Architectural Testing

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

(Revised)

Rendered to:
UNITED STATES ALUMINUM CORPORATION

SERIES/MODEL:
7200/7300 Outswing Casement

Report Number:	**96062.04-116-45**
Original Report Date:	**01/18/10**
Expiration Date:	**12/10/13**
Revised Report Date:	**03/02/11**

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COMPUTER SIMULATION REPORT
(Revised)

Rendered to:
UNITED STATES ALUMINUM CORPORATION
200 Singleton Drive
Waxahachie, Texas 75165

Report Number:	96062.04-116-45
Simulation Date:	12/10/09
Original Report Date:	01/18/10
Expiration Date:	12/10/13
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Project Summary:

Architectural Testing, Inc. 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 below.

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

Standards:

NFRC 100-2010:	*Procedure for Determining Fenestration Product U-Factors*
NFRC 200-2010:	*Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence*
NFRC 500-2010:	*Procedure for Determining Fenestration Product Condensation Resistance Values*

Software:

Frame and Edge Modeling:	THERM 5.2.14
Center-of-Glass Modeling:	WINDOW 5.2.17
Total Product Calculations:	WINDOW 5.2.17
Spectral Data Library:	18.0

Simulations Specimen Description:

Series/Model:	7200/7300 Outswing Casement
Type:	Casement , Single Vent
Frame Material:	AT Aluminum w/ Thermal Breaks - All Members
Sash Material:	AT Aluminum w/ Thermal Breaks - All Members
Standard Size:	600mm x 1500mm

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Technical Interpretations:

None

Modeling Assumptions:

1) To prevent air infiltration, tape was applied to all interior sash crack locations.
2) The 7200 Series and 7300 Series were grouped per NFRC 100-2010 section 4.2.4.5.B.i.

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 5.2. 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.

(7200 Series)	No Dividers	Dividers < 1	Dividers > 1
SHGC0	0.019618	0.021713	0.023703
SHGC1	0.683810	0.621382	0.562074
VT0	0.000000	0.000000	0.000000
VT1	0.664192	0.599669	0.538372

SHGC = SHGC0 + SHGCc (SHGC1 - SHGC0)
VT = VT0 + VTc (VT1 - VT0)

(7300 Series)	No Dividers	Dividers < 1	Dividers > 1
SHGC0	0.023057	0.025055	0.026949
SHGC1	0.632777	0.573218	0.516780
VT0	0.000000	0.000000	0.000000
VT1	0.609720	0.548163	0.489831

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.

Product Line	*Report Number*
7200/7300 Outswing Casement	96062.01-116-45
7200/7300 Project Out Awning	96067.01-116-45

Spacer Option Description

	Sealant		
Spacer Type	*Primary*	*Secondary*	*Desiccant*
Standard Aluminum Spacer	Butyl Rubber	Butyl Rubber	Yes
Tin-plate Intercept Spacer	Butyl Rubber	Butyl Rubber	Yes
Edgetech Standard Super Spacer	Butyl Rubber	None	No
Stainless Steel Spacer	Polyisobutylene	Silicone	Yes
Edgetech TriSeal Premium Super Spacer	Polyisobutylene	Butyl Rubber	No
Technoform TGI Wave Spacer	Polyisobutylene	Silicone	Yes

Grid Option Description

Grid Size	*Grid Type*	*Grid Pattern*
None	-	-

Reinforcement Option Description

Location	*Material*
None	-

Gas Filling Technique Description

Fill Type	*Method*
90% Argon	Single-probe timed

Edge-of-Glass Construction

Interior Condition	EPDM gasket between frame and glass
Exterior Condition	Glazing tape between frame and glass

Weatherstripping

Type	*Quantity*	*Location*
Bulb gasket	1 row	Frame perimeter
Bulb gasket	1 row	Sash perimeter

Frame/Sash Materials Finish

Interior	Painted Aluminum
Exterior	Painted Aluminum

NFRC 100/200/500 Summary Sheet
7200 Outswing Casement

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	
1	clr / air / clr											
	0.225	0.500	0.225					AIR		CL	A1-D	N
	U-Factor		**0.61**	**SHGC (N)**				**0.49**	**VT (N)**	**0.52**	**CR**	**34**
2	clr / arg / clr											
	0.225	0.500	0.225					ARG90		CL	A1-D	N
	U-Factor		**0.59**	**SHGC (N)**				**0.49**	**VT (N)**	**0.52**	**CR**	**34**
3	SB60 / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**34**
	clr / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**34**
4	SB60 / arg / clr											
	0.223	0.500	0.223					ARG90	0.035(#2)	CL	A1-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**35**
	clr / arg / SB60											
	0.223	0.500	0.223					ARG90	0.035(#3)	CL	A1-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**35**
5	SB60 on Atlantica / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	GR	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.20**	**VT (N)**	**0.36**	**CR**	**34**
	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.22**	**VT (N)**	**0.35**	**CR**	**34**
6	SB70XL / air / clr											
	0.223	0.500	0.223					AIR	0.018(#2)	CL	A1-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.20**	**VT (N)**	**0.43**	**CR**	**34**
	clr / air / SB70XL											
	0.223	0.500	0.223					AIR	0.018(#3)	CL	A1-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.27**	**VT (N)**	**0.43**	**CR**	**34**

NFRC 100/200/500 Summary Sheet
7200 Outswing Casement

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	
7	SB70XL / arg / clr											
	0.223	0.500	0.223					ARG90	0.018(#2)	CL	A1-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.20**	**VT (N)**	**0.43**	**CR**	**35**
	clr / arg / SB70XL											
	0.223	0.500	0.223					ARG90	0.018(#3)	CL	A1-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.27**	**VT (N)**	**0.43**	**CR**	**35**
8	VE185 / air / clr											
	0.223	0.500	0.225					AIR	0.088(#2)	CL	A1-D	N
	U-Factor		**0.51**	**SHGC (N)**				**0.38**	**VT (N)**	**0.50**	**CR**	**34**
	clr / air / VE185											
	0.225	0.500	0.223					AIR	0.088(#3)	CL	A1-D	N
	U-Factor		**0.51**	**SHGC (N)**				**0.40**	**VT (N)**	**0.50**	**CR**	**34**
9	VE185 / arg / clr											
	0.223	0.500	0.225					ARG90	0.088(#2)	CL	A1-D	N
	U-Factor		**0.48**	**SHGC (N)**				**0.38**	**VT (N)**	**0.50**	**CR**	**35**
	clr / arg / VE185											
	0.225	0.500	0.223					ARG90	0.088(#3)	CL	A1-D	N
	U-Factor		**0.48**	**SHGC (N)**				**0.41**	**VT (N)**	**0.50**	**CR**	**35**
10	VE12M / air / clr											
	0.223	0.500	0.225					AIR	0.040(#2)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**34**
	clr / air / VE12M											
	0.225	0.500	0.223					AIR	0.040(#3)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**34**
11	VE12M / arg / clr											
	0.223	0.500	0.225					ARG90	0.040(#2)	CL	A1-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**35**
	clr / arg / VE12M											
	0.225	0.500	0.223					ARG90	0.040(#3)	CL	A1-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**35**

NFRC 100/200/500 Summary Sheet
7200 Outswing Casement

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	
12	TiAC36 / air / clr											
	0.222	0.500	0.225					AIR	0.034(#2)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.26**	**VT (N)**	**0.43**	**CR**	**34**
	clr / air / TiAC36											
	0.225	0.500	0.222					AIR	0.034(#3)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.32**	**VT (N)**	**0.43**	**CR**	**34**
13	TiAC36 / arg / clr											
	0.222	0.500	0.225					ARG90	0.034(#2)	CL	A1-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**35**
	clr / arg / TiAC36											
	0.225	0.500	0.222					ARG90	0.034(#3)	CL	A1-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.32**	**VT (N)**	**0.43**	**CR**	**35**
14	TiAC23 / air / clr											
	0.228	0.500	0.225					AIR	0.041(#2)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.17**	**VT (N)**	**0.25**	**CR**	**34**
	clr / air / TiAC23											
	0.225	0.500	0.228					AIR	0.041(#3)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.32**	**VT (N)**	**0.25**	**CR**	**34**
15	TiAC23 / arg / clr											
	0.228	0.500	0.225					ARG90	0.041(#2)	CL	A1-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.17**	**VT (N)**	**0.25**	**CR**	**35**
	clr / arg / TiAC23											
	0.225	0.500	0.228					ARG90	0.041(#3)	CL	A1-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.33**	**VT (N)**	**0.25**	**CR**	**35**
16	EADV / air / clr											
	0.222	0.500	0.223					AIR	0.157(#2)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.43**	**VT (N)**	**0.48**	**CR**	**34**
	clr / air / EADV											
	0.223	0.500	0.222					AIR	0.157(#3)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.46**	**VT (N)**	**0.48**	**CR**	**34**

NFRC 100/200/500 Summary Sheet
7200 Outswing Casement

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	
17	EADV / arg / clr											
	0.222	0.500	0.223					ARG90	0.157(#2)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.43**	**VT (N)**	**0.48**	**CR**	**34**
	clr / arg / EADV											
	0.223	0.500	0.222					ARG90	0.157(#3)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.46**	**VT (N)**	**0.48**	**CR**	**34**
18	S100 / air / clr											
	0.223	0.500	0.223					AIR	0.087(#2)	CL	A1-D	N
	U-Factor		**0.51**	**SHGC (N)**				**0.38**	**VT (N)**	**0.51**	**CR**	**34**
	clr / air / S100											
	0.223	0.500	0.223					AIR	0.087(#3)	CL	A1-D	N
	U-Factor		**0.51**	**SHGC (N)**				**0.41**	**VT (N)**	**0.51**	**CR**	**34**
19	SB80 / air / clr											
	0.223	0.500	0.223					AIR	0.024(#2)	CL	A1-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.18**	**VT (N)**	**0.32**	**CR**	**34**
	clr / air / SB80											
	0.223	0.500	0.223					AIR	0.024(#3)	CL	A1-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.21**	**VT (N)**	**0.32**	**CR**	**34**
20	SB80 / arg / clr											
	0.223	0.500	0.223					ARG90	0.024(#2)	CL	A1-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.17**	**VT (N)**	**0.32**	**CR**	**35**
	clr / arg / SB80											
	0.223	0.500	0.223					ARG90	0.024(#3)	CL	A1-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.21**	**VT (N)**	**0.32**	**CR**	**35**
21	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.22**	**VT (N)**	**0.35**	**CR**	**34**
22	clr / air / clr											
	0.225	0.500	0.225					AIR		CL	CU-S	N
	U-Factor		**0.60**	**SHGC (N)**				**0.49**	**VT (N)**	**0.52**	**CR**	**35**

NFRC 100/200/500 Summary Sheet
7200 Outswing Casement

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	
23	clr / arg / clr											
	0.225	0.500	0.225					ARG90		CL	CU-S	N
	U-Factor		**0.58**	**SHGC (N)**				**0.49**	**VT (N)**	**0.52**	**CR**	**35**
24	SB60 / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**36**
	clr / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**36**
25	SB60 / arg / clr											
	0.223	0.500	0.223					ARG90	0.035(#2)	CL	CU-S	N
	U-Factor		**0.46**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**36**
	clr / arg / SB60											
	0.223	0.500	0.223					ARG90	0.035(#3)	CL	CU-S	N
	U-Factor		**0.46**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**36**
26	SB60 on Atlantica / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	GR	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.20**	**VT (N)**	**0.36**	**CR**	**36**
	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.22**	**VT (N)**	**0.35**	**CR**	**36**
27	SB70XL / air / clr											
	0.223	0.500	0.223					AIR	0.018(#2)	CL	CU-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.20**	**VT (N)**	**0.43**	**CR**	**36**
	clr / air / SB70XL											
	0.223	0.500	0.223					AIR	0.018(#3)	CL	CU-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.27**	**VT (N)**	**0.43**	**CR**	**36**
28	SB70XL / arg / clr											
	0.223	0.500	0.223					ARG90	0.018(#2)	CL	CU-S	N
	U-Factor		**0.45**	**SHGC (N)**				**0.20**	**VT (N)**	**0.43**	**CR**	**36**

NFRC 100/200/500 Summary Sheet
7200 Outswing Casement

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	
	clr / arg / SB70XL											
	0.223	0.500	0.223					ARG90	0.018(#3)	CL	CU-S	N
	U-Factor		**0.45**	**SHGC (N)**				**0.27**	**VT (N)**	**0.43**	**CR**	**36**
29	VE185 / air / clr											
	0.223	0.500	0.225					AIR	0.088(#2)	CL	CU-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.38**	**VT (N)**	**0.50**	**CR**	**36**
	clr / air / VE185											
	0.225	0.500	0.223					AIR	0.088(#3)	CL	CU-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.40**	**VT (N)**	**0.50**	**CR**	**36**
30	VE185 / arg / clr											
	0.223	0.500	0.225					ARG90	0.088(#2)	CL	CU-S	N
	U-Factor		**0.47**	**SHGC (N)**				**0.38**	**VT (N)**	**0.50**	**CR**	**36**
	clr / arg / VE185											
	0.225	0.500	0.223					ARG90	0.088(#3)	CL	CU-S	N
	U-Factor		**0.47**	**SHGC (N)**				**0.41**	**VT (N)**	**0.50**	**CR**	**36**
31	VE12M / air / clr											
	0.223	0.500	0.225					AIR	0.040(#2)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**36**
	clr / air / VE12M											
	0.225	0.500	0.223					AIR	0.040(#3)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**36**
32	VE12M / arg / clr											
	0.223	0.500	0.225					ARG90	0.040(#2)	CL	CU-S	N
	U-Factor		**0.46**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**36**
	clr / arg / VE12M											
	0.225	0.500	0.223					ARG90	0.040(#3)	CL	CU-S	N
	U-Factor		**0.46**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**36**
33	TiAC36 / air / clr											
	0.222	0.500	0.225					AIR	0.034(#2)	CL	CU-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.26**	**VT (N)**	**0.43**	**CR**	**36**

