / 0.29 / 0.26		CR 56	
65	3mm Arg 180 3mm - 7/8"											
	0.118	0.625	0.118					ARG90	0.068(#3)	CL	SS-D	N,G,S
	U-Factor 0.29			SHGC (N / <1 / >1) 0.47 / 0.43 / 0.39					VT (N / <1 / >1) 0.54 / 0.49 / 0.44		CR 55	
66	3mm Arg 340 3mm - 7/8"											
	0.118	0.625	0.118					ARG90	0.028(#3)	CL	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.29 / 0.27 / 0.24					VT (N / <1 / >1) 0.26 / 0.24 / 0.21		CR 56	
67	3mm Arg 270 3mm - 7/8"											
	0.118	0.625	0.118					ARG90	0.037(#3)	CL	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.32 / 0.29 / 0.27					VT (N / <1 / >1) 0.48 / 0.43 / 0.39		CR 56	
68	3mm Arg 366 3mm - 7/8"											
	0.118	0.625	0.117					ARG90	0.022(#3)	CL	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.27 / 0.25 / 0.23					VT (N / <1 / >1) 0.44 / 0.40 / 0.36		CR 56	
69	3mm 270 Arg 3mm BZ - 7/8"											
	0.118	0.625	0.129					ARG90	0.037(#2)	BZ	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.25 / 0.23 / 0.21					VT (N / <1 / >1) 0.35 / 0.32 / 0.29		CR 55	
70	3mm 270 Arg 3mm GY - 7/8"											
	0.118	0.625	0.129					ARG90	0.037(#2)	GY	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.25 / 0.23 / 0.21					VT (N / <1 / >1) 0.32 / 0.29 / 0.26		CR 55	

NFRC 100/200/500 Summary Sheet 3511 Awning

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)					Visible Transmittance (VT)		Condensation Resistance	
				Grids (None / <1 / >=1)					Grids (None / <1 / >=1)			
71	3mm 180 Arg 5mm - 7/8"											
	0.118	0.562	0.185					ARG90	0.068(#2)		CL	SS-D N,G,S
	U-Factor 0.29			SHGC (N / <1 / >1) 0.44 / 0.40 / 0.37					VT (N / <1 / >1) 0.53 / 0.48 / 0.43		CR 46	
72	3mm 340 Arg 5mm - 7/8"											
	0.118	0.562	0.185					ARG90	0.028(#2)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.13 / 0.12 / 0.11					VT (N / <1 / >1) 0.26 / 0.24 / 0.21		CR 57	
73	3mm 270 Arg 5mm - 7/8"											
	0.118	0.562	0.185					ARG90	0.037(#2)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.26 / 0.23 / 0.21					VT (N / <1 / >1) 0.47 / 0.43 / 0.38		CR 57	
74	3mm 366 Arg 5mm - 7/8"											
	0.117	0.562	0.185					ARG90	0.022(#2)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.19 / 0.18 / 0.16					VT (N / <1 / >1) 0.44 / 0.39 / 0.35		CR 58	
75	3mm 366 Arg 180 3mm - 7/8"											
	0.117	0.625	0.118					ARG90	0.022(#2) / 0.068(#3)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.19 / 0.17 / 0.16					VT (N / <1 / >1) 0.42 / 0.38 / 0.34		CR 56	
76	3mm 270 Arg 270 3mm - 7/8"											
	0.118	0.625	0.118					ARG90	0.037(#2) / 0.037(#3)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.24 / 0.22 / 0.20					VT (N / <1 / >1) 0.41 / 0.37 / 0.33		CR 56	
77	4mm Arg 4mm - 7/8"											
	0.154	0.563	0.154					ARG90			CL	SS-D N,G,S
	U-Factor 0.42			SHGC (N / <1 / >1) 0.52 / 0.47 / 0.43					VT (N / <1 / >1) 0.56 / 0.50 / 0.45		CR 45	
78	4mm 180 Arg 4mm - 7/8"											
	0.160	0.563	0.154					ARG90	0.068(#2)		CL	SS-D N,G,S
	U-Factor 0.29			SHGC (N / <1 / >1) 0.43 / 0.39 / 0.36					VT (N / <1 / >1) 0.53 / 0.48 / 0.43		CR 57	
79	4mm 270 Arg 4mm - 7/8"											
	0.157	0.563	0.154					ARG90	0.037(#2)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.25 / 0.23 / 0.21					VT (N / <1 / >1) 0.47 / 0.43 / 0.38		CR 57	
80	4mm 366 Arg 4mm - 7/8"											
	0.153	0.563	0.154					ARG90	0.022(#2)		CL	SS-D N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.19 / 0.18 / 0.16					VT (N / <1 / >1) 0.44 / 0.39 / 0.35		CR 58	

NFRC 100/200/500 Summary Sheet

3511 Awning

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)					Visible Transmittance (VT)		Condensation Resistance	
	Grids (None / <1 / >=1)											
81	4mm SCBZ Arg 4mm - 7/8"											
	0.154	0.563	0.154					ARG90		BZ	SS-D	N,G,S
	U-Factor 0.42			SHGC (N / <1 / >1) 0.25 / 0.23 / 0.21					VT (N / <1 / >1) 0.15 / 0.14 / 0.12		CR 45	
82	4mm SCBZ Arg 270 4mm - 7/8"											
	0.154	0.563	0.157					ARG90	0.037(#3)	BZ	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.12 / 0.11 / 0.10					VT (N / <1 / >1) 0.13 / 0.12 / 0.10		CR 58	
83	4mm Arg 180 4mm - 7/8"											
	0.154	0.563	0.160					ARG90	0.068(#3)	CL	SS-D	N,G,S
	U-Factor 0.29			SHGC (N / <1 / >1) 0.46 / 0.42 / 0.38					VT (N / <1 / >1) 0.53 / 0.48 / 0.43		CR 57	
84	4mm Arg 270 4mm - 7/8"											
	0.154	0.563	0.157					ARG90	0.037(#3)	CL	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.31 / 0.29 / 0.26					VT (N / <1 / >1) 0.47 / 0.43 / 0.38		CR 58	
85	4mm Arg 366 4mm - 7/8"											
	0.154	0.563	0.153					ARG90	0.022(#3)	CL	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.27 / 0.25 / 0.22					VT (N / <1 / >1) 0.44 / 0.39 / 0.35		CR 58	
86	4mm 270 Arg SCBZ 4mm - 7/8"											
	0.157	0.563	0.154					ARG90	0.037(#2)	BZ	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.21 / 0.20 / 0.18					VT (N / <1 / >1) 0.13 / 0.12 / 0.10		CR 58	
87	4mm 366 Arg 180 4mm - 7/8"											
	0.153	0.563	0.160					ARG90	0.022(#2) / 0.068(#3)	CL	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.19 / 0.17 / 0.16					VT (N / <1 / >1) 0.42 / 0.38 / 0.34		CR 59	
88	4mm 270 Arg 270 4mm - 7/8"											
	0.157	0.563	0.157					ARG90	0.037(#2) / 0.037(#3)	CL	SS-D	N,G,S
	U-Factor 0.28			SHGC (N / <1 / >1) 0.23 / 0.21 / 0.19					VT (N / <1 / >1) 0.40 / 0.36 / 0.32		CR 59	
89	2mm 270 Arg 2mm Arg 2mm - 7/8"											
	0.087	0.297	0.087	0.297	0.087			ARG90	0.037(#2)	CL	SS-D	N
	U-Factor 0.26			SHGC (N) 0.24					VT (N) 0.44		CR 61	
90	2mm 270 Arg 2mm Arg 2mm - 7/8"											
	0.087	0.297	0.087	0.297	0.087			ARG90	0.037(#2)	CL	SS-D	G,S
	U-Factor 0.27			SHGC (<1 / >1) 0.22 / 0.20					VT (<1 / >1) 0.40 / 0.36		CR 61	

NFRC 100/200/500 Summary Sheet
3511 Awning

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	
91	2mm 366 Arg 2mm 180 Arg 2mm i89 - 7/8"											
	0.087	0.297	0.087	0.297	0.087			ARG90	0.022(#2) / 0.068(#4) / 0.149(#6)	CL	SS-D	N
	U-Factor 0.21			SHGC (N) 0.17					VT (N) 0.38		CR 55	
92	2mm 366 Arg 2mm 180 Arg 2mm i89 - 7/8"											
	0.087	0.297	0.087	0.297	0.087			ARG90	0.022(#2) / 0.068(#4) / 0.149(#6)	CL	SS-D	G,S
	U-Factor 0.21			SHGC (<1 / >1) 0.16 / 0.14					VT (<1 / >1) 0.35 / 0.31		CR 55	

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 February 1, 2020.