NFRC 100/200/500 Summary Sheet
7200 Outswing Casement

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	
	clr / air / TiAC36											
	0.225	0.500	0.222					AIR	0.034(#3)	CL	CU-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.32**	**VT (N)**	**0.43**	**CR**	**36**
34	TiAC36 / arg / clr											
	0.222	0.500	0.225					ARG90	0.034(#2)	CL	CU-S	N
	U-Factor		**0.46**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**36**
	clr / arg / TiAC36											
	0.225	0.500	0.222					ARG90	0.034(#3)	CL	CU-S	N
	U-Factor		**0.46**	**SHGC (N)**				**0.32**	**VT (N)**	**0.43**	**CR**	**36**
35	TiAC23 / air / clr											
	0.228	0.500	0.225					AIR	0.041(#2)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.17**	**VT (N)**	**0.25**	**CR**	**36**
	clr / air / TiAC23											
	0.225	0.500	0.228					AIR	0.041(#3)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.32**	**VT (N)**	**0.25**	**CR**	**36**
36	TiAC23 / arg / clr											
	0.228	0.500	0.225					ARG90	0.041(#2)	CL	CU-S	N
	U-Factor		**0.46**	**SHGC (N)**				**0.17**	**VT (N)**	**0.25**	**CR**	**36**
	clr / arg / TiAC23											
	0.225	0.500	0.228					ARG90	0.041(#3)	CL	CU-S	N
	U-Factor		**0.46**	**SHGC (N)**				**0.33**	**VT (N)**	**0.25**	**CR**	**36**
37	EADV / air / clr											
	0.222	0.500	0.223					AIR	0.157(#2)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.43**	**VT (N)**	**0.48**	**CR**	**36**
	clr / air / EADV											
	0.223	0.500	0.222					AIR	0.157(#3)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.46**	**VT (N)**	**0.48**	**CR**	**36**
38	EADV / arg / clr											
	0.222	0.500	0.223					ARG90	0.157(#2)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.43**	**VT (N)**	**0.48**	**CR**	**36**

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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	
	clr / arg / EADV											
	0.223	0.500	0.222					ARG90	0.157(#3)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.46**	**VT (N)**	**0.48**	**CR**	**36**
39	S100 / air / clr											
	0.223	0.500	0.223					AIR	0.087(#2)	CL	CU-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.38**	**VT (N)**	**0.51**	**CR**	**36**
	clr / air / S100											
	0.223	0.500	0.223					AIR	0.087(#3)	CL	CU-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.41**	**VT (N)**	**0.51**	**CR**	**36**
40	SB80 / air / clr											
	0.223	0.500	0.223					AIR	0.024(#2)	CL	CU-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.18**	**VT (N)**	**0.32**	**CR**	**36**
	clr / air / SB80											
	0.223	0.500	0.223					AIR	0.024(#3)	CL	CU-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.21**	**VT (N)**	**0.32**	**CR**	**36**
41	SB80 / arg / clr											
	0.223	0.500	0.223					ARG90	0.024(#2)	CL	CU-S	N
	U-Factor		**0.45**	**SHGC (N)**				**0.17**	**VT (N)**	**0.32**	**CR**	**36**
	clr / arg / SB80											
	0.223	0.500	0.223					ARG90	0.024(#3)	CL	CU-S	N
	U-Factor		**0.45**	**SHGC (N)**				**0.21**	**VT (N)**	**0.32**	**CR**	**36**
42	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.22**	**VT (N)**	**0.35**	**CR**	**36**
43	clr / air / clr											
	0.225	0.500	0.225					AIR		CL	SS-D	N
	U-Factor		**0.60**	**SHGC (N)**				**0.49**	**VT (N)**	**0.52**	**CR**	**34**
44	clr / arg / clr											
	0.225	0.500	0.225					ARG90		CL	SS-D	N
	U-Factor		**0.58**	**SHGC (N)**				**0.49**	**VT (N)**	**0.52**	**CR**	**35**

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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	
45	SB60 / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**35**
	clr / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**35**
46	SB60 / arg / clr											
	0.223	0.500	0.223					ARG90	0.035(#2)	CL	SS-D	N
	U-Factor		**0.46**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**36**
	clr / arg / SB60											
	0.223	0.500	0.223					ARG90	0.035(#3)	CL	SS-D	N
	U-Factor		**0.46**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**36**
47	SB60 on Atlantica / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	GR	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.20**	**VT (N)**	**0.36**	**CR**	**35**
	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.22**	**VT (N)**	**0.35**	**CR**	**35**
48	SB70XL / air / clr											
	0.223	0.500	0.223					AIR	0.018(#2)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.20**	**VT (N)**	**0.43**	**CR**	**35**
	clr / air / SB70XL											
	0.223	0.500	0.223					AIR	0.018(#3)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.27**	**VT (N)**	**0.43**	**CR**	**35**
49	SB70XL / arg / clr											
	0.223	0.500	0.223					ARG90	0.018(#2)	CL	SS-D	N
	U-Factor		**0.46**	**SHGC (N)**				**0.20**	**VT (N)**	**0.43**	**CR**	**36**
	clr / arg / SB70XL											
	0.223	0.500	0.223					ARG90	0.018(#3)	CL	SS-D	N
	U-Factor		**0.46**	**SHGC (N)**				**0.27**	**VT (N)**	**0.43**	**CR**	**36**

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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	
50	VE185 / air / clr											
	0.223	0.500	0.225					AIR	0.088(#2)	CL	SS-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.38**	**VT (N)**	**0.50**	**CR**	**35**
	clr / air / VE185											
	0.225	0.500	0.223					AIR	0.088(#3)	CL	SS-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.40**	**VT (N)**	**0.50**	**CR**	**35**
51	VE185 / arg / clr											
	0.223	0.500	0.225					ARG90	0.088(#2)	CL	SS-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.38**	**VT (N)**	**0.50**	**CR**	**35**
	clr / arg / VE185											
	0.225	0.500	0.223					ARG90	0.088(#3)	CL	SS-D	N
	U-Factor		**0.47**	**SHGC (N)**				**0.41**	**VT (N)**	**0.50**	**CR**	**35**
52	VE12M / air / clr											
	0.223	0.500	0.225					AIR	0.040(#2)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**35**
	clr / air / VE12M											
	0.225	0.500	0.223					AIR	0.040(#3)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**35**
53	VE12M / arg / clr											
	0.223	0.500	0.225					ARG90	0.040(#2)	CL	SS-D	N
	U-Factor		**0.46**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**36**
	clr / arg / VE12M											
	0.225	0.500	0.223					ARG90	0.040(#3)	CL	SS-D	N
	U-Factor		**0.46**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**36**
54	TiAC36 / air / clr											
	0.222	0.500	0.225					AIR	0.034(#2)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.26**	**VT (N)**	**0.43**	**CR**	**35**
	clr / air / TiAC36											
	0.225	0.500	0.222					AIR	0.034(#3)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.32**	**VT (N)**	**0.43**	**CR**	**35**

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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	
55	TiAC36 / arg / clr											
	0.222	0.500	0.225					ARG90	0.034(#2)	CL	SS-D	N
	U-Factor		**0.46**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**36**
	clr / arg / TiAC36											
	0.225	0.500	0.222					ARG90	0.034(#3)	CL	SS-D	N
	U-Factor		**0.46**	**SHGC (N)**				**0.32**	**VT (N)**	**0.43**	**CR**	**36**
56	TiAC23 / air / clr											
	0.228	0.500	0.225					AIR	0.041(#2)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.17**	**VT (N)**	**0.25**	**CR**	**35**
	clr / air / TiAC23											
	0.225	0.500	0.228					AIR	0.041(#3)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.32**	**VT (N)**	**0.25**	**CR**	**35**
57	TiAC23 / arg / clr											
	0.228	0.500	0.225					ARG90	0.041(#2)	CL	SS-D	N
	U-Factor		**0.46**	**SHGC (N)**				**0.17**	**VT (N)**	**0.25**	**CR**	**36**
	clr / arg / TiAC23											
	0.225	0.500	0.228					ARG90	0.041(#3)	CL	SS-D	N
	U-Factor		**0.46**	**SHGC (N)**				**0.33**	**VT (N)**	**0.25**	**CR**	**36**
58	EADV / air / clr											
	0.222	0.500	0.223					AIR	0.157(#2)	CL	SS-D	N
	U-Factor		**0.51**	**SHGC (N)**				**0.43**	**VT (N)**	**0.48**	**CR**	**35**
	clr / air / EADV											
	0.223	0.500	0.222					AIR	0.157(#3)	CL	SS-D	N
	U-Factor		**0.51**	**SHGC (N)**				**0.46**	**VT (N)**	**0.48**	**CR**	**35**
59	EADV / arg / clr											
	0.222	0.500	0.223					ARG90	0.157(#2)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.43**	**VT (N)**	**0.48**	**CR**	**35**
	clr / arg / EADV											
	0.223	0.500	0.222					ARG90	0.157(#3)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.46**	**VT (N)**	**0.48**	**CR**	**35**

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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	
60	S100 / air / clr											
	0.223	0.500	0.223					AIR	0.087(#2)	CL	SS-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.38**	**VT (N)**	**0.51**	**CR**	**35**
	clr / air / S100											
	0.223	0.500	0.223					AIR	0.087(#3)	CL	SS-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.41**	**VT (N)**	**0.51**	**CR**	**35**
61	SB80 / air / clr											
	0.223	0.500	0.223					AIR	0.024(#2)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.18**	**VT (N)**	**0.32**	**CR**	**35**
	clr / air / SB80											
	0.223	0.500	0.223					AIR	0.024(#3)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.21**	**VT (N)**	**0.32**	**CR**	**35**
62	SB80 / arg / clr											
	0.223	0.500	0.223					ARG90	0.024(#2)	CL	SS-D	N
	U-Factor		**0.46**	**SHGC (N)**				**0.17**	**VT (N)**	**0.32**	**CR**	**36**
	clr / arg / SB80											
	0.223	0.500	0.223					ARG90	0.024(#3)	CL	SS-D	N
	U-Factor		**0.46**	**SHGC (N)**				**0.21**	**VT (N)**	**0.32**	**CR**	**36**
63	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.22**	**VT (N)**	**0.35**	**CR**	**35**
64	clr / air / clr											
	0.225	0.500	0.225					AIR		CL	ZF-S	N
	U-Factor		**0.59**	**SHGC (N)**				**0.49**	**VT (N)**	**0.52**	**CR**	**36**
65	clr / arg / clr											
	0.225	0.500	0.225					ARG90		CL	ZF-S	N
	U-Factor		**0.57**	**SHGC (N)**				**0.49**	**VT (N)**	**0.52**	**CR**	**36**
66	SB60 / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**37**

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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	
	clr / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**37**
67	SB60 / arg / clr											
	0.223	0.500	0.223					ARG90	0.035(#2)	CL	ZF-S	N
	U-Factor		**0.45**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**38**
	clr / arg / SB60											
	0.223	0.500	0.223					ARG90	0.035(#3)	CL	ZF-S	N
	U-Factor		**0.45**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**38**
68	SB60 on Atlantica / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	GR	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.20**	**VT (N)**	**0.36**	**CR**	**37**
	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.22**	**VT (N)**	**0.35**	**CR**	**37**
69	SB70XL / air / clr											
	0.223	0.500	0.223					AIR	0.018(#2)	CL	ZF-S	N
	U-Factor		**0.47**	**SHGC (N)**				**0.20**	**VT (N)**	**0.43**	**CR**	**37**
	clr / air / SB70XL											
	0.223	0.500	0.223					AIR	0.018(#3)	CL	ZF-S	N
	U-Factor		**0.47**	**SHGC (N)**				**0.27**	**VT (N)**	**0.43**	**CR**	**37**
70	SB70XL / arg / clr											
	0.223	0.500	0.223					ARG90	0.018(#2)	CL	ZF-S	N
	U-Factor		**0.44**	**SHGC (N)**				**0.20**	**VT (N)**	**0.43**	**CR**	**38**
	clr / arg / SB70XL											
	0.223	0.500	0.223					ARG90	0.018(#3)	CL	ZF-S	N
	U-Factor		**0.44**	**SHGC (N)**				**0.27**	**VT (N)**	**0.43**	**CR**	**38**
71	VE185 / air / clr											
	0.223	0.500	0.225					AIR	0.088(#2)	CL	ZF-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.38**	**VT (N)**	**0.50**	**CR**	**37**

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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	
	clr / air / VE185											
	0.225	0.500	0.223					AIR	0.088(#3)	CL	ZF-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.40**	**VT (N)**	**0.50**	**CR**	**37**
72	VE185 / arg / clr											
	0.223	0.500	0.225					ARG90	0.088(#2)	CL	ZF-S	N
	U-Factor		**0.46**	**SHGC (N)**				**0.38**	**VT (N)**	**0.50**	**CR**	**37**
	clr / arg / VE185											
	0.225	0.500	0.223					ARG90	0.088(#3)	CL	ZF-S	N
	U-Factor		**0.46**	**SHGC (N)**				**0.41**	**VT (N)**	**0.50**	**CR**	**37**
73	VE12M / air / clr											
	0.223	0.500	0.225					AIR	0.040(#2)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**37**
	clr / air / VE12M											
	0.225	0.500	0.223					AIR	0.040(#3)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**37**
74	VE12M / arg / clr											
	0.223	0.500	0.225					ARG90	0.040(#2)	CL	ZF-S	N
	U-Factor		**0.45**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**38**
	clr / arg / VE12M											
	0.225	0.500	0.223					ARG90	0.040(#3)	CL	ZF-S	N
	U-Factor		**0.45**	**SHGC (N)**				**0.32**	**VT (N)**	**0.47**	**CR**	**38**
75	TiAC36 / air / clr											
	0.222	0.500	0.225					AIR	0.034(#2)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.26**	**VT (N)**	**0.43**	**CR**	**37**
	clr / air / TiAC36											
	0.225	0.500	0.222					AIR	0.034(#3)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.32**	**VT (N)**	**0.43**	**CR**	**37**
76	TiAC36 / arg / clr											
	0.222	0.500	0.225					ARG90	0.034(#2)	CL	ZF-S	N
	U-Factor		**0.45**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**38**

NFRC 100/200/500 Summary Sheet
7200 Outswing Casement

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	
	clr / arg / TiAC36											
	0.225	0.500	0.222					ARG90	0.034(#3)	CL	ZF-S	N
	U-Factor		**0.45**	**SHGC (N)**				**0.32**	**VT (N)**	**0.43**	**CR**	**38**
77	TiAC23 / air / clr											
	0.228	0.500	0.225					AIR	0.041(#2)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.17**	**VT (N)**	**0.25**	**CR**	**37**
	clr / air / TiAC23											
	0.225	0.500	0.228					AIR	0.041(#3)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.32**	**VT (N)**	**0.25**	**CR**	**37**
78	TiAC23 / arg / clr											
	0.228	0.500	0.225					ARG90	0.041(#2)	CL	ZF-S	N
	U-Factor		**0.45**	**SHGC (N)**				**0.17**	**VT (N)**	**0.25**	**CR**	**38**
	clr / arg / TiAC23											
	0.225	0.500	0.228					ARG90	0.041(#3)	CL	ZF-S	N
	U-Factor		**0.45**	**SHGC (N)**				**0.33**	**VT (N)**	**0.25**	**CR**	**38**
79	EADV / air / clr											
	0.222	0.500	0.223					AIR	0.157(#2)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.43**	**VT (N)**	**0.48**	**CR**	**37**
	clr / air / EADV											
	0.223	0.500	0.222					AIR	0.157(#3)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.46**	**VT (N)**	**0.48**	**CR**	**37**
80	EADV / arg / clr											
	0.222	0.500	0.223					ARG90	0.157(#2)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.43**	**VT (N)**	**0.48**	**CR**	**37**
	clr / arg / EADV											
	0.223	0.500	0.222					ARG90	0.157(#3)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.46**	**VT (N)**	**0.48**	**CR**	**37**
81	S100 / air / clr											
	0.223	0.500	0.223					AIR	0.087(#2)	CL	ZF-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.38**	**VT (N)**	**0.51**	**CR**	**37**

NFRC 100/200/500 Summary Sheet
7200 Outswing Casement

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	
	clr / air / S100											
	0.223	0.500	0.223					AIR	0.087(#3)	CL	ZF-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.41**	**VT (N)**	**0.51**	**CR**	**37**
82	SB80 / air / clr											
	0.223	0.500	0.223					AIR	0.024(#2)	CL	ZF-S	N
	U-Factor		**0.47**	**SHGC (N)**				**0.18**	**VT (N)**	**0.32**	**CR**	**37**
	clr / air / SB80											
	0.223	0.500	0.223					AIR	0.024(#3)	CL	ZF-S	N
	U-Factor		**0.47**	**SHGC (N)**				**0.21**	**VT (N)**	**0.32**	**CR**	**37**
83	SB80 / arg / clr											
	0.223	0.500	0.223					ARG90	0.024(#2)	CL	ZF-S	N
	U-Factor		**0.44**	**SHGC (N)**				**0.17**	**VT (N)**	**0.32**	**CR**	**38**
	clr / arg / SB80											
	0.223	0.500	0.223					ARG90	0.024(#3)	CL	ZF-S	N
	U-Factor		**0.44**	**SHGC (N)**				**0.21**	**VT (N)**	**0.32**	**CR**	**38**
84	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.22**	**VT (N)**	**0.35**	**CR**	**37**
85	E272 / arg / i81											
	0.224	0.500	0.223					ARG90	0.042(#2) / 0.149(#4)	CL	ZF-D	N
	U-Factor		**0.42**	**SHGC (N)**				**0.26**	**VT (N)**	**0.41**	**CR**	**36**
86	E366 / arg / i81											
	0.225	0.500	0.223					ARG90	0.022(#2) / 0.149(#4)	CL	ZF-D	N
	U-Factor		**0.41**	**SHGC (N)**				**0.18**	**VT (N)**	**0.37**	**CR**	**36**
87	E366 / arg / Sungate 500											
	0.225	0.500	0.223					ARG90	0.022(#2) / 0.215(#4)	CL	ZF-D	N
	U-Factor		**0.42**	**SHGC (N)**				**0.19**	**VT (N)**	**0.39**	**CR**	**36**
88	SB60 / arg / clr											
	0.223	0.500	0.223					ARG90	0.035(#2)	CL	TS-D	N
	U-Factor		**0.45**	**SHGC (N)**				**0.27**	**VT (N)**	**0.47**	**CR**	**37**

NFRC 100/200/500 Summary Sheet
7200 Outswing Casement

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	
	clr / arg / SB60											
	0.223	0.500	0.223					ARG90	0.035(#3)	CL	TS-D	N
	U-Factor		0.45	SHGC (N)				0.32	VT (N)	0.47	CR	37
89	SG400 / arg / clr											
	0.223	0.500	0.223					ARG90	0.115(#2)	CL	TS-D	N
	U-Factor		0.47	SHGC (N)				0.41	VT (N)	0.51	CR	37
	clr / arg / SG400											
	0.223	0.500	0.223					ARG90	0.115(#3)	CL	TS-D	N
	U-Factor		0.47	SHGC (N)				0.44	VT (N)	0.51	CR	37
90	SG500 / arg / clr											
	0.223	0.500	0.223					ARG90	0.215(#2)	CL	TS-D	N
	U-Factor		0.49	SHGC (N)				0.43	VT (N)	0.49	CR	37
	clr / arg / SG500											
	0.223	0.500	0.223					ARG90	0.215(#3)	CL	TS-D	N
	U-Factor		0.49	SHGC (N)				0.46	VT (N)	0.49	CR	37

NFRC 100/200/500 Summary Sheet
7300 Outswing Casement

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	clr / air / clr											
	0.225	0.500	0.225					AIR		CL	A1-D	N
	U-Factor		**0.62**	**SHGC (N)**				**0.45**	**VT (N)**	**0.48**	**CR**	**33**
92	clr / arg / clr											
	0.225	0.500	0.225					ARG90		CL	A1-D	N
	U-Factor		**0.61**	**SHGC (N)**				**0.45**	**VT (N)**	**0.48**	**CR**	**33**
93	SB60 / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**34**
	clr / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**34**
94	SB60 / arg / clr											
	0.223	0.500	0.223					ARG90	0.035(#2)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**34**
	clr / arg / SB60											
	0.223	0.500	0.223					ARG90	0.035(#3)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**34**
95	SB60 on Atlantica / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	GR	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.19**	**VT (N)**	**0.33**	**CR**	**34**
	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.21**	**VT (N)**	**0.33**	**CR**	**34**
96	SB70XL / air / clr											
	0.223	0.500	0.223					AIR	0.018(#2)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.19**	**VT (N)**	**0.39**	**CR**	**34**
	clr / air / SB70XL											
	0.223	0.500	0.223					AIR	0.018(#3)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.25**	**VT (N)**	**0.39**	**CR**	**34**

NFRC 100/200/500 Summary Sheet
7300 Outswing Casement

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	
97	SB70XL / arg / clr											
	0.223	0.500	0.223					ARG90	0.018(#2)	CL	A1-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.19**	**VT (N)**	**0.39**	**CR**	**34**
	clr / arg / SB70XL											
	0.223	0.500	0.223					ARG90	0.018(#3)	CL	A1-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.25**	**VT (N)**	**0.39**	**CR**	**34**
98	VE185 / air / clr											
	0.223	0.500	0.225					AIR	0.088(#2)	CL	A1-D	N
	U-Factor		**0.53**	**SHGC (N)**				**0.35**	**VT (N)**	**0.46**	**CR**	**34**
	clr / air / VE185											
	0.225	0.500	0.223					AIR	0.088(#3)	CL	A1-D	N
	U-Factor		**0.53**	**SHGC (N)**				**0.38**	**VT (N)**	**0.46**	**CR**	**34**
99	VE185 / arg / clr											
	0.223	0.500	0.225					ARG90	0.088(#2)	CL	A1-D	N
	U-Factor		**0.51**	**SHGC (N)**				**0.35**	**VT (N)**	**0.46**	**CR**	**34**
	clr / arg / VE185											
	0.225	0.500	0.223					ARG90	0.088(#3)	CL	A1-D	N
	U-Factor		**0.51**	**SHGC (N)**				**0.38**	**VT (N)**	**0.46**	**CR**	**34**
100	VE12M / air / clr											
	0.223	0.500	0.225					AIR	0.040(#2)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**34**
	clr / air / VE12M											
	0.225	0.500	0.223					AIR	0.040(#3)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**34**
101	VE12M / arg / clr											
	0.223	0.500	0.225					ARG90	0.040(#2)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**34**
	clr / arg / VE12M											
	0.225	0.500	0.223					ARG90	0.040(#3)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**34**

NFRC 100/200/500 Summary Sheet
7300 Outswing Casement

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	
102	TiAC36 / air / clr											
	0.222	0.500	0.225					AIR	0.034(#2)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.24**	**VT (N)**	**0.40**	**CR**	**34**
	clr / air / TiAC36											
	0.225	0.500	0.222					AIR	0.034(#3)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.30**	**VT (N)**	**0.40**	**CR**	**34**
103	TiAC36 / arg / clr											
	0.222	0.500	0.225					ARG90	0.034(#2)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.24**	**VT (N)**	**0.40**	**CR**	**34**
	clr / arg / TiAC36											
	0.225	0.500	0.222					ARG90	0.034(#3)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.30**	**VT (N)**	**0.40**	**CR**	**34**
104	TiAC23 / air / clr											
	0.228	0.500	0.225					AIR	0.041(#2)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.17**	**VT (N)**	**0.23**	**CR**	**34**
	clr / air / TiAC23											
	0.225	0.500	0.228					AIR	0.041(#3)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.30**	**VT (N)**	**0.23**	**CR**	**34**
105	TiAC23 / arg / clr											
	0.228	0.500	0.225					ARG90	0.041(#2)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.16**	**VT (N)**	**0.23**	**CR**	**34**
	clr / arg / TiAC23											
	0.225	0.500	0.228					ARG90	0.041(#3)	CL	A1-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.31**	**VT (N)**	**0.23**	**CR**	**34**
106	EADV / air / clr											
	0.222	0.500	0.223					AIR	0.157(#2)	CL	A1-D	N
	U-Factor		**0.54**	**SHGC (N)**				**0.40**	**VT (N)**	**0.44**	**CR**	**33**
	clr / air / EADV											
	0.223	0.500	0.222					AIR	0.157(#3)	CL	A1-D	N
	U-Factor		**0.54**	**SHGC (N)**				**0.43**	**VT (N)**	**0.44**	**CR**	**33**

NFRC 100/200/500 Summary Sheet
7300 Outswing Casement

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	
107	EADV / arg / clr											
	0.222	0.500	0.223					ARG90	0.157(#2)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.40**	**VT (N)**	**0.44**	**CR**	**34**
	clr / arg / EADV											
	0.223	0.500	0.222					ARG90	0.157(#3)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.43**	**VT (N)**	**0.44**	**CR**	**34**
108	S100 / air / clr											
	0.223	0.500	0.223					AIR	0.087(#2)	CL	A1-D	N
	U-Factor		**0.53**	**SHGC (N)**				**0.35**	**VT (N)**	**0.46**	**CR**	**34**
	clr / air / S100											
	0.223	0.500	0.223					AIR	0.087(#3)	CL	A1-D	N
	U-Factor		**0.53**	**SHGC (N)**				**0.38**	**VT (N)**	**0.46**	**CR**	**34**
109	SB80 / air / clr											
	0.223	0.500	0.223					AIR	0.024(#2)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.17**	**VT (N)**	**0.29**	**CR**	**34**
	clr / air / SB80											
	0.223	0.500	0.223					AIR	0.024(#3)	CL	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.20**	**VT (N)**	**0.29**	**CR**	**34**
110	SB80 / arg / clr											
	0.223	0.500	0.223					ARG90	0.024(#2)	CL	A1-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.16**	**VT (N)**	**0.29**	**CR**	**34**
	clr / arg / SB80											
	0.223	0.500	0.223					ARG90	0.024(#3)	CL	A1-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.20**	**VT (N)**	**0.29**	**CR**	**34**
111	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	A1-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.21**	**VT (N)**	**0.33**	**CR**	**34**
112	clr / air / clr											
	0.225	0.500	0.225					AIR		CL	CU-S	N
	U-Factor		**0.61**	**SHGC (N)**				**0.45**	**VT (N)**	**0.48**	**CR**	**34**