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:

Emmett T. Houlihan
Simulation Technician
NFRC Certified Simulator

Andrew C. Walczak
Simulations Project Manager
Simulator-In-Responsible-Charge

ETH: acw/ppk
F3148.01-201-45

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix A: Drawings and Bills of Material (18)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
01-R0	02/01/16	NA	Original report issue. Work requested by Mr. Blake Doll of Coeur d'Alene Window Company.

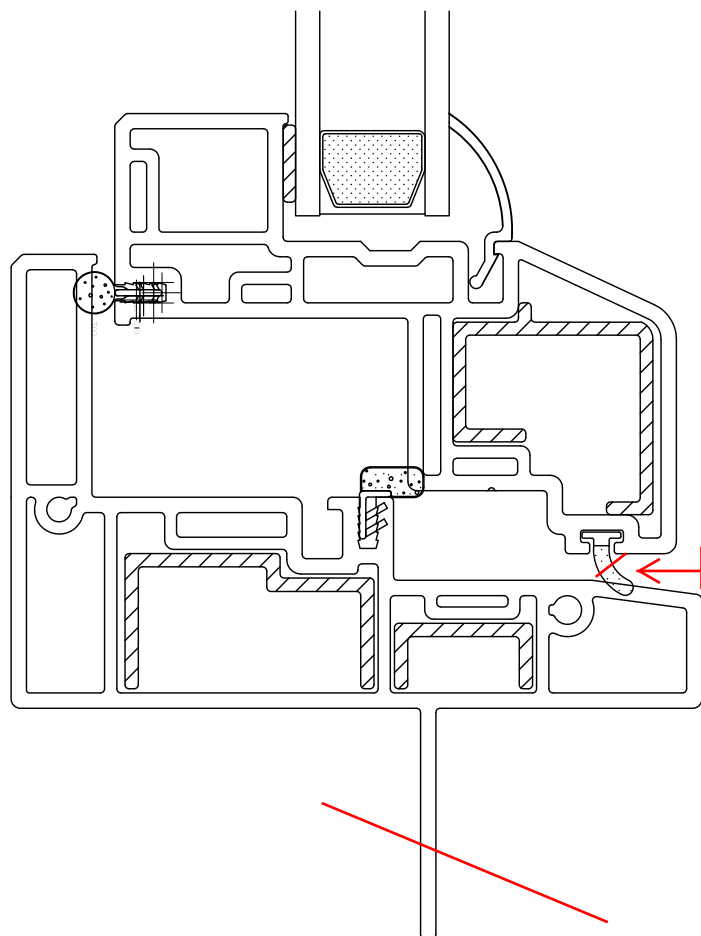


All drawings and Bills of Material used to simulate this product are enclosed in this Appendix

Appendix A

F3148.01-201-45

3511 Awning	
Part	Part #
Casement Main Frame	KE2010
Casement Sash	KE2011
Glazing Bead	KE1994
Setting Block	6152
Setting Block Glue	IPS-56-1021
Glazing Tape	VG1216W-FC515
Handle/Cover Kit	OP08-7900-00
Sash Bracket Assy	OP05-8000
Track Assy (13" facemount)	OP05-8100
Dual Arm Operator	OP08-7504
14" Hinge Arm Podwer LH	HG06-7554
14" Hinge Arm Podwer RH	HG06-7555
14" Hinge Track H SS Left Hand	HG06-7564
14" Hinge Track H SS Right Hand	HG06-7565
Lock Handle	LH18-7524-00
8-32x1/2" Trilobe Truss Head Screw	M13026
Plastic Handle Plate	G2-HNDLPLT-03
Lock Bar Assy 47.9" 4 Pin	LB10-7512
G5 Guide Housing 1005	LB05-1005-29
G6 Nylon Striker 1013	LB06-1013-50
Weather Stripping	E51218KN3020
Weather Stripping	U3532-00000
Weather Stripping	30018745WHGF



DWG: 30018745WHGF

 Architectural Testing	Report #:	F3148.01-201-45
	Date:	01/22/2016
	Verified by:	

CYCLOID
DESIGNS



DWG: 310-L2

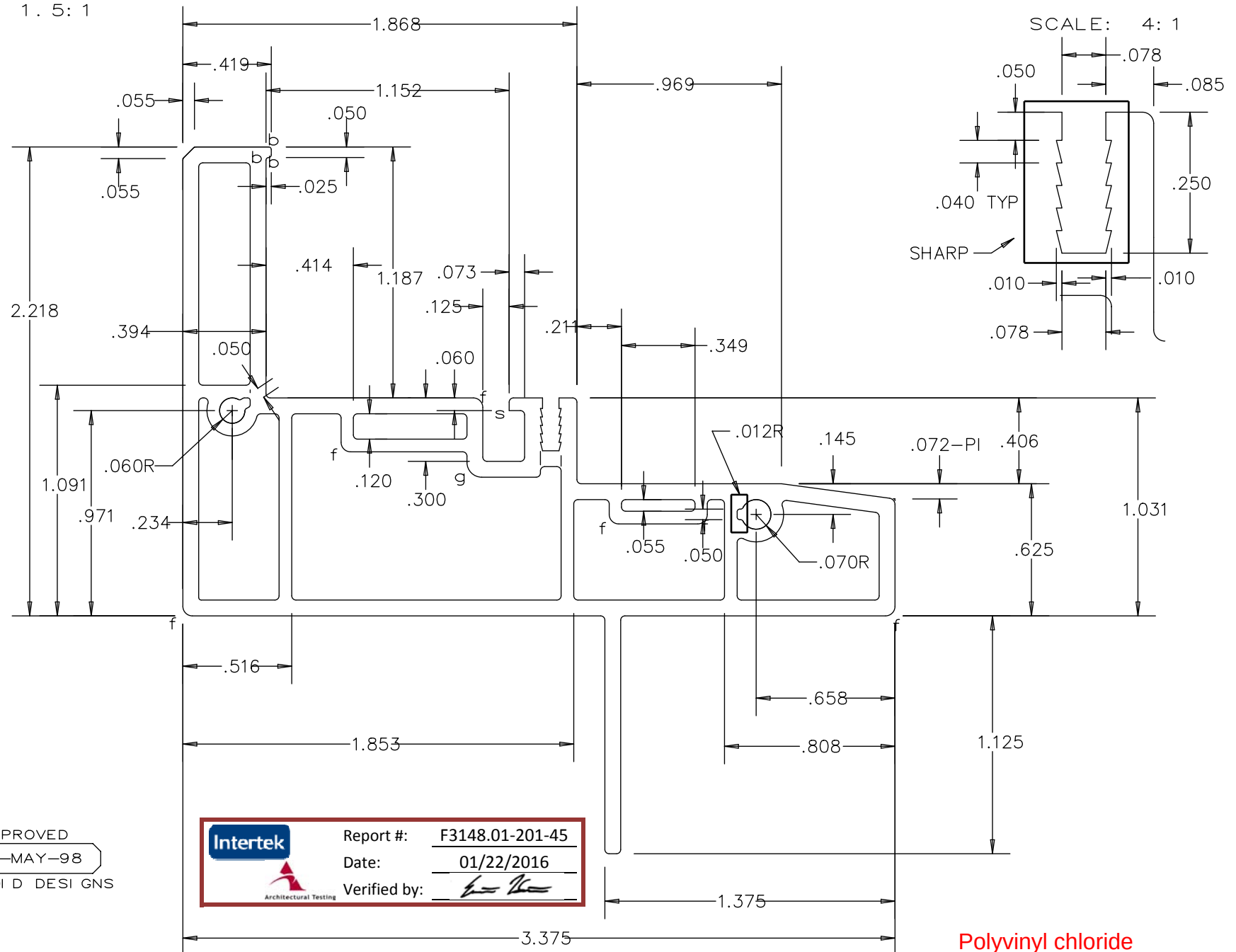
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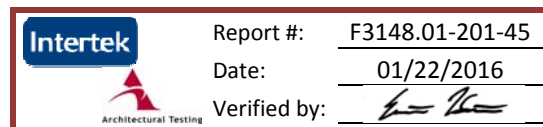
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EXTERNAL WALL: X.XXX
INTERNAL WALL: X.XXX
CORNER TYP: X.XXXR
WEIGHT: X.XXX LB/FT

a=0. 006R
b=0. 01 2R
c=0. 01 5R
d=0. 020R
e=0. 030R
f =0. 045R
g=0. 060R
s=SHARP



APPROVED
23-MAY-98
CYCLOID DESIGNS



Polyvinyl chloride

CYCLOID
DESIGNS

DWG: 310-D1

DATE: 07-MAY-98

TI TLE: CASEMENT FRAME

KE2010

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KI NG EXTRUSI ONS LTD
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ALL RI GHTS RESERVED