NFRC 100/200/500 Summary Sheet
7300 Outswing Casement

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	
113	clr / arg / clr											
	0.225	0.500	0.225					ARG90		CL	CU-S	N
	U-Factor		**0.60**	**SHGC (N)**				**0.45**	**VT (N)**	**0.48**	**CR**	**34**
114	SB60 / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**35**
	clr / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**35**
115	SB60 / arg / clr											
	0.223	0.500	0.223					ARG90	0.035(#2)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**35**
	clr / arg / SB60											
	0.223	0.500	0.223					ARG90	0.035(#3)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**35**
116	SB60 on Atlantica / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	GR	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.19**	**VT (N)**	**0.33**	**CR**	**35**
	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.21**	**VT (N)**	**0.33**	**CR**	**35**
117	SB70XL / air / clr											
	0.223	0.500	0.223					AIR	0.018(#2)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.19**	**VT (N)**	**0.39**	**CR**	**35**
	clr / air / SB70XL											
	0.223	0.500	0.223					AIR	0.018(#3)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.25**	**VT (N)**	**0.39**	**CR**	**35**
118	SB70XL / arg / clr											
	0.223	0.500	0.223					ARG90	0.018(#2)	CL	CU-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.19**	**VT (N)**	**0.39**	**CR**	**35**

NFRC 100/200/500 Summary Sheet
7300 Outswing Casement

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	
	clr / arg / SB70XL											
	0.223	0.500	0.223					ARG90	0.018(#3)	CL	CU-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.25**	**VT (N)**	**0.39**	**CR**	**35**
119	VE185 / air / clr											
	0.223	0.500	0.225					AIR	0.088(#2)	CL	CU-S	N
	U-Factor		**0.52**	**SHGC (N)**				**0.35**	**VT (N)**	**0.46**	**CR**	**35**
	clr / air / VE185											
	0.225	0.500	0.223					AIR	0.088(#3)	CL	CU-S	N
	U-Factor		**0.52**	**SHGC (N)**				**0.38**	**VT (N)**	**0.46**	**CR**	**35**
120	VE185 / arg / clr											
	0.223	0.500	0.225					ARG90	0.088(#2)	CL	CU-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.35**	**VT (N)**	**0.46**	**CR**	**35**
	clr / arg / VE185											
	0.225	0.500	0.223					ARG90	0.088(#3)	CL	CU-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.38**	**VT (N)**	**0.46**	**CR**	**35**
121	VE12M / air / clr											
	0.223	0.500	0.225					AIR	0.040(#2)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**35**
	clr / air / VE12M											
	0.225	0.500	0.223					AIR	0.040(#3)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**35**
122	VE12M / arg / clr											
	0.223	0.500	0.225					ARG90	0.040(#2)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**35**
	clr / arg / VE12M											
	0.225	0.500	0.223					ARG90	0.040(#3)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**35**
123	TiAC36 / air / clr											
	0.222	0.500	0.225					AIR	0.034(#2)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.24**	**VT (N)**	**0.40**	**CR**	**35**

NFRC 100/200/500 Summary Sheet
7300 Outswing Casement

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	
	clr / air / TiAC36											
	0.225	0.500	0.222					AIR	0.034(#3)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.30**	**VT (N)**	**0.40**	**CR**	**35**
124	TiAC36 / arg / clr											
	0.222	0.500	0.225					ARG90	0.034(#2)	CL	CU-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.24**	**VT (N)**	**0.40**	**CR**	**35**
	clr / arg / TiAC36											
	0.225	0.500	0.222					ARG90	0.034(#3)	CL	CU-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.30**	**VT (N)**	**0.40**	**CR**	**35**
125	TiAC23 / air / clr											
	0.228	0.500	0.225					AIR	0.041(#2)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.17**	**VT (N)**	**0.23**	**CR**	**35**
	clr / air / TiAC23											
	0.225	0.500	0.228					AIR	0.041(#3)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.30**	**VT (N)**	**0.23**	**CR**	**35**
126	TiAC23 / arg / clr											
	0.228	0.500	0.225					ARG90	0.041(#2)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.16**	**VT (N)**	**0.23**	**CR**	**35**
	clr / arg / TiAC23											
	0.225	0.500	0.228					ARG90	0.041(#3)	CL	CU-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.31**	**VT (N)**	**0.23**	**CR**	**35**
127	EADV / air / clr											
	0.222	0.500	0.223					AIR	0.157(#2)	CL	CU-S	N
	U-Factor		**0.53**	**SHGC (N)**				**0.40**	**VT (N)**	**0.44**	**CR**	**35**
	clr / air / EADV											
	0.223	0.500	0.222					AIR	0.157(#3)	CL	CU-S	N
	U-Factor		**0.53**	**SHGC (N)**				**0.43**	**VT (N)**	**0.44**	**CR**	**35**
128	EADV / arg / clr											
	0.222	0.500	0.223					ARG90	0.157(#2)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.40**	**VT (N)**	**0.44**	**CR**	**35**

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7300 Outswing Casement

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	
	clr / arg / EADV											
	0.223	0.500	0.222					ARG90	0.157(#3)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.43**	**VT (N)**	**0.44**	**CR**	**35**
129	S100 / air / clr											
	0.223	0.500	0.223					AIR	0.087(#2)	CL	CU-S	N
	U-Factor		**0.52**	**SHGC (N)**				**0.35**	**VT (N)**	**0.46**	**CR**	**35**
	clr / air / S100											
	0.223	0.500	0.223					AIR	0.087(#3)	CL	CU-S	N
	U-Factor		**0.52**	**SHGC (N)**				**0.38**	**VT (N)**	**0.46**	**CR**	**35**
130	SB80 / air / clr											
	0.223	0.500	0.223					AIR	0.024(#2)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.17**	**VT (N)**	**0.29**	**CR**	**35**
	clr / air / SB80											
	0.223	0.500	0.223					AIR	0.024(#3)	CL	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.20**	**VT (N)**	**0.29**	**CR**	**35**
131	SB80 / arg / clr											
	0.223	0.500	0.223					ARG90	0.024(#2)	CL	CU-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.16**	**VT (N)**	**0.29**	**CR**	**35**
	clr / arg / SB80											
	0.223	0.500	0.223					ARG90	0.024(#3)	CL	CU-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.20**	**VT (N)**	**0.29**	**CR**	**35**
132	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	CU-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.21**	**VT (N)**	**0.33**	**CR**	**35**
133	clr / air / clr											
	0.225	0.500	0.225					AIR		CL	SS-D	N
	U-Factor		**0.62**	**SHGC (N)**				**0.45**	**VT (N)**	**0.48**	**CR**	**33**
134	clr / arg / clr											
	0.225	0.500	0.225					ARG90		CL	SS-D	N
	U-Factor		**0.60**	**SHGC (N)**				**0.45**	**VT (N)**	**0.48**	**CR**	**34**

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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	
135	SB60 / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	CL	SS-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**34**
	clr / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	CL	SS-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**34**
136	SB60 / arg / clr											
	0.223	0.500	0.223					ARG90	0.035(#2)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**34**
	clr / arg / SB60											
	0.223	0.500	0.223					ARG90	0.035(#3)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**34**
137	SB60 on Atlantica / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	GR	SS-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.19**	**VT (N)**	**0.33**	**CR**	**34**
	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	SS-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.21**	**VT (N)**	**0.33**	**CR**	**34**
138	SB70XL / air / clr											
	0.223	0.500	0.223					AIR	0.018(#2)	CL	SS-D	N
	U-Factor		**0.51**	**SHGC (N)**				**0.19**	**VT (N)**	**0.39**	**CR**	**34**
	clr / air / SB70XL											
	0.223	0.500	0.223					AIR	0.018(#3)	CL	SS-D	N
	U-Factor		**0.51**	**SHGC (N)**				**0.25**	**VT (N)**	**0.39**	**CR**	**34**
139	SB70XL / arg / clr											
	0.223	0.500	0.223					ARG90	0.018(#2)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.19**	**VT (N)**	**0.39**	**CR**	**34**
	clr / arg / SB70XL											
	0.223	0.500	0.223					ARG90	0.018(#3)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.25**	**VT (N)**	**0.39**	**CR**	**34**

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7300 Outswing Casement

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	
140	VE185 / air / clr											
	0.223	0.500	0.225					AIR	0.088(#2)	CL	SS-D	N
	U-Factor		**0.53**	**SHGC (N)**				**0.35**	**VT (N)**	**0.46**	**CR**	**34**
	clr / air / VE185											
	0.225	0.500	0.223					AIR	0.088(#3)	CL	SS-D	N
	U-Factor		**0.53**	**SHGC (N)**				**0.38**	**VT (N)**	**0.46**	**CR**	**34**
141	VE185 / arg / clr											
	0.223	0.500	0.225					ARG90	0.088(#2)	CL	SS-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.35**	**VT (N)**	**0.46**	**CR**	**34**
	clr / arg / VE185											
	0.225	0.500	0.223					ARG90	0.088(#3)	CL	SS-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.38**	**VT (N)**	**0.46**	**CR**	**34**
142	VE12M / air / clr											
	0.223	0.500	0.225					AIR	0.040(#2)	CL	SS-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**34**
	clr / air / VE12M											
	0.225	0.500	0.223					AIR	0.040(#3)	CL	SS-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**34**
143	VE12M / arg / clr											
	0.223	0.500	0.225					ARG90	0.040(#2)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**34**
	clr / arg / VE12M											
	0.225	0.500	0.223					ARG90	0.040(#3)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**34**
144	TiAC36 / air / clr											
	0.222	0.500	0.225					AIR	0.034(#2)	CL	SS-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.24**	**VT (N)**	**0.40**	**CR**	**34**
	clr / air / TiAC36											
	0.225	0.500	0.222					AIR	0.034(#3)	CL	SS-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.30**	**VT (N)**	**0.40**	**CR**	**34**

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7300 Outswing Casement

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	
145	TiAC36 / arg / clr											
	0.222	0.500	0.225					ARG90	0.034(#2)	CL	SS-D	N
	U-Factor	0.49		SHGC (N)				0.24	VT (N)	0.40	CR	34
	clr / arg / TiAC36											
	0.225	0.500	0.222					ARG90	0.034(#3)	CL	SS-D	N
	U-Factor	0.49		SHGC (N)				0.30	VT (N)	0.40	CR	34
146	TiAC23 / air / clr											
	0.228	0.500	0.225					AIR	0.041(#2)	CL	SS-D	N
	U-Factor	0.52		SHGC (N)				0.17	VT (N)	0.23	CR	34
	clr / air / TiAC23											
	0.225	0.500	0.228					AIR	0.041(#3)	CL	SS-D	N
	U-Factor	0.52		SHGC (N)				0.30	VT (N)	0.23	CR	34
147	TiAC23 / arg / clr											
	0.228	0.500	0.225					ARG90	0.041(#2)	CL	SS-D	N
	U-Factor	0.49		SHGC (N)				0.16	VT (N)	0.23	CR	34
	clr / arg / TiAC23											
	0.225	0.500	0.228					ARG90	0.041(#3)	CL	SS-D	N
	U-Factor	0.49		SHGC (N)				0.31	VT (N)	0.23	CR	34
148	EADV / air / clr											
	0.222	0.500	0.223					AIR	0.157(#2)	CL	SS-D	N
	U-Factor	0.54		SHGC (N)				0.40	VT (N)	0.44	CR	34
	clr / air / EADV											
	0.223	0.500	0.222					AIR	0.157(#3)	CL	SS-D	N
	U-Factor	0.54		SHGC (N)				0.43	VT (N)	0.44	CR	34
149	EADV / arg / clr											
	0.222	0.500	0.223					ARG90	0.157(#2)	CL	SS-D	N
	U-Factor	0.52		SHGC (N)				0.40	VT (N)	0.44	CR	34
	clr / arg / EADV											
	0.223	0.500	0.222					ARG90	0.157(#3)	CL	SS-D	N
	U-Factor	0.52		SHGC (N)				0.43	VT (N)	0.44	CR	34

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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	
150	S100 / air / clr											
	0.223	0.500	0.223					AIR	0.087(#2)	CL	SS-D	N
	U-Factor		**0.53**	**SHGC (N)**				**0.35**	**VT (N)**	**0.46**	**CR**	**34**
	clr / air / S100											
	0.223	0.500	0.223					AIR	0.087(#3)	CL	SS-D	N
	U-Factor		**0.53**	**SHGC (N)**				**0.38**	**VT (N)**	**0.46**	**CR**	**34**
151	SB80 / air / clr											
	0.223	0.500	0.223					AIR	0.024(#2)	CL	SS-D	N
	U-Factor		**0.51**	**SHGC (N)**				**0.17**	**VT (N)**	**0.29**	**CR**	**34**
	clr / air / SB80											
	0.223	0.500	0.223					AIR	0.024(#3)	CL	SS-D	N
	U-Factor		**0.51**	**SHGC (N)**				**0.20**	**VT (N)**	**0.29**	**CR**	**34**
152	SB80 / arg / clr											
	0.223	0.500	0.223					ARG90	0.024(#2)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.16**	**VT (N)**	**0.29**	**CR**	**34**
	clr / arg / SB80											
	0.223	0.500	0.223					ARG90	0.024(#3)	CL	SS-D	N
	U-Factor		**0.49**	**SHGC (N)**				**0.20**	**VT (N)**	**0.29**	**CR**	**34**
153	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	SS-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.21**	**VT (N)**	**0.33**	**CR**	**34**
154	clr / air / clr											
	0.225	0.500	0.225					AIR		CL	ZF-S	N
	U-Factor		**0.61**	**SHGC (N)**				**0.45**	**VT (N)**	**0.48**	**CR**	**35**
155	clr / arg / clr											
	0.225	0.500	0.225					ARG90		CL	ZF-S	N
	U-Factor		**0.59**	**SHGC (N)**				**0.45**	**VT (N)**	**0.48**	**CR**	**35**
156	SB60 / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**36**

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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	
	clr / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**36**
157	SB60 / arg / clr											
	0.223	0.500	0.223					ARG90	0.035(#2)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**36**
	clr / arg / SB60											
	0.223	0.500	0.223					ARG90	0.035(#3)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**36**
158	SB60 on Atlantica / air / clr											
	0.223	0.500	0.223					AIR	0.035(#2)	GR	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.19**	**VT (N)**	**0.33**	**CR**	**36**
	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.21**	**VT (N)**	**0.33**	**CR**	**36**
159	SB70XL / air / clr											
	0.223	0.500	0.223					AIR	0.018(#2)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.19**	**VT (N)**	**0.39**	**CR**	**36**
	clr / air / SB70XL											
	0.223	0.500	0.223					AIR	0.018(#3)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.25**	**VT (N)**	**0.39**	**CR**	**36**
160	SB70XL / arg / clr											
	0.223	0.500	0.223					ARG90	0.018(#2)	CL	ZF-S	N
	U-Factor		**0.47**	**SHGC (N)**				**0.19**	**VT (N)**	**0.39**	**CR**	**36**
	clr / arg / SB70XL											
	0.223	0.500	0.223					ARG90	0.018(#3)	CL	ZF-S	N
	U-Factor		**0.47**	**SHGC (N)**				**0.25**	**VT (N)**	**0.39**	**CR**	**36**
161	VE185 / air / clr											
	0.223	0.500	0.225					AIR	0.088(#2)	CL	ZF-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.35**	**VT (N)**	**0.46**	**CR**	**36**

NFRC 100/200/500 Summary Sheet
7300 Outswing Casement

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	
	clr / air / VE185											
	0.225	0.500	0.223					AIR	0.088(#3)	CL	ZF-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.38**	**VT (N)**	**0.46**	**CR**	**36**
162	VE185 / arg / clr											
	0.223	0.500	0.225					ARG90	0.088(#2)	CL	ZF-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.35**	**VT (N)**	**0.46**	**CR**	**36**
	clr / arg / VE185											
	0.225	0.500	0.223					ARG90	0.088(#3)	CL	ZF-S	N
	U-Factor		**0.49**	**SHGC (N)**				**0.38**	**VT (N)**	**0.46**	**CR**	**36**
163	VE12M / air / clr											
	0.223	0.500	0.225					AIR	0.040(#2)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**36**
	clr / air / VE12M											
	0.225	0.500	0.223					AIR	0.040(#3)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**36**
164	VE12M / arg / clr											
	0.223	0.500	0.225					ARG90	0.040(#2)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**36**
	clr / arg / VE12M											
	0.225	0.500	0.223					ARG90	0.040(#3)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**36**
165	TiAC36 / air / clr											
	0.222	0.500	0.225					AIR	0.034(#2)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.24**	**VT (N)**	**0.40**	**CR**	**36**
	clr / air / TiAC36											
	0.225	0.500	0.222					AIR	0.034(#3)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.30**	**VT (N)**	**0.40**	**CR**	**36**
166	TiAC36 / arg / clr											
	0.222	0.500	0.225					ARG90	0.034(#2)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.24**	**VT (N)**	**0.40**	**CR**	**36**

NFRC 100/200/500 Summary Sheet
7300 Outswing Casement

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	
	clr / arg / TiAC36											
	0.225	0.500	0.222					ARG90	0.034(#3)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.30**	**VT (N)**	**0.40**	**CR**	**36**
167	TiAC23 / air / clr											
	0.228	0.500	0.225					AIR	0.041(#2)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.17**	**VT (N)**	**0.23**	**CR**	**36**
	clr / air / TiAC23											
	0.225	0.500	0.228					AIR	0.041(#3)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.30**	**VT (N)**	**0.23**	**CR**	**36**
168	TiAC23 / arg / clr											
	0.228	0.500	0.225					ARG90	0.041(#2)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.16**	**VT (N)**	**0.23**	**CR**	**36**
	clr / arg / TiAC23											
	0.225	0.500	0.228					ARG90	0.041(#3)	CL	ZF-S	N
	U-Factor		**0.48**	**SHGC (N)**				**0.31**	**VT (N)**	**0.23**	**CR**	**36**
169	EADV / air / clr											
	0.222	0.500	0.223					AIR	0.157(#2)	CL	ZF-S	N
	U-Factor		**0.53**	**SHGC (N)**				**0.40**	**VT (N)**	**0.44**	**CR**	**35**
	clr / air / EADV											
	0.223	0.500	0.222					AIR	0.157(#3)	CL	ZF-S	N
	U-Factor		**0.53**	**SHGC (N)**				**0.43**	**VT (N)**	**0.44**	**CR**	**35**
170	EADV / arg / clr											
	0.222	0.500	0.223					ARG90	0.157(#2)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.40**	**VT (N)**	**0.44**	**CR**	**36**
	clr / arg / EADV											
	0.223	0.500	0.222					ARG90	0.157(#3)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.43**	**VT (N)**	**0.44**	**CR**	**36**
171	S100 / air / clr											
	0.223	0.500	0.223					AIR	0.087(#2)	CL	ZF-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.35**	**VT (N)**	**0.46**	**CR**	**36**

NFRC 100/200/500 Summary Sheet
7300 Outswing Casement

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	
	clr / air / S100											
	0.223	0.500	0.223					AIR	0.087(#3)	CL	ZF-S	N
	U-Factor		**0.51**	**SHGC (N)**				**0.38**	**VT (N)**	**0.46**	**CR**	**36**
172	SB80 / air / clr											
	0.223	0.500	0.223					AIR	0.024(#2)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.17**	**VT (N)**	**0.29**	**CR**	**36**
	clr / air / SB80											
	0.223	0.500	0.223					AIR	0.024(#3)	CL	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.20**	**VT (N)**	**0.29**	**CR**	**36**
173	SB80 / arg / clr											
	0.223	0.500	0.223					ARG90	0.024(#2)	CL	ZF-S	N
	U-Factor		**0.47**	**SHGC (N)**				**0.16**	**VT (N)**	**0.29**	**CR**	**36**
	clr / arg / SB80											
	0.223	0.500	0.223					ARG90	0.024(#3)	CL	ZF-S	N
	U-Factor		**0.47**	**SHGC (N)**				**0.20**	**VT (N)**	**0.29**	**CR**	**36**
174	Atlantica / air / SB60											
	0.223	0.500	0.223					AIR	0.035(#3)	GR	ZF-S	N
	U-Factor		**0.50**	**SHGC (N)**				**0.21**	**VT (N)**	**0.33**	**CR**	**36**
175	E272 / arg / i81											
	0.224	0.500	0.223					ARG90	0.042(#2) / 0.149(#4)	CL	ZF-D	N
	U-Factor		**0.45**	**SHGC (N)**				**0.24**	**VT (N)**	**0.38**	**CR**	**35**
176	E366 / arg / i81											
	0.225	0.500	0.223					ARG90	0.022(#2) / 0.149(#4)	CL	ZF-D	N
	U-Factor		**0.45**	**SHGC (N)**				**0.17**	**VT (N)**	**0.34**	**CR**	**35**
177	E366 / arg / Sungate 500											
	0.225	0.500	0.223					ARG90	0.022(#2) / 0.215(#4)	CL	ZF-D	N
	U-Factor		**0.45**	**SHGC (N)**				**0.18**	**VT (N)**	**0.35**	**CR**	**35**
178	SB60 / arg / clr											
	0.223	0.500	0.223					ARG90	0.035(#2)	CL	TS-D	N
	U-Factor		**0.48**	**SHGC (N)**				**0.25**	**VT (N)**	**0.43**	**CR**	**36**

NFRC 100/200/500 Summary Sheet
7300 Outswing Casement

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	
	clr / arg / SB60											
	0.223	0.500	0.223					ARG90	0.035(#3)	CL	TS-D	N
	U-Factor		**0.48**	**SHGC (N)**				**0.30**	**VT (N)**	**0.43**	**CR**	**36**
179	SG400 / arg / clr											
	0.223	0.500	0.223					ARG90	0.115(#2)	CL	TS-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.39**	**VT (N)**	**0.47**	**CR**	**36**
	clr / arg / SG400											
	0.223	0.500	0.223					ARG90	0.115(#3)	CL	TS-D	N
	U-Factor		**0.50**	**SHGC (N)**				**0.41**	**VT (N)**	**0.47**	**CR**	**36**
180	SG500 / arg / clr											
	0.223	0.500	0.223					ARG90	0.215(#2)	CL	TS-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.40**	**VT (N)**	**0.45**	**CR**	**35**
	clr / arg / SG500											
	0.223	0.500	0.223					ARG90	0.215(#3)	CL	TS-D	N
	U-Factor		**0.52**	**SHGC (N)**				**0.42**	**VT (N)**	**0.45**	**CR**	**35**

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.

Architectural Testing, Inc. is an NFRC accredited simulation laboratory and all simulations were conducted in full compliance with NFRC approved procedures and specifications. The NFRC procedure requires that the computational results be verified through actual test results.

Detailed drawings, simulation data files, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire. 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 Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.:

SIMULATED BY:

Digitally Signed by: Kevin Louder

Kevin S. Louder
Project Engineer

REVIEWED BY:

Digitally Signed by: Kristen L. Livelsberger

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

KSL:ksl
96062.04-116-45

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix A: Drawings and Bills of Material (14)

Revision Log

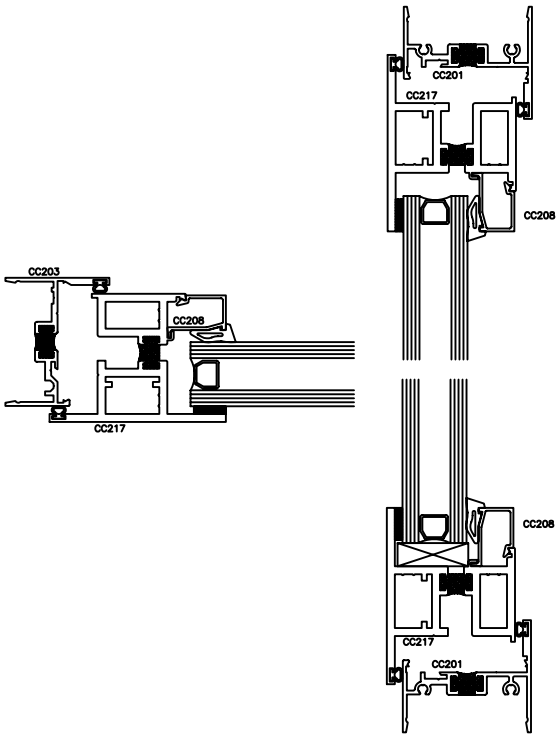
Rev. #	Date	Page(s)	Revision(s)
.01 R0	1/18/2010	All	Original Report Issue
.01 R1	5/26/2010	Page 2	Added grouping notation
.03 R0	9/29/2010	All	Simulate product as Fully Debridged Revised SHGC Table
.04 R0	3/2/2011	19, 20, 36, 37	Added options #85 - #90 and #175 - #180