EXTERNAL WALL: 0.075
INTERNAL WALL: 0.060
CORNER TYP: 0.020R
WEIGHT: 0.746 LB/FT

SCALE: 2: 1

a=0. 006R
b=0. 012R
c=0. 015R
d=0. 020R
e=0. 030R
f=0. 045R
g=0. 060R
s=SHARP
h=0. 187R

Intertek



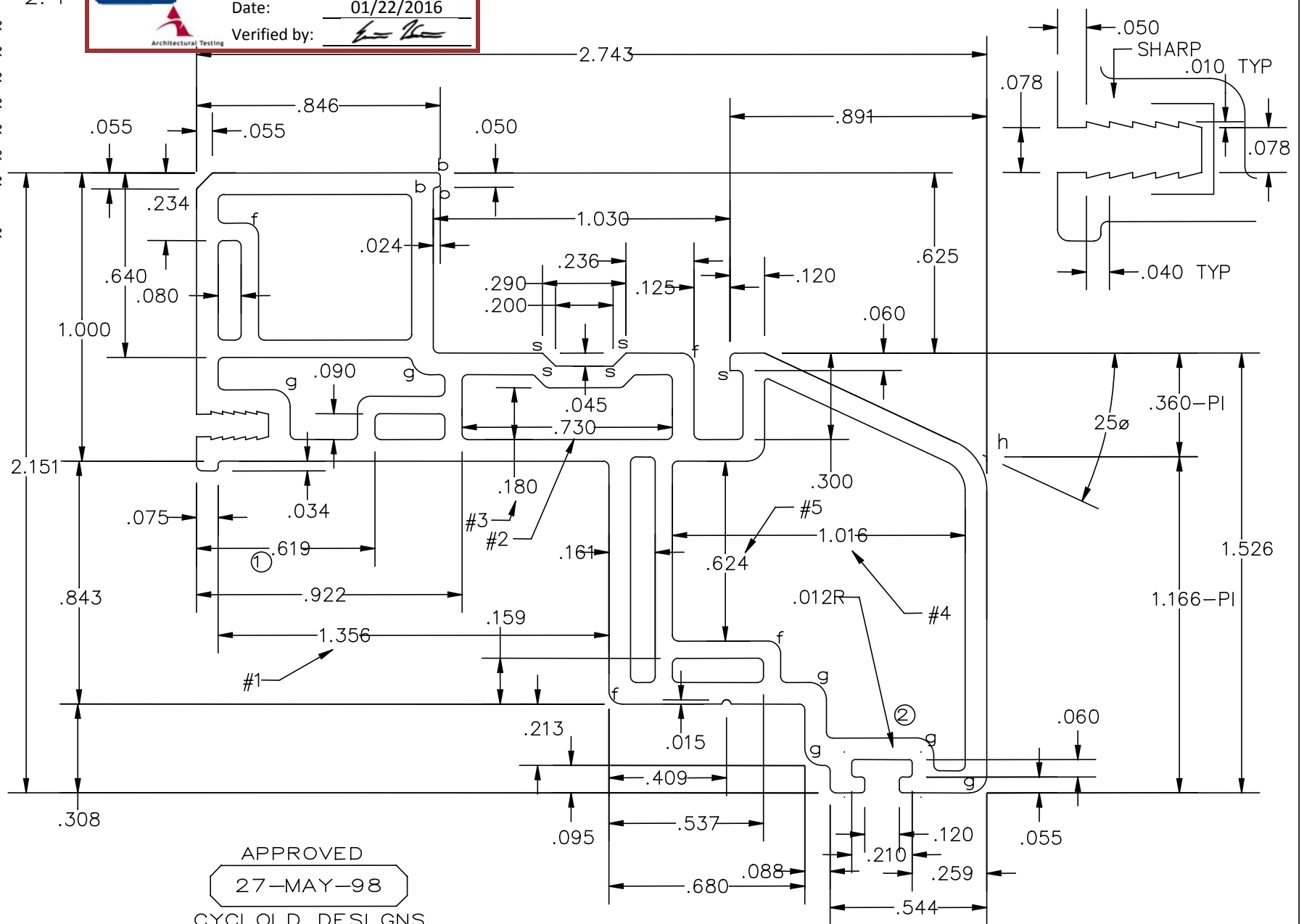
Report #: F3148.01-201-45

Date: 01/22/2016

Verified by:

[Signature]

SCALE: 4: 1



APPROVED
27-MAY-98
CYCLOID DESIGNS

Polyvinyl chloride

2	07-16-98	WALL CORRECTED; WT WAS .599
1	07-16-98	DIMENSION CORRECTED
REV	DATE	REMARKS

CYCLOID DESIGNS



DWG: 310-D2

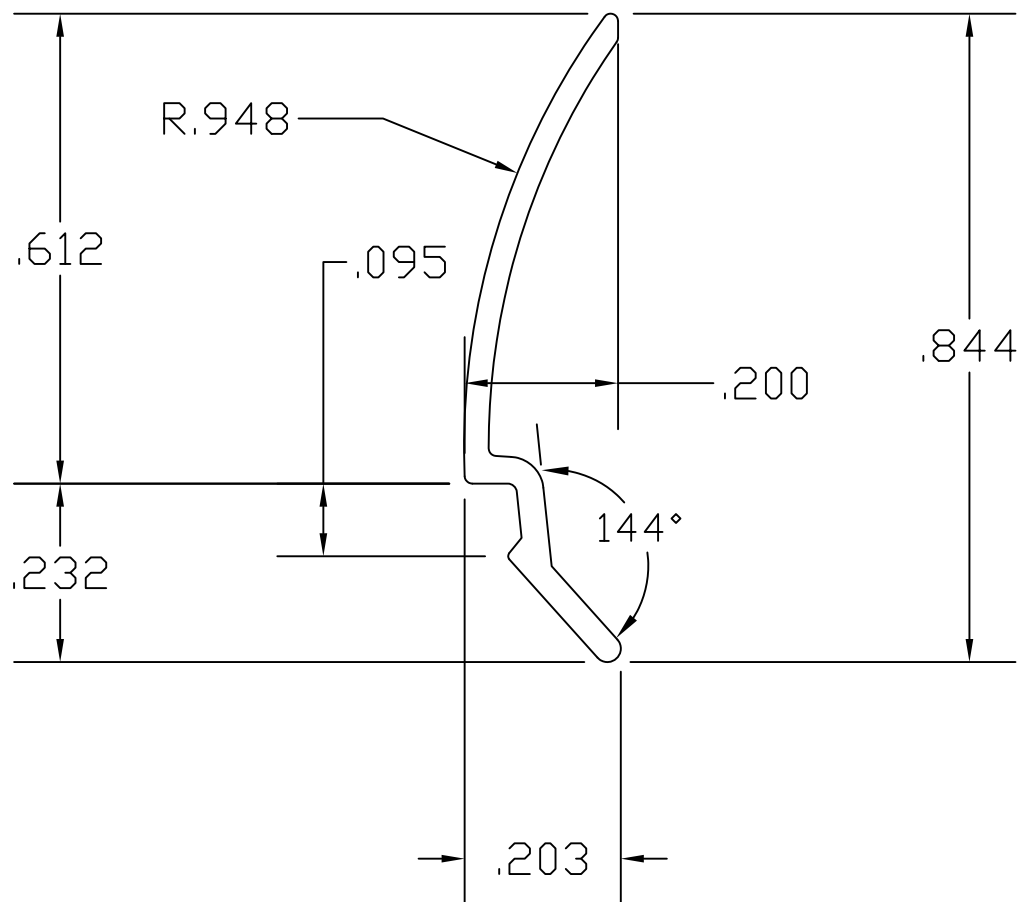
DATE: 23-MAY-98

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EXTERNAL WALL: 0.075
INTERNAL WALL: 0.060
CORNER TYP: 0.020R
WEIGHT: 0.603 LB/FT

TITLE: CASEMENT SASH

KE2011



Customer Approval
By: _____
Date: _____

	Report #:	F3148.01-201-45
	Date:	01/22/2016
	Verified by:	

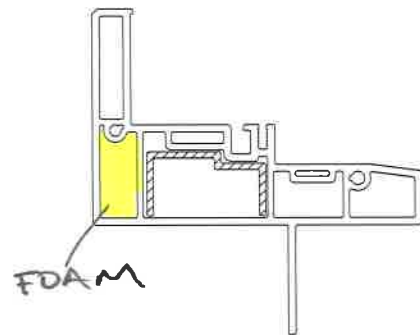
Polyvinyl chloride

REV #	DATE	REVISION NOTES

External Walls = .065 Internal Walls = .045		Layout Name: Base Drawn BY: gmc SCALE: 4:1	DATE: 4-25-08 ACAD#: R1994 Bead	Copyright © 2008 ROYAL GROUP, INC.	100A Royal Group Crescent Woodbridge, Ontario Canada L4L 8Z7 All Rights Reserved
CUSTOMER: RSE TITLE: Clam Shell Bead		PROJECT: Sierra Classic SlimLine AREA = .0323 WT/FT = .020		NOTICE: THE INFORMATION CONTAINED HEREON IS THE PROPERTY OF ROYAL GROUP, INC. IT'S CONTENTS ARE CONFIDENTIAL AND MUST NOT BE COPIED OR SUBMITTED TO OUSIDE PARTIES FOR USE OR EXAMINATION WITHOUT THE WRITTEN PERMISSION OF ROYAL.	

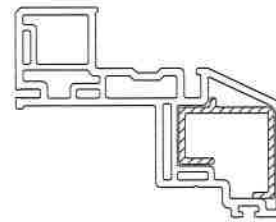


NO FOAM OR
REINFORCEMENT
FOR 3410 PCL

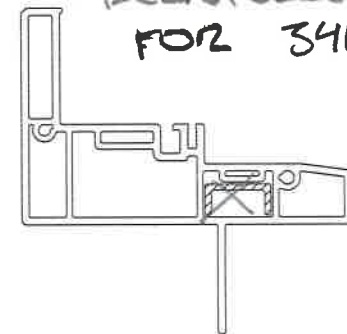


Polyurethane
Foam Insulation

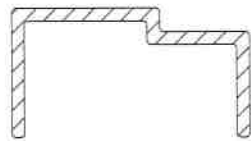
310-A1



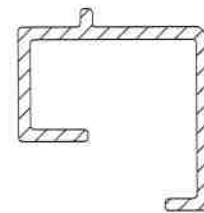
310-A2



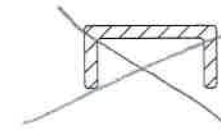
310-A3



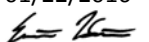
$I_{x-x} = 0.005 \text{ in}^4$
 $I_{y-y} = 0.033 \text{ in}^4$
 $S_x = 0.052 \text{ in}^3$
 $Zeta = 3.55^\circ$
 $c = 0.631$
 AREA 0.156



$I_{x-x} = 0.016 \text{ in}^4$
 $I_{y-y} = 0.025 \text{ in}^4$
 $S_x = 0.047 \text{ in}^3$
 $Zeta = 25.9^\circ$
 $c = 0.527$
 AREA 0.181
 WT/FT 0.217



AREA 0.077
 WT/FT 0.092

 Architectural Testing	Report #: F3148.01-201-45
	Date: 01/22/2016
	Verified by: 

CYCLOID
DESIGNS



DWG: 310-A0

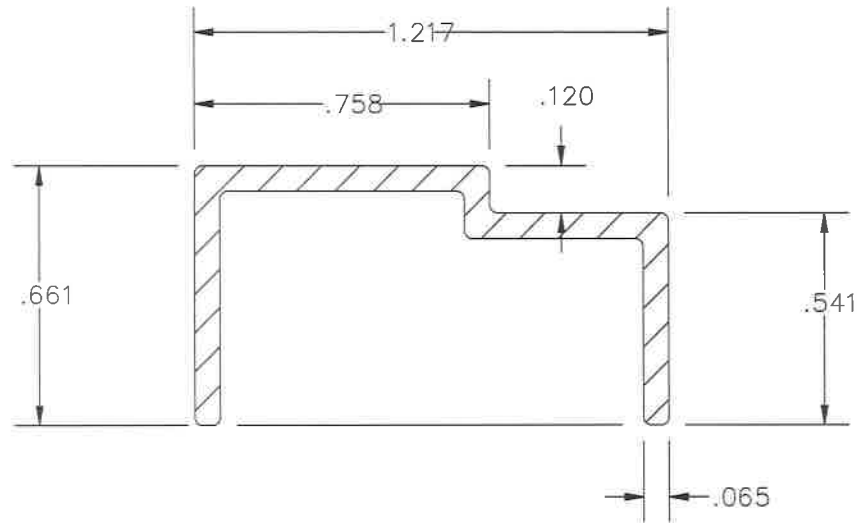
DATE: 23-MAY-98

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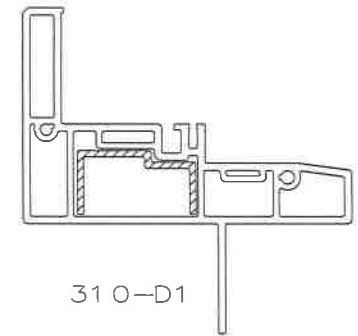
TYPICAL WALL: X.XXX
 CORNER TYP: X.XXX
 AREA: X.XXX IN²
 WEIGHT: X.XXX LB/FT
 ALLOY: 6063T6

TITLE: REINFORCING

SCALE: 2: 1



SCALE: 1/2: 1



PHYSICAL PROPERTIES

$I_{x-x} = 0.005 \text{ in}^4$
 $I_{y-y} = 0.033 \text{ in}^4$
 $S_y = 0.052 \text{ in}^3$
 $Zeta = 3.55^\circ$
 $c = 0.631$

Intertek

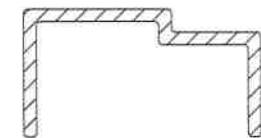


Report #: F3148.01-201-45

Date: 01/22/2016

Verified by: *[Signature]*

Aluminum Alloy
(Mill Finish)



ACTUAL SIZE

CYCLOID
DESIGNS



DWG: 310-A1

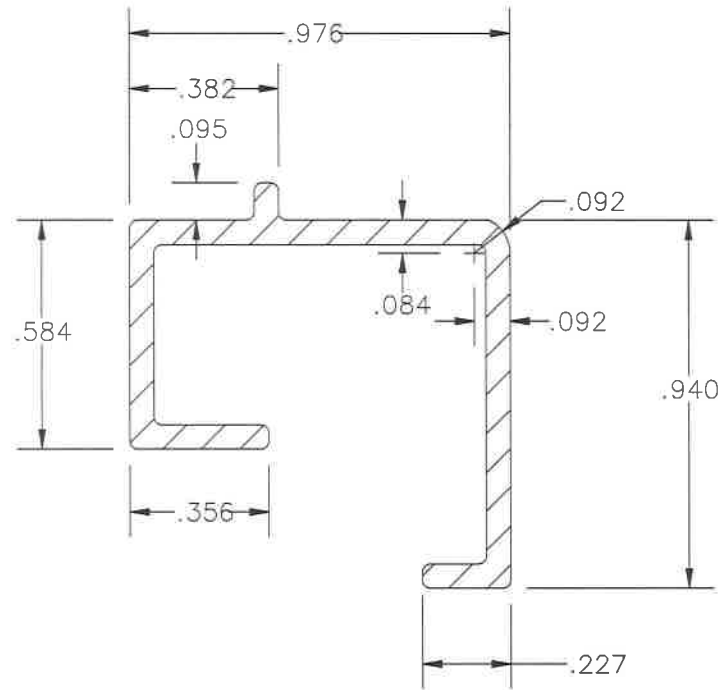
DATE: 25-AUG-98

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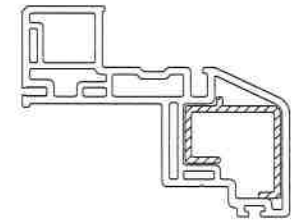
TYPICAL WALL: 0.065
CORNER TYP: 0.020
AREA: 0.156 IN²
WEIGHT: 0.187 LB/FT
ALLOY: 6063T6

TITLE: FRAME REINFORCING

SCALE: 2: 1



SCALE: 1 /2: 1



310-D2

PHYSICAL PROPERTIES

$$I_{x-x} = 0.016 \text{ in}^4$$

$$I_{y-y} = 0.025 \text{ in}^4$$

$$S_y = 0.047 \text{ in}^3$$

$$\text{Zeta} = 25.9^\circ$$

$$c = 0.527$$

Intertek

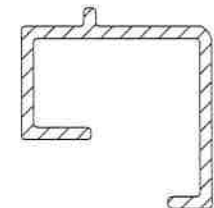


Report #: F3148.01-201-45

Date: 01/22/2016

Verified by: *[Signature]*

**Aluminum Alloy
(Mill Finish)**



ACTUAL SIZE

CYCLOID
DESIGNS



DWG: 310-A2

DATE: 25-AUG-98

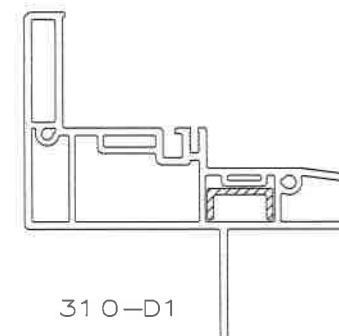
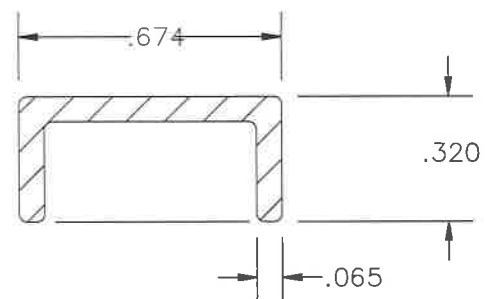
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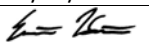
TYPICAL WALL: 0.062
CORNER TYP: 0.020
AREA: 0.181 IN²
WEIGHT: 0.217 LB/FT
ALLOY: 6063T6