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

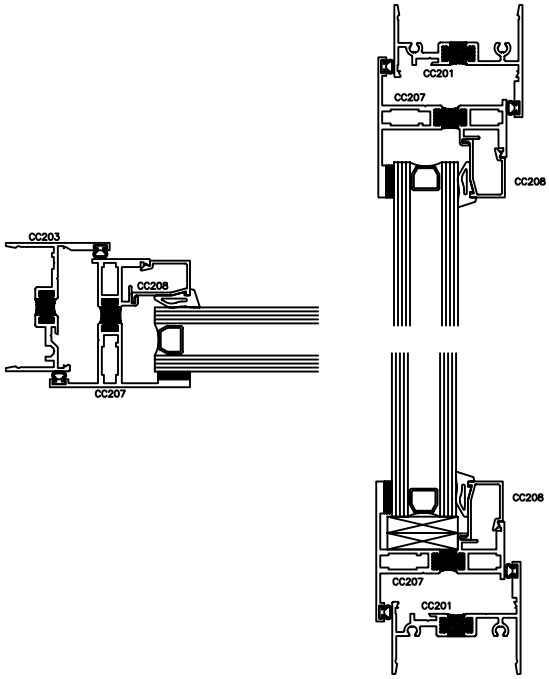
Appendix A

96062.04-116-45

7300 Po



7200 Po



ATI

Report # 96062

Date 12/10/09

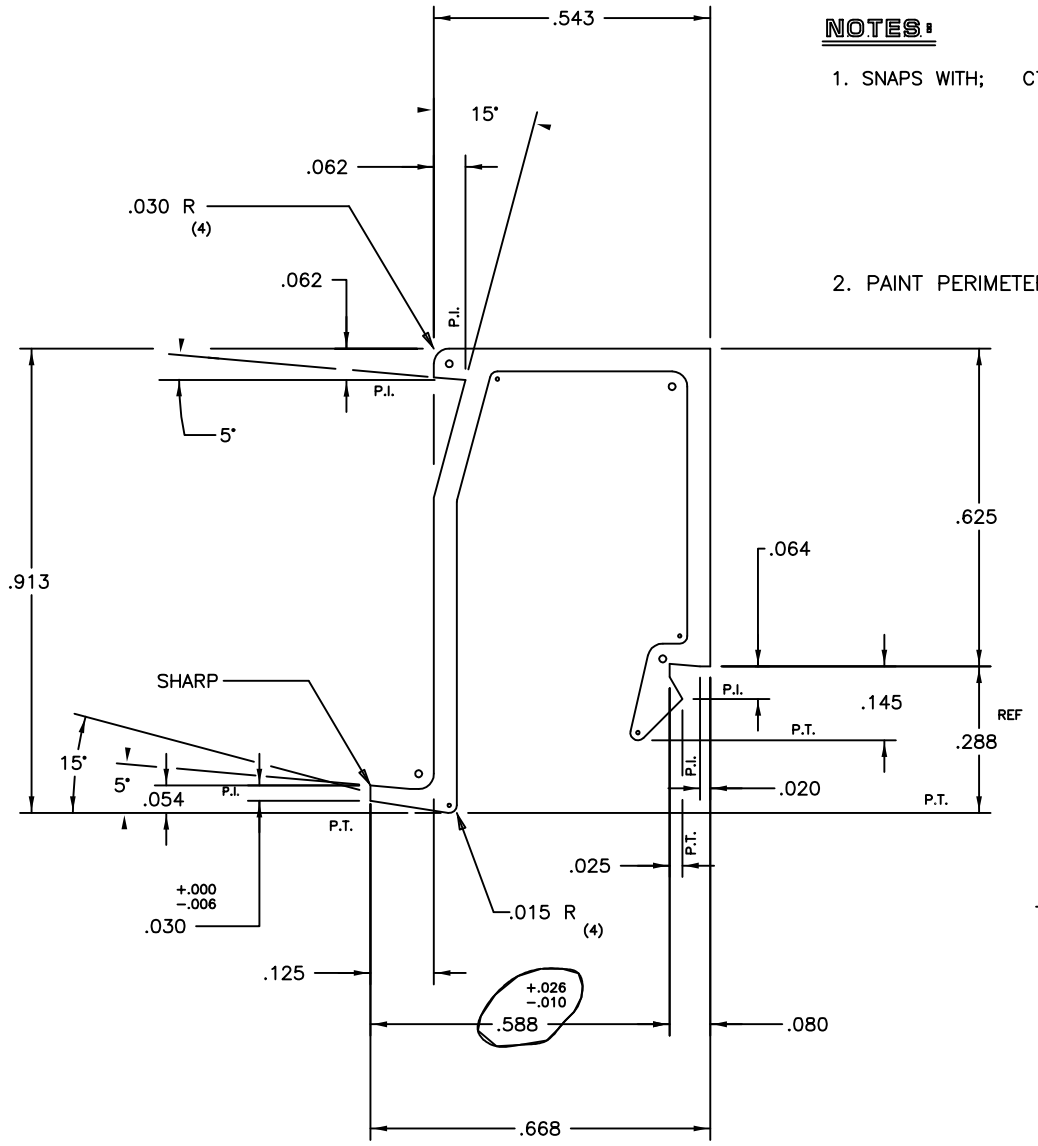
Simulator

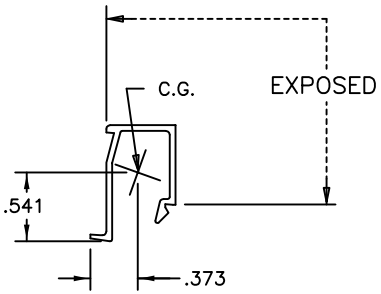
A1	PART # CC208 WAS C7208	RT GH	2/05 98	U. S. ALUMINUM CORP.		T-31043 A2
A2	REVISED WT/FT ECN99118	GLH	7/14 99	1" GLAZING BEAD	MAMO	3/25/93
				CC208 (A1)	4X SIZE	

NOTES:

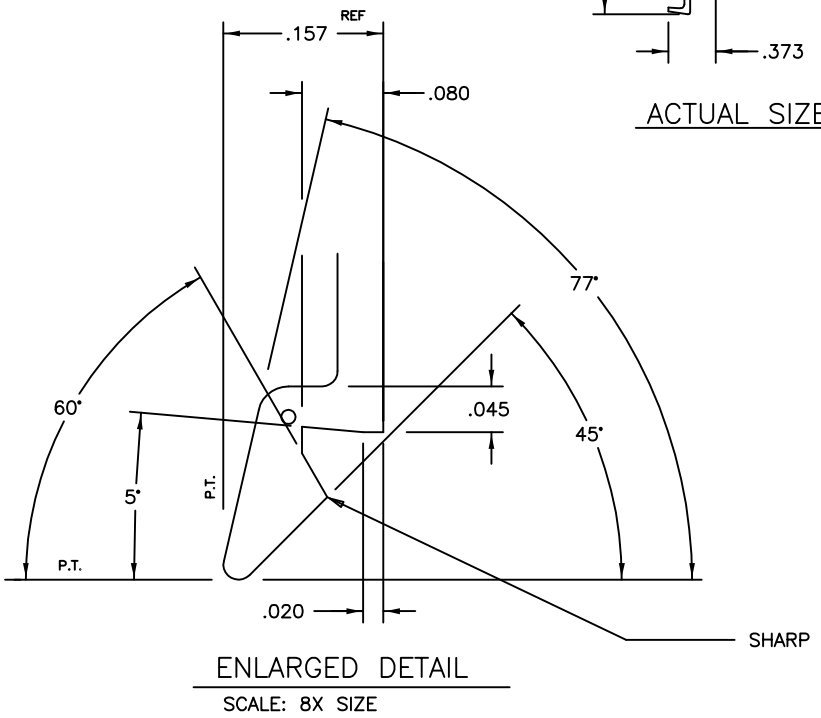
1. SNAPS WITH; C7206, DIE #31033; C7225, DIE #31038
   C7207, DIE #31034; C7226, DIE #
   C7204, DIE #31032; C7227, DIE #
   C7205, DIE #31039; C7228, DIE #
   C7202, DIE #31030; C7229, DIE #
   C7203, DIE #31031; C7217, DIE #
   C7213, DIE #31036; C7201, DIE #31029

2. PAINT PERIMETER: 1.138"





ACTUAL SIZE



ENLARGED DETAIL
SCALE: 8X SIZE

Report # 96062
Date 12/10/09
Simulator
ATI

.045

.107	P-21364	5	WELDRING
.128	1.100	9 X	31043
4.712	SOLID	B05-7	
37	7 77	T-31043	A2

B	1.062 WAS 1.125; CALCS MM		8/25 93
B2	PART # CC207 WAS C7207 ADDED F&DB PART #, REVISED PAINT PERIMETER	RT	2/03 GH 98
C	NUBS WERE .030 NOW .040 ECN 99253	DWJ	1/21 99
D	PART REVISED AS NOTED RECALC	TD	10/14 04
D1	REVISED NOTE #1	RT	09/01 10

U.S. ALUMINUM CORP.

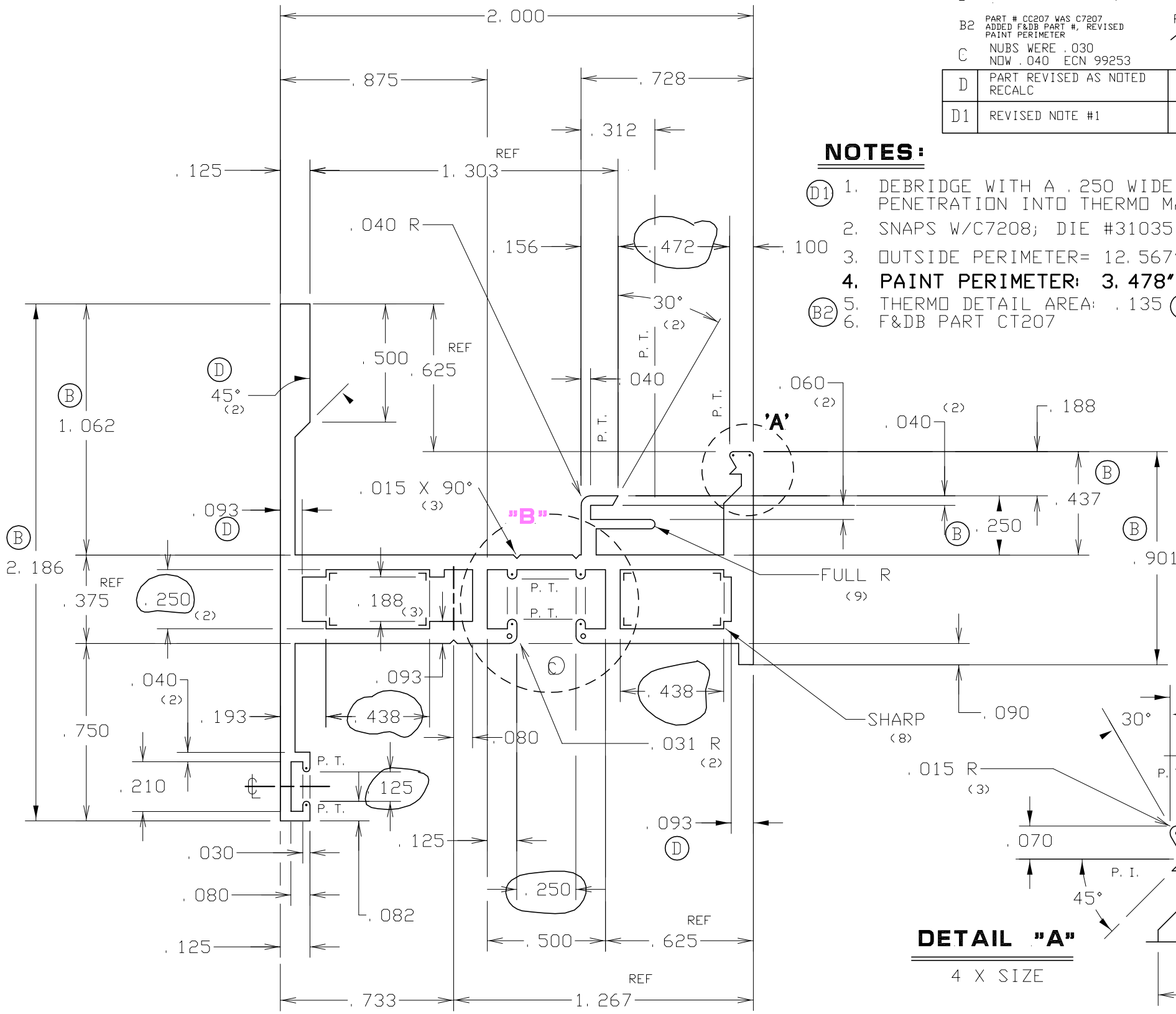
H-31034 D1

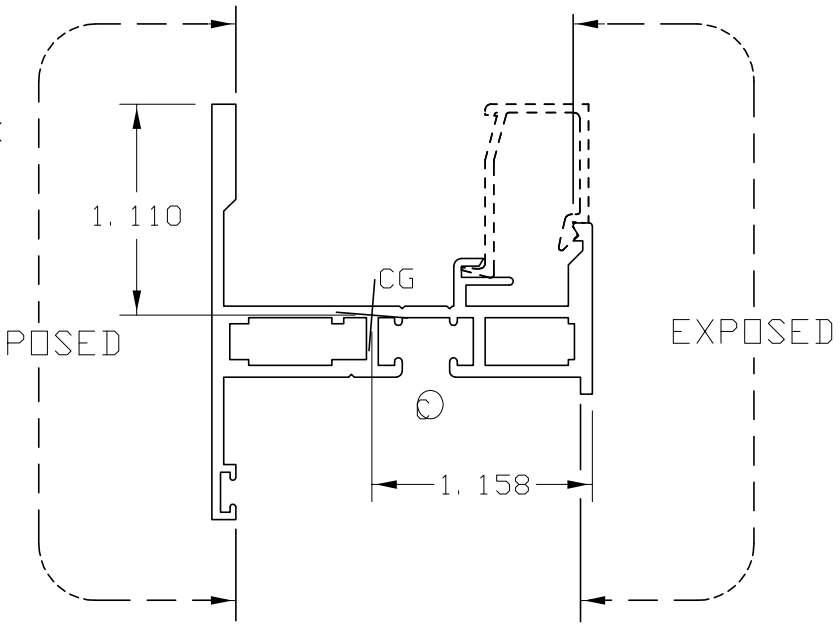
CASEMENT & PD VENT | B. SEDHOM | 02/09/93

CC207 (B2) | 2 X SIZE

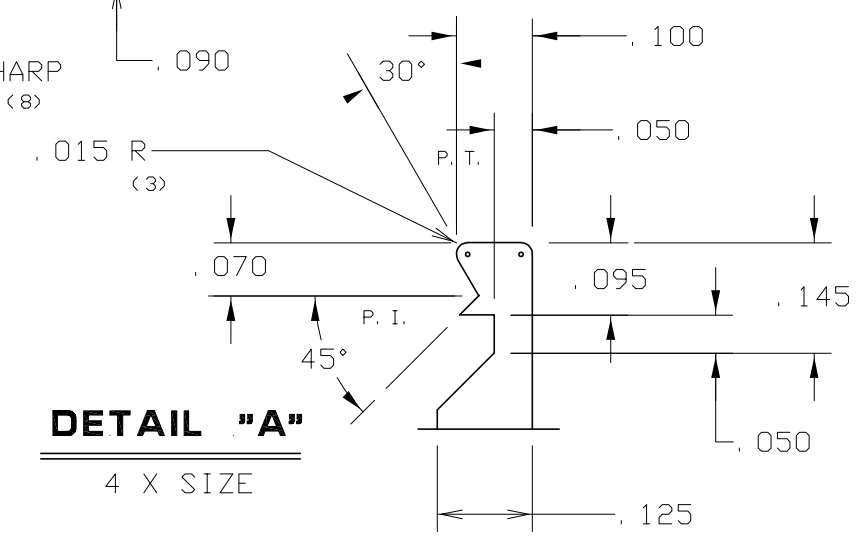
NOTES:

(D1) 1. DEBRIDGE WITH A .250 WIDE X .015 MAX PENETRATION INTO THERMO MATERIAL
2. SNAPS W/C7208; DIE #31035
3. OUTSIDE PERIMETER= 12.567"
4. PAINT PERIMETER: 3.478" (C)
(B2) 5. THERMO DETAIL AREA: .135 (C)
6. F&DB PART CT207