TITLE: SASH REINFORCEMENT

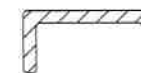
SCALE: 2: 1

SCALE: 1/2: 1



  Architectural Testing	Report #:	F3148.01-201-45
	Date:	01/22/2016
	Verified by:	

Aluminum Alloy
(Mill Finish)



ACTUAL SIZE

CYCLOID
DESIGNS



DWG: 325-A3

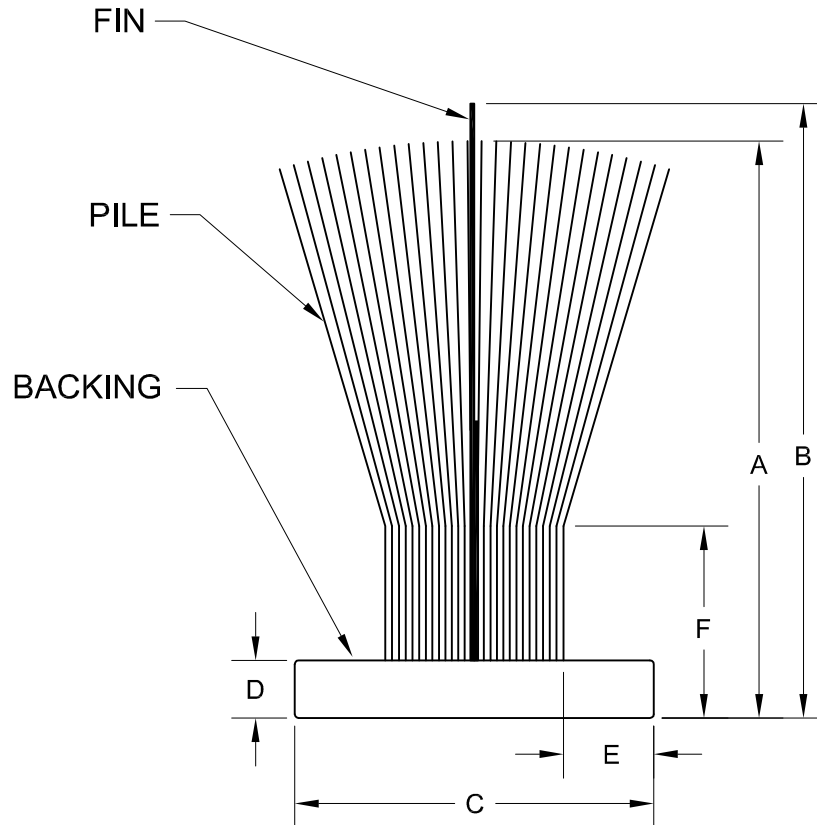
DATE: 25-AUG-98

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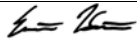
TYPICAL WALL: 0.065
CORNER TYP: 0.020
AREA: 0.077 IN²
WEIGHT: 0.092 LB/FT
ALLOY: 6063T5

TITLE: HINGE REINFORCING: FRAME

GLIDE FIT 187 FLATBACK



Ref	Description	Dimension	Tolerance
A	Pile Height	.300	+.010 -.005
B	Fin Height	.320	+/- .010
C	Backing Width	.187	+/- .005
D	Backing Thickness	.030	+/- .003
E	Centering	.040 MIN	REFERENCE
F	GlideFit	.100	REFERENCE

	Report #:	F3148.01-201-45
	Date:	01/22/2016
	Verified by:	

Mohair

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GMS0914

DATE:	REVISION:	TITLE: GLIDE FIT 187 FLATBACK		DIMENSIONS ARE IN INCHES UNLESS INDICATED OTHERWISE		 Amesbury Truth Engineered Solutions. Trusted Results. 159 WALKER RD. STATESVILLE NC 28625	
				TOLERANCES-UNLESS INDICATED OTHERWISE			
		DRAWN: JM	CHECKED:	Fractions ±1/64"	Decimals .X ±.020"		
		DATE: 1/15/16	SCALE: 10:1	Angles ±0.5°	.XX ±.010" .XXX ±.005"		
		MATERIAL Polypropylene					DRAWING/PART No. 30018745WHGF

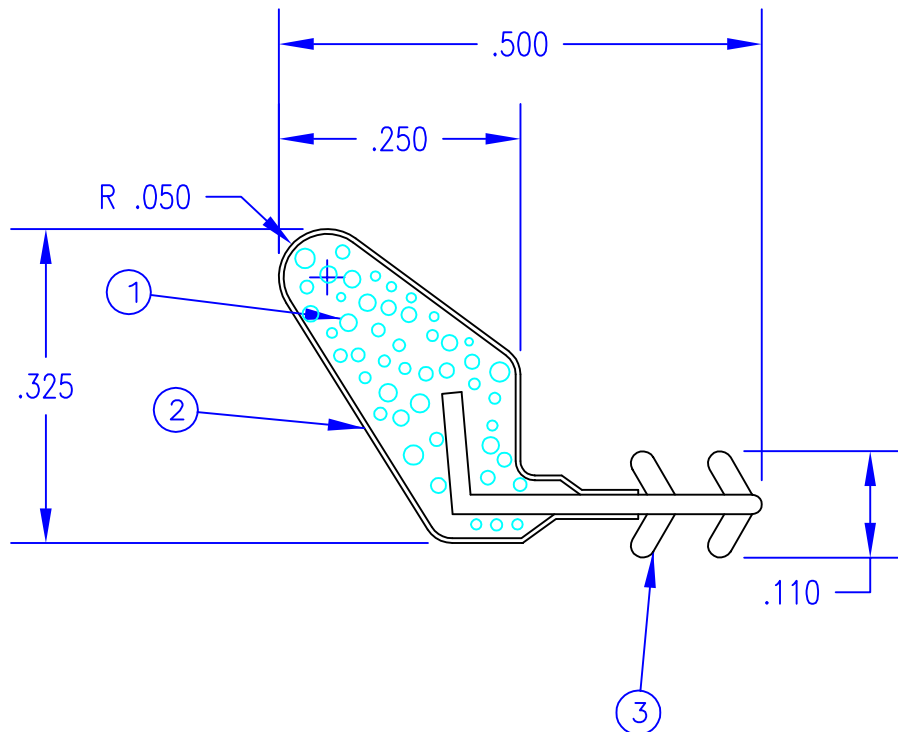


ROCHESTER DIVISION PRODUCT PRINT

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Revisions

Lev	Description	Date	By
(A)	THIS PART SUPERSEDES UC302671	6/30/04	EJL
(B)			
(C)			



Foam
Weatherstripping/
Polyvinyl chloride



Report #: F3148.01-201-45
Date: 01/22/2016
Verified by: *[Signature]*

DO NOT SCALE THIS DRAWING
UNLESS PRINTER IS QUALIFIED

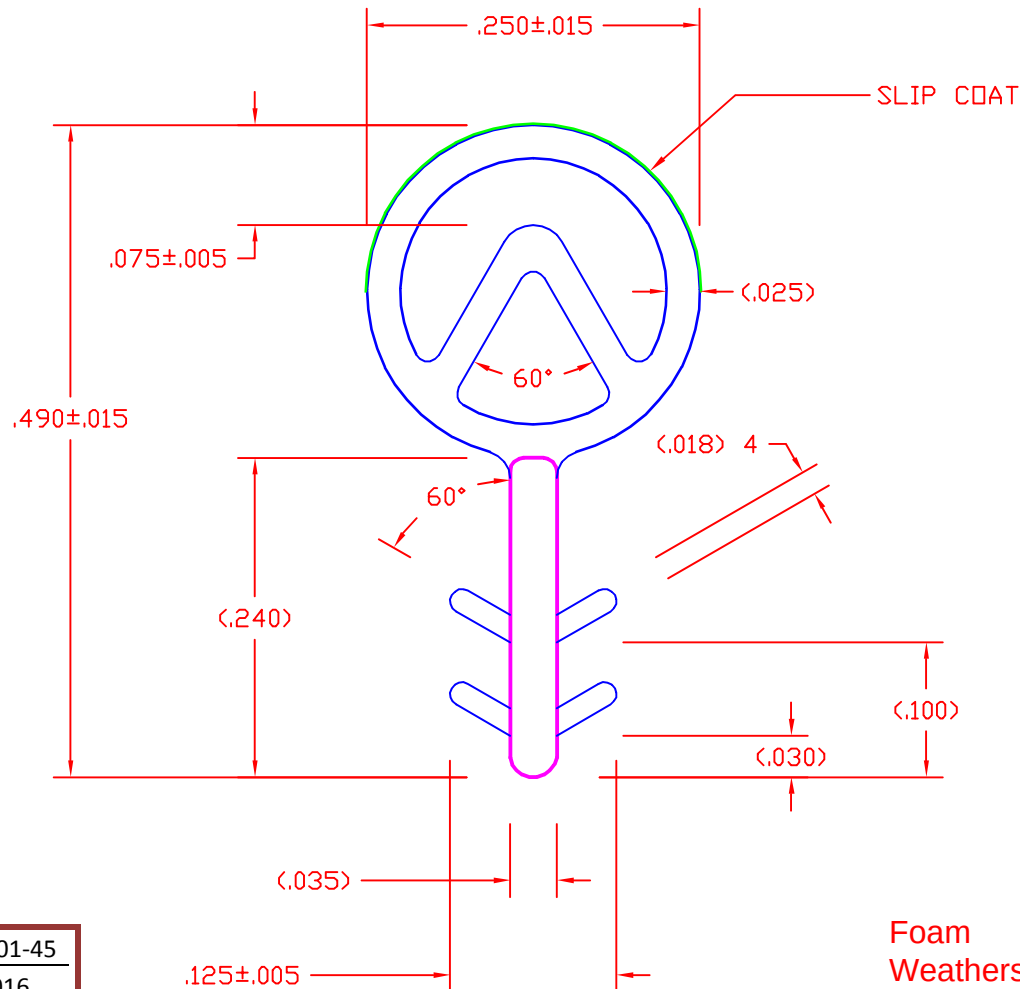
DE0021FM.dwg

DECIMAL DIMENSIONS ± _____ UNLESS OTHERWISE SPECIFIED mm. ☒ Inch ☒	(4)		
	(3)	SEE B.O.M.	INSERT PC20819
	(2)	SEE B.O.M.	PE LINER
	(1)	SEE B.O.M.	URETHANE FOAM
Date: 3/2/01	Sheet 1 of 1	Item	R.M. Number
Drawn Scale: 5 : 1	Approved:	Drawn: ED LEE	Title: QEZD-250
Cad File No. UC26711A	Part No. U35__-_____	Dwg. No. UC302671	

2

1

REV	DESCRIPTION	ECR #



	Report #:	F3148.01-201-45
	Date:	01/22/2016
	Verified by:	

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DRAWN **CAB 02/01/12**

CHECKED

ENGINEER

MAT'L: **POLYPROPYLENE/TPE**

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UCx DIVISION

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FARMINGTON, NY 14425
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WWW.ULTRAFAB.COM

TITLE **E512**

SIZE DWG NO REV

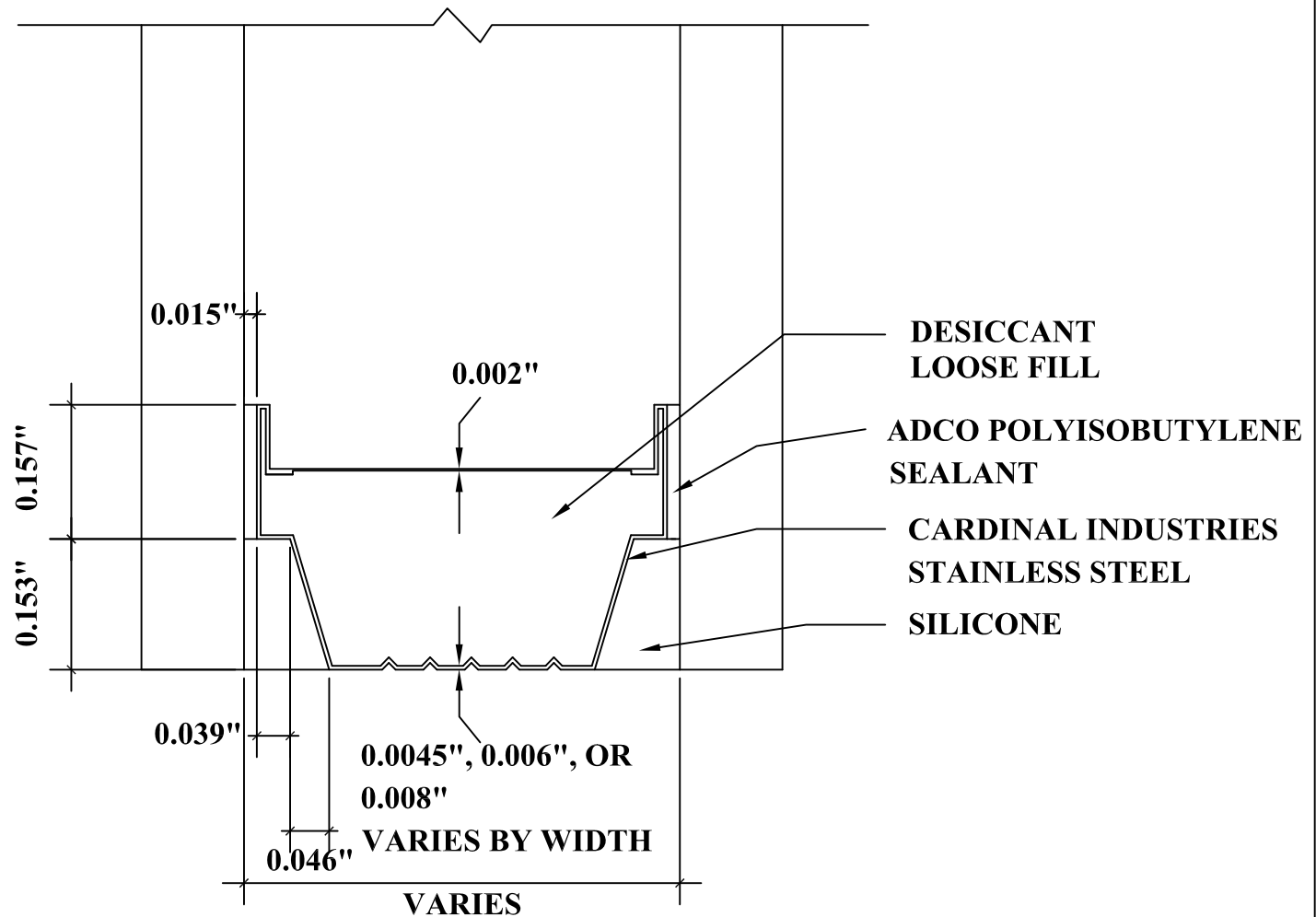
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SHEET

OF

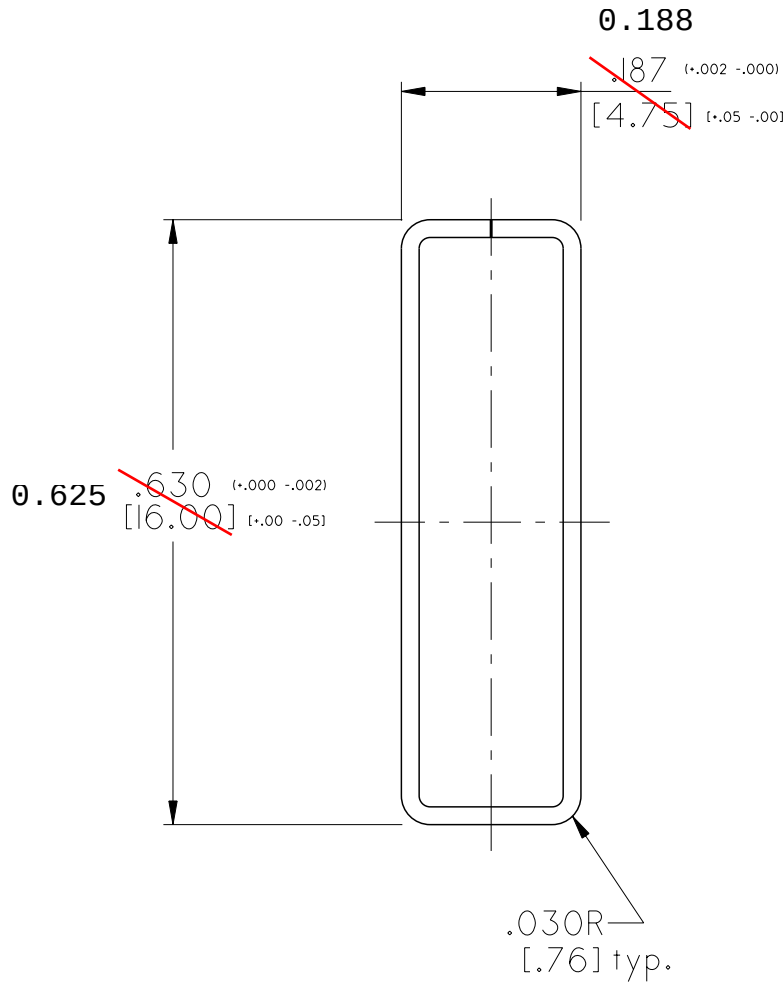
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1