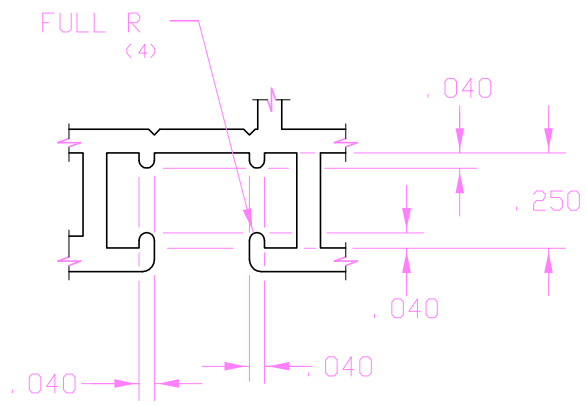


ACTUAL SIZE



DETAIL "A"

4 X SIZE



DETAIL "B" (C)

4 X SIZE

ATI
Report # 96062
Date 12/10/09
Simulator

SECTION PROPERTIES:

Ixx = 0.305 in^4
Sxx = 0.263 in^3
Iyy = 0.099 in^4
Syy = 0.089 in^3

7200 WINDOWS

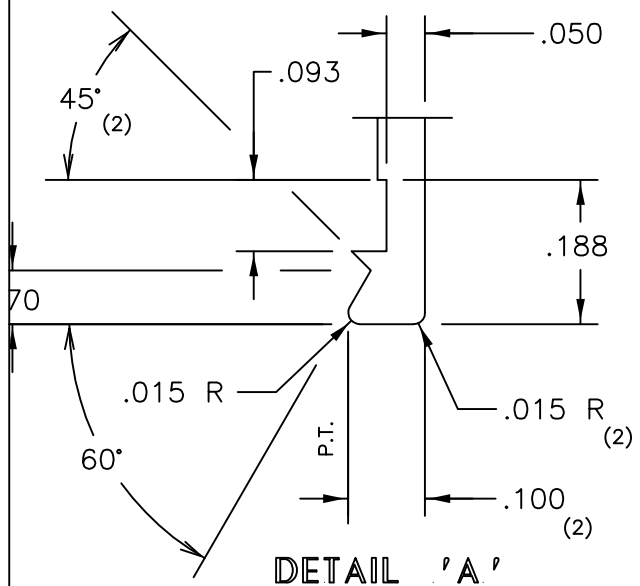
.062

.557	(D)	P-21363	1
.668	(D)	2.750	T/S
16.015	(D)	HOLLOW II	1-14
24		6 55	H-31034 D1

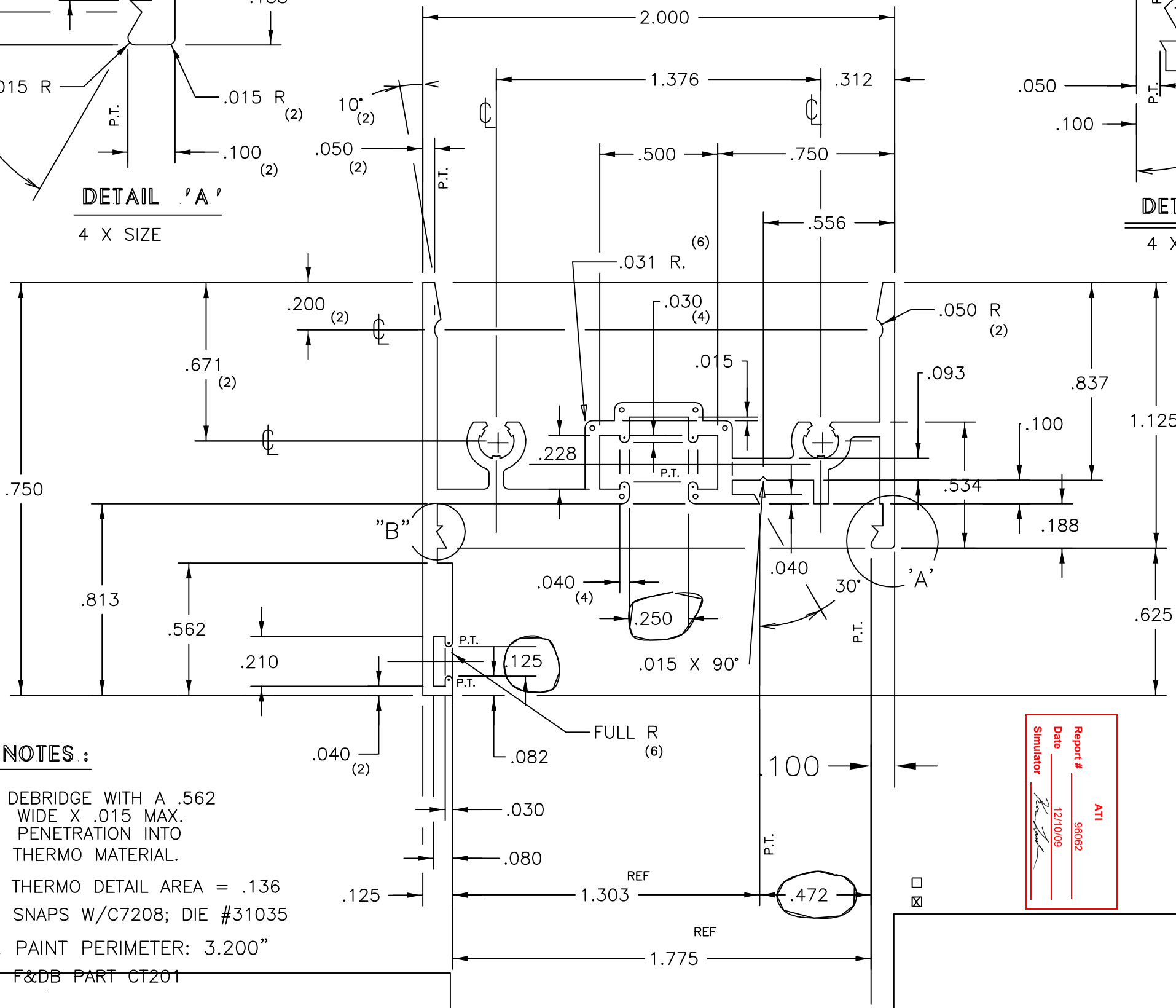
				U. S. ALUMINUM CORP.	T-31029 | A2
A1	PART # CC201 WAS C7201 ADDED F&DB PART #, REVISED PAINT PERIMETER	RT / GH	2/03 98	HEAD/SILL CASEMENT & P.O.	MAMO	02/09/93
A2	Added struct.prop. revised wt/ft ECN99118	GLH	7/14 99	CC201 (A1)	2 X SIZE	

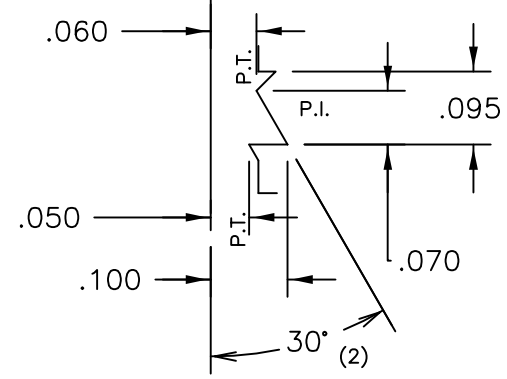
(A2) PROPERTIES:

I_{xx} = 0.246
S_{xx} = 0.219
I_{yy} = 0.051
S_{yy} = 0.053

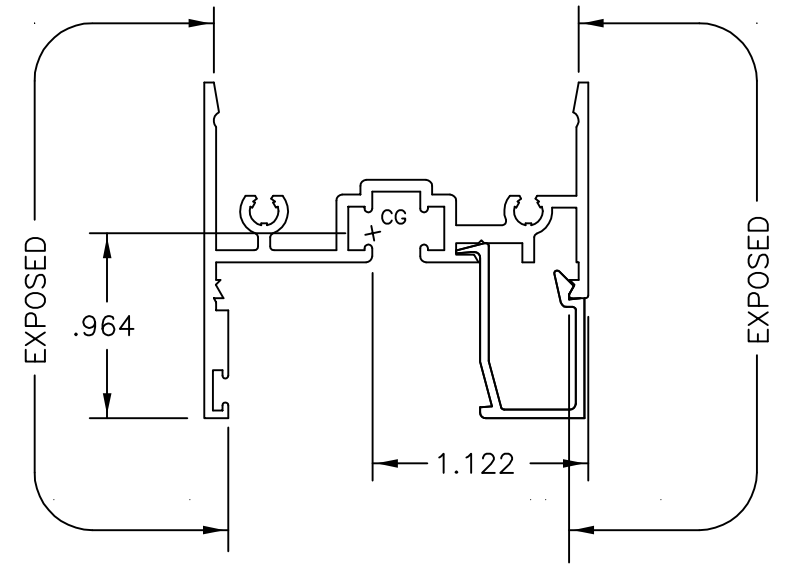


DETAIL 'A'
4 X SIZE

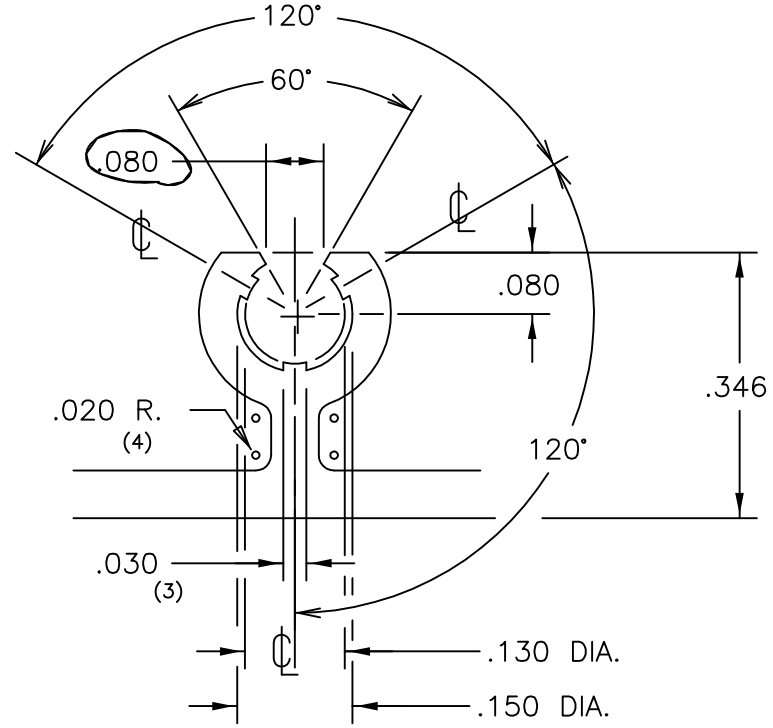




DETAIL "B"
4 X SIZE



ACTUAL SIZE



SCREW RACE DETAIL
SCALE: 4X SIZE (2 PLACES)

NOTES:

1. DEBRIDGE WITH A .562 WIDE X .015 MAX. PENETRATION INTO THERMO MATERIAL.
2. THERMO DETAIL AREA = .136
3. SNAPS W/C7208; DIE #31035
4. PAINT PERIMETER: 3.200"
5. F&DB PART CT201

(A1)