DETAIL FOR THERMAL MODELING OF
CARDINAL ENDUR SPACER (SS-D)

NOTE: ALL DIMENSIONS IN [] BRACKETS ARE MM UNLESS NOTED



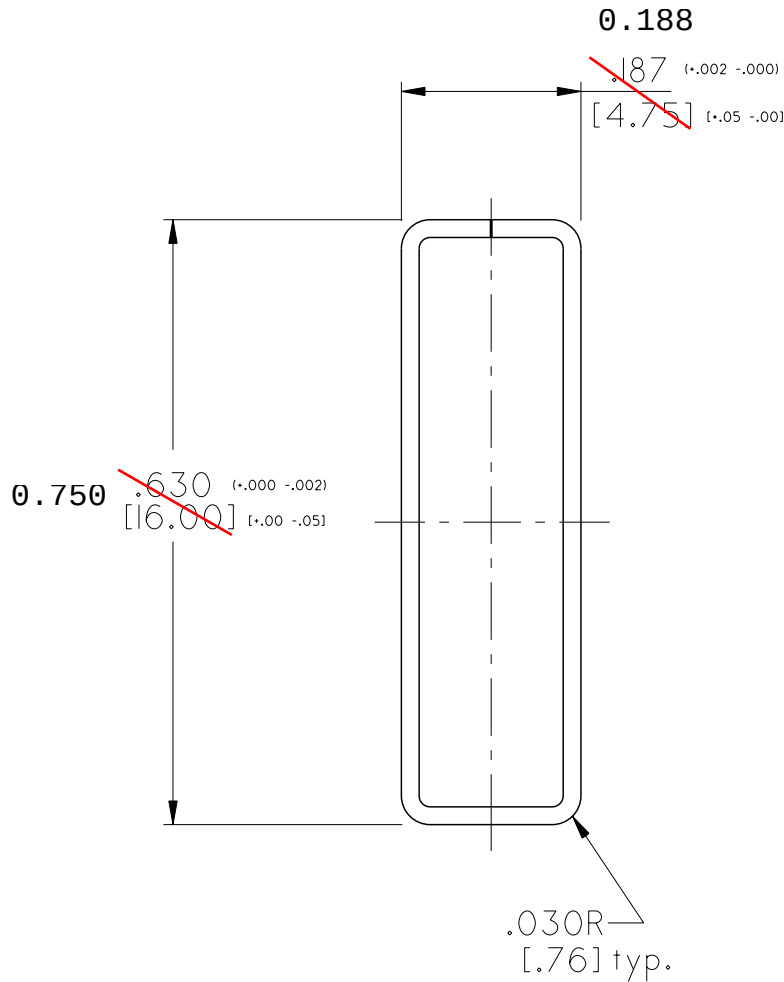
ACTUAL PART
SIZE

	Report #:	F3148.01-201-45
	Date:	01/22/2016
	Verified by:	<i>[Signature]</i>

FILENAME:.. \MB\0185\316X58

DATE	SYM.	REVISION		AUTH.	DRN.	CK.
			INFORMATION SHOWN ON THIS PRINT IS PROPRIETARY. THIS DRAWING IS NOT TO BE REPRODUCED EITHER WHOLLY OR IN PART WITHOUT THE EXPRESS PERMISSION OF ALLMETAL INC.			
TOLERANCES EXCEPT AS NOTED		TITLE 3/16 x 5/8 MB (Muntin Bar)			DRN. BY <i>G. Matthews</i>	
DECIMAL INCHES .XX .XXX .XXXX ± .01 .005 .0002		MATL. .0185 [.47mm] 3105-H24 Aluminum		FINISH ALL BUT ANODIZED		CK. BY
DECIMAL MM .XX .XXX ± .13 .06		SCALE 5:1		DATE 6/15/99		APPR. BY
ANGULAR ± 1°		DWG. NO. 1020101018XX140		S.O. NO.		

NOTE: ALL DIMENSIONS IN [] BRACKETS ARE MM UNLESS NOTED



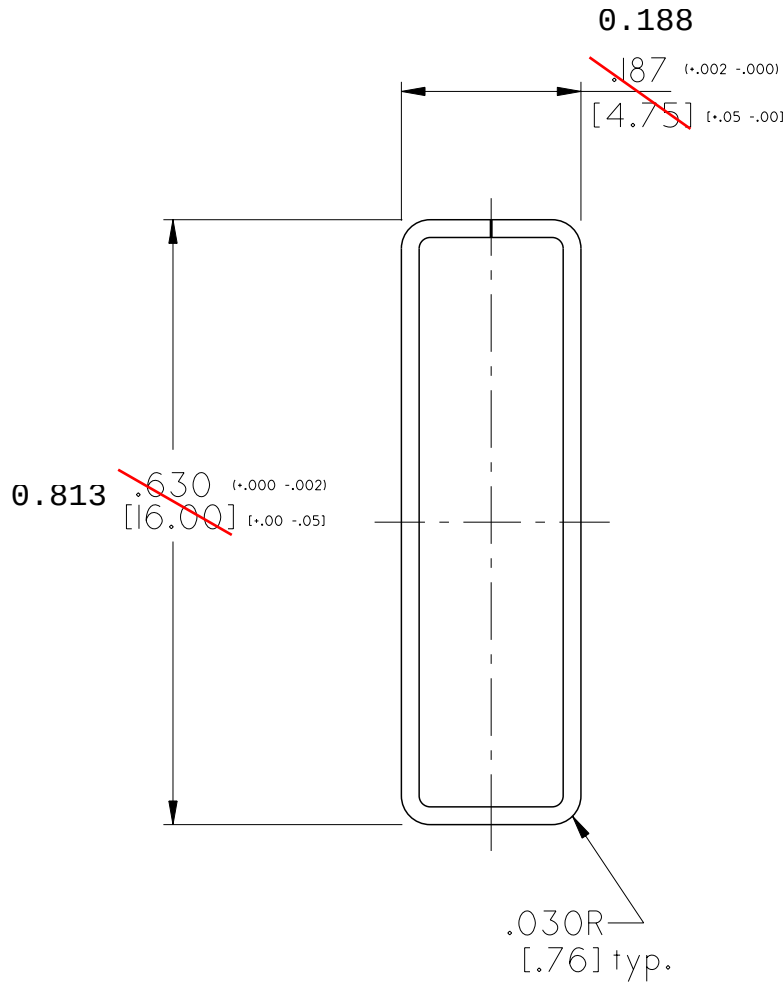
ACTUAL PART
SIZE

 Architectural Testing	Report #:	F3148.01-201-45
	Date:	01/22/2016
	Verified by:	

FILENAME:.. \MB\0185\316X58

DATE	SYM.	REVISION		AUTH.	DRN.	CK.
			INFORMATION SHOWN ON THIS PRINT IS PROPRIETARY. THIS DRAWING IS NOT TO BE REPRODUCED EITHER WHOLLY OR IN PART WITHOUT THE EXPRESS PERMISSION OF ALLMETAL INC.			
TOLERANCES EXCEPT AS NOTED		TITLE 3/16 x 5/8 MB (Muntin Bar)			DRN. BY <i>G. Matthews</i>	
DECIMAL INCHES .XX .XXX .XXXX ± .01 .005 .0002		MATL. .0185 [.47mm] 3105-H24 Aluminum		FINISH ALL BUT ANODIZED		CK. BY
DECIMAL MM .XX .XXX ± .13 .06		SCALE 5:1		DATE 6/15/99		APPR. BY
ANGULAR ± 1°		DWG. NO. 1020101018XX140		S.O. NO.		