Simulator ATI
Date 12/10/09
Report # 96062

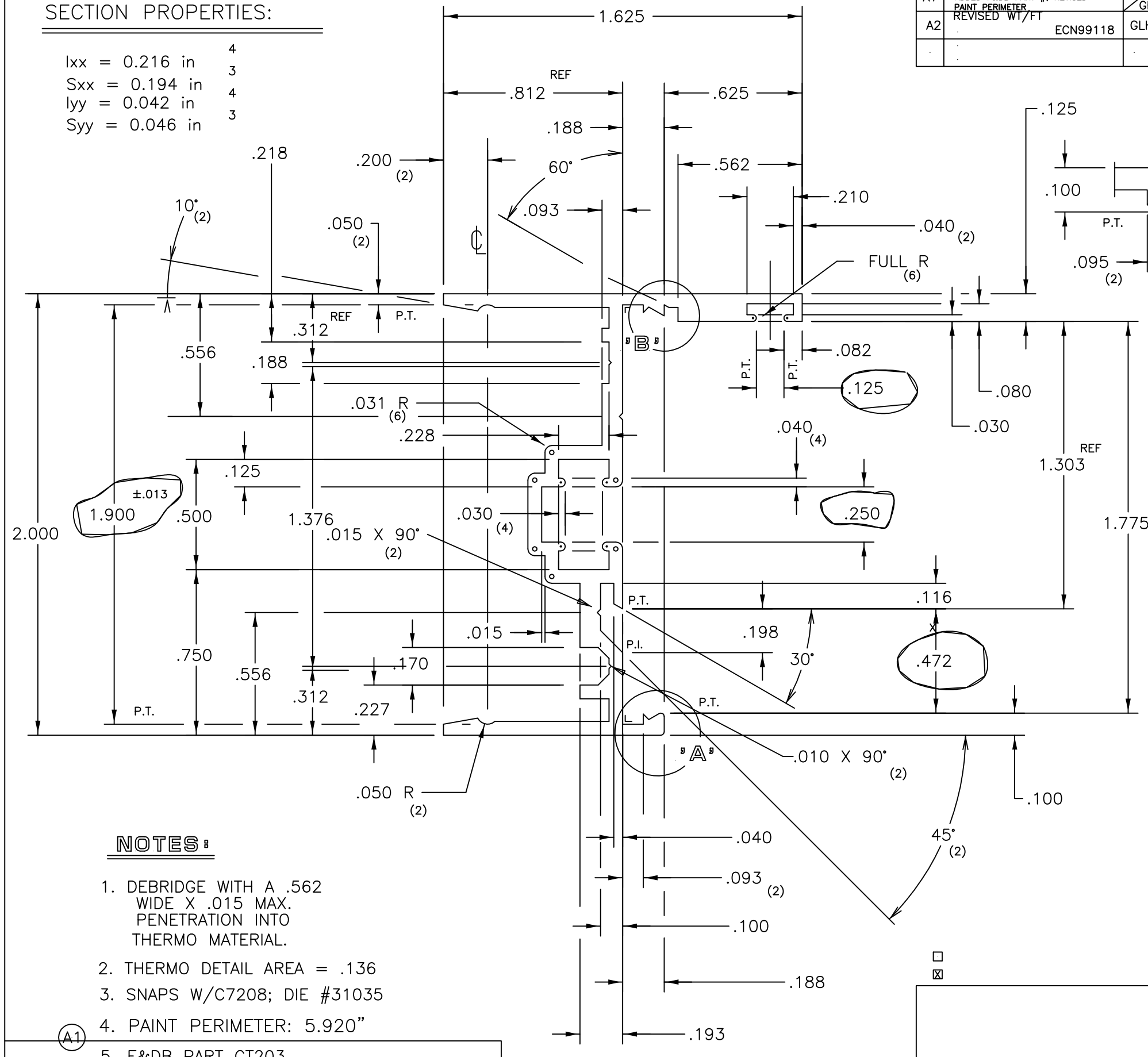
.062

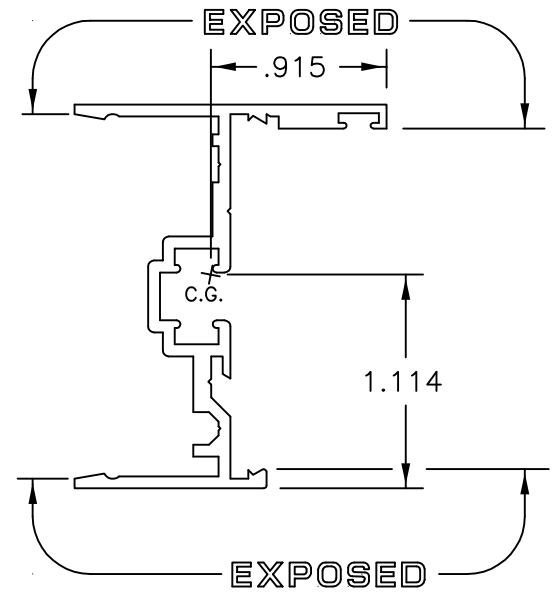
.451	P-21357	1
.530 * (A2)	2.600	9X31029
14.551	SOLID	B01-15
27	7" = 91	T-31029 | A2

				U. S. ALUMINUM CORP.	T-31031 A2
A1	PART # CC203 WAS C7203 ADDED F&DB PART #, REVISED PAINT PERIMETER	RT	2/03 98		
A2	REVISED WT/FT ECN99118	GLH		JAMB / CC203 (A1)	MAMO / 2 X SIZE — 02/09/93

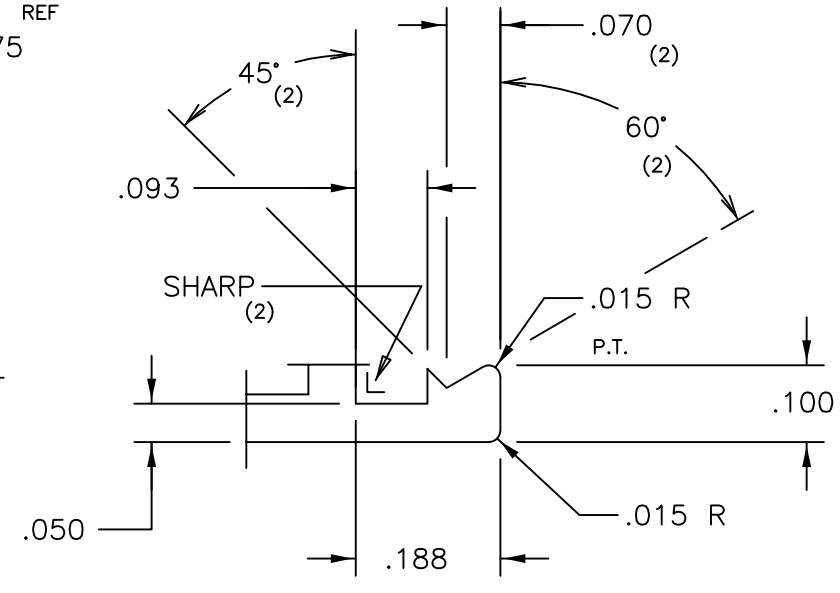
SECTION PROPERTIES:

Ixx = 0.216 in^4
Sxx = 0.194 in^3
Iyy = 0.042 in^4
Syy = 0.046 in^3





ACTUAL SIZE



DETAIL "A"
4 X SIZE

NOTES:

1. DEBRIDGE WITH A .562 WIDE X .015 MAX. PENETRATION INTO THERMO MATERIAL.
2. THERMO DETAIL AREA = .136
3. SNAPS W/C7208; DIE #31035
4. PAINT PERIMETER: 5.920"
5. F&DB PART CT203

(A1)

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Simulator

A11

☐
☒

.062

	.401	P-21359	2
	.472 * (A2)	2.600	9X30983
	12.510	SOLID	B02-35
	26	7" = 51	T-31031 A2

U.S. ALUMINUM CORP. H-31046 C2

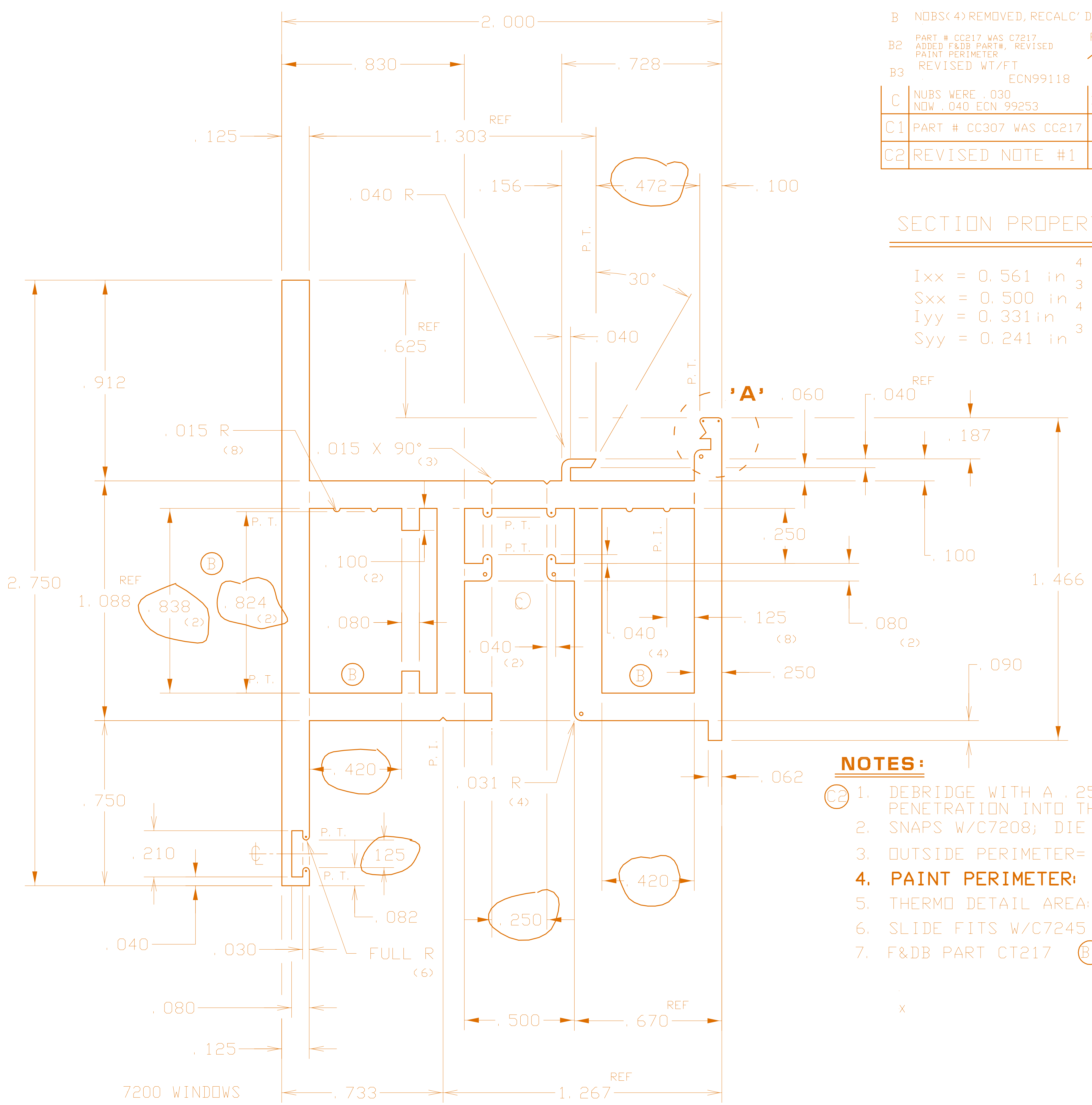
CASEMENT & PO VENT-HD | MAMO | 05/24/93

CC307 (C1) | 2 X SIZE

B	NOBS(4) REMOVED, RECALC'D	MM	3/31 94
B2	PART # CC217 WAS C7217 ADDED F&DB PART#, REVISED PAINT PERIMETER	RT / GH	2/05 98
B3	REVISED WT/FT ECN99118	GLH	7/15 99
C	NUBS WERE .030 NOW .040 ECN 99253	DWJ	1/21 99
C1	PART # CC307 WAS CC217	RT	09/25 02
C2	REVISED NOTE #1	RT	9/10 10

SECTION PROPERTIES:

$I_{xx} = 0.561\ in^4$
$S_{xx} = 0.500\ in^3$
$I_{yy} = 0.331\ in^4$
$S_{yy} = 0.241\ in^3$



NOTES:

(C2) 1. DEBRIDGE WITH A .250 WIDE X .015 MAX PENETRATION INTO THERMO MATERIAL
2. SNAPS W/C7208; DIE #31043
3. OUTSIDE PERIMETER= 13.978 (C)
4. **PAINT PERIMETER: 4.606** (B2) (C)
5. THERMO DETAIL AREA: .140 (C)
6. SLIDE FITS W/C7245 - 30972
7. F&DB PART CT217 (B2)

ATI
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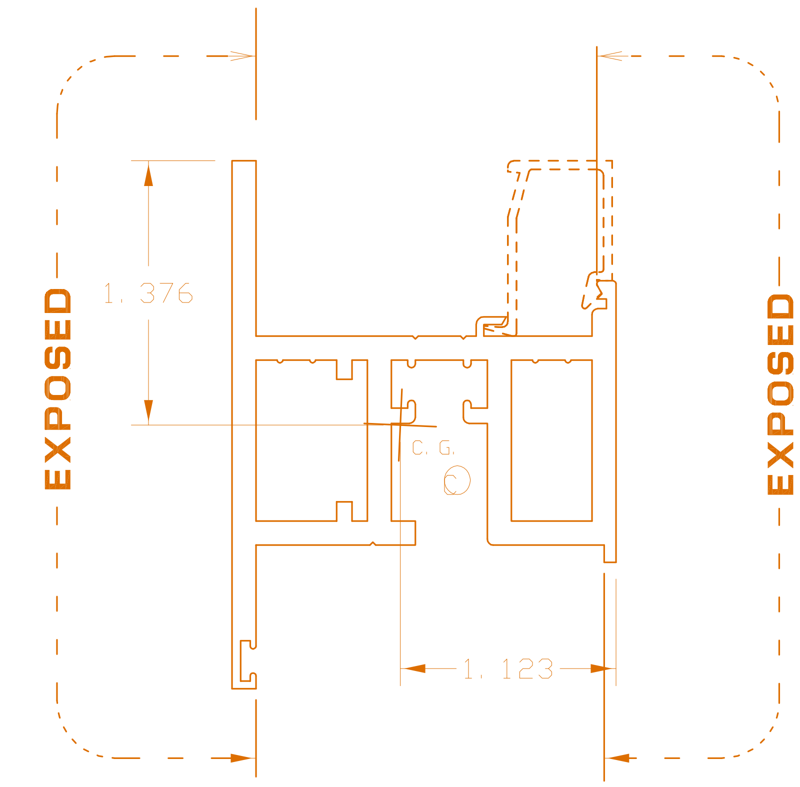
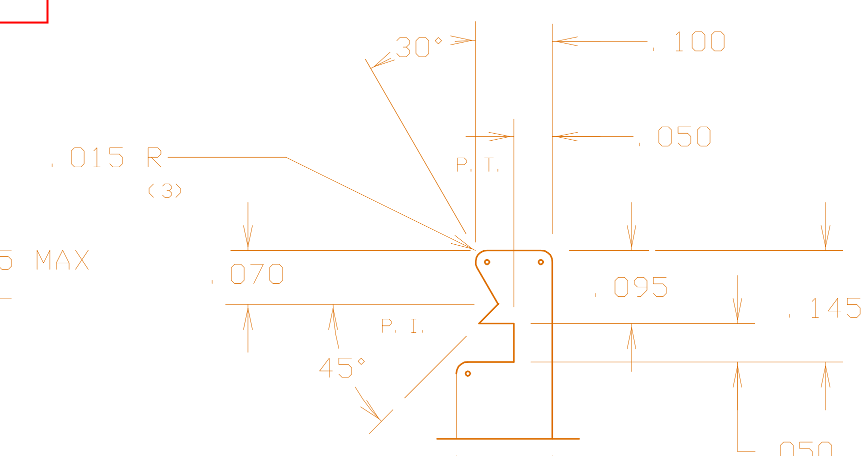
Simulator [signature]



ACTUAL SIZE