NOTE: ALL DIMENSIONS IN [] BRACKETS ARE MM UNLESS NOTED



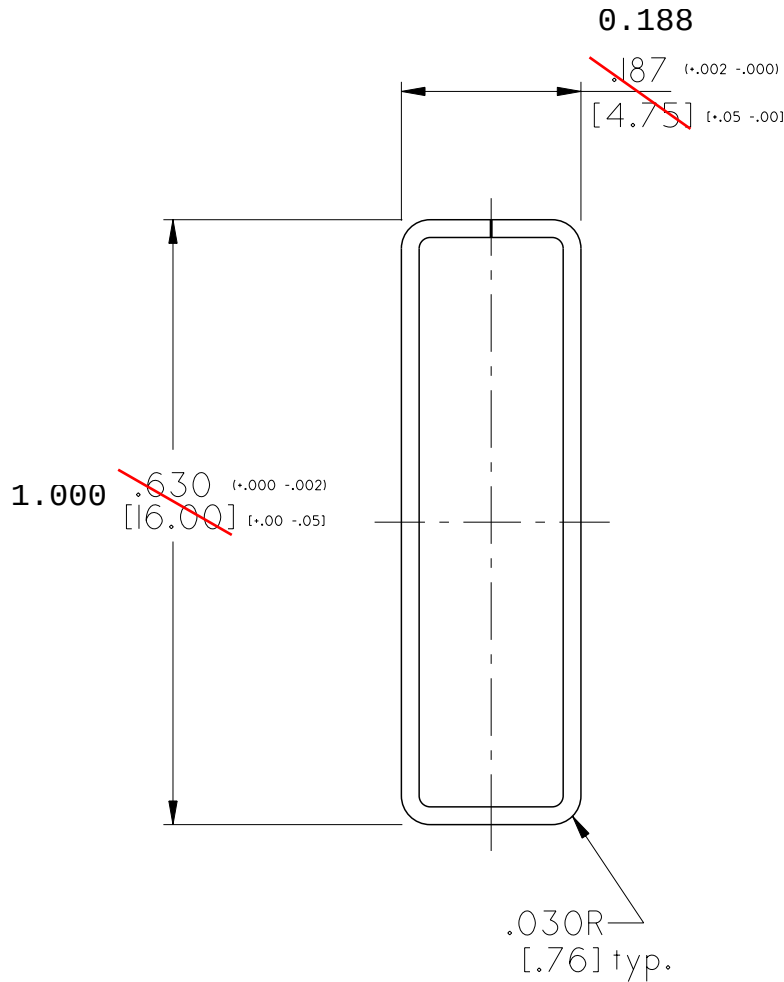
ACTUAL PART
SIZE

 Architectural Testing	Report #:	F3148.01-201-45
	Date:	01/22/2016
	Verified by:	

FILENAME:.. \MB\0185\316X58

DATE	SYM.	REVISION		AUTH.	DRN.	CK.
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TOLERANCES EXCEPT AS NOTED		TITLE 3/16 x 5/8 MB (Muntin Bar)			DRN. BY <i>G. Matthews</i>	
DECIMAL INCHES .XX .XXX .XXXX ± .01 .005 .0002		MATL. .0185 [.47mm] 3105-H24 Aluminum		FINISH ALL BUT ANODIZED		CK. BY
DECIMAL MM .XX .XXX ± .13 .06		SCALE 5:1		DATE 6/15/99		APPR. BY
ANGULAR ± 1°		DWG. NO. 1020101018XX140		S.O. NO.		

NOTE: ALL DIMENSIONS IN [] BRACKETS ARE MM UNLESS NOTED



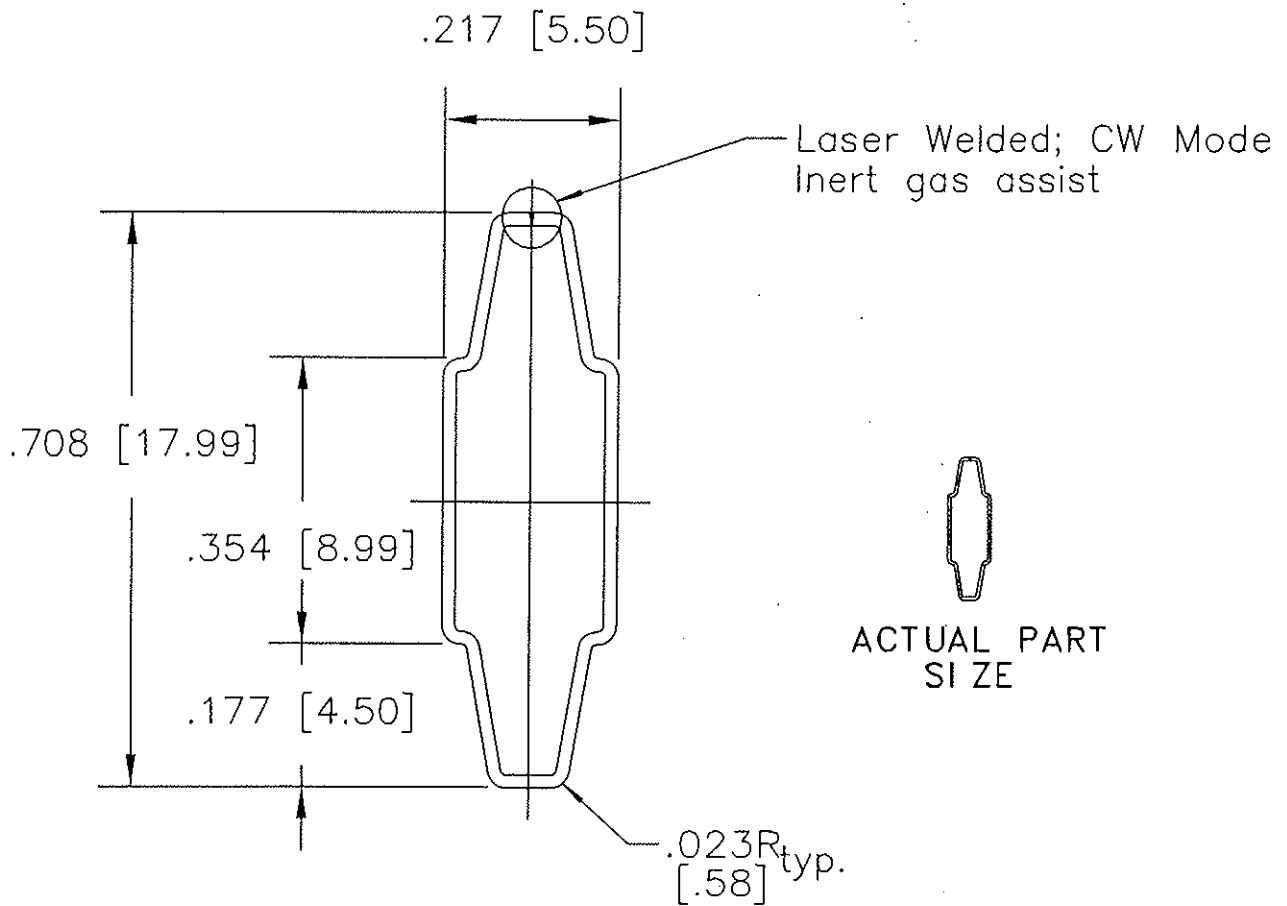
ACTUAL PART
SIZE

	Report #:	F3148.01-201-45
	Date:	01/22/2016
	Verified by:	

FILENAME:.. \MB\0185\316X58

DATE	SYM.	REVISION		AUTH.	DRN.	CK.
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TOLERANCES EXCEPT AS NOTED		TITLE 3/16 x 5/8 MB (Muntin Bar)			DRN. BY <i>G. Matthews</i>	
DECIMAL INCHES .XX .XXX .XXXX ± .01 .005 .0002		MATL. .0185 [.47mm] 3105-H24 Aluminum		FINISH ALL BUT ANODIZED		CK. BY
DECIMAL MM .XX .XXX ± .13 .06		SCALE 5:1		DATE 6/15/99		APPR. BY
ANGULAR ± 1°		DWG. NO. 1020101018XX140		S.O. NO.		

NOTE: ALL DIMENSIONS IN [] BRACKETS ARE MM UNLESS NOTED



	Report #:	F3148.01-201-45
	Date:	01/22/2016
	Verified by:	<i>[Signature]</i>

4/17/97		Weld note changed, Title block changed		GRM	
12/9/92		Initial Release		GRM	
DATE	SYM.	REVISION	AUTH.	DRN.	CK.
		INFORMATION SHOWN ON THIS PRINT IS PROPRIETARY. THIS DRAWING IS NOT TO BE REPRODUCED EITHER WHOLLY OR IN PART WITHOUT THE EXPRESS PERMISSION OF ALLMETAL INC.			
TOLERANCES EXCEPT AS NOTED DECIMAL INCHES .XX .XXX .XXXX ± .01 .005 .0002 DECIMAL MM .XX .XXX ± .13 .06 ANGULAR ± 1°		TITLE 5.5 x 18mm Contour Muntin Bar (CMB) MATL. .016" [.41mm] 3105 Aluminum		DRN. BY <i>G. Matthews</i> CK. BY APPR. BY S.O. NO.	
SCALE 4:1		DATE 4/17/97		DWG. NO. 1020301010XX255	

FILENAME: CMB5518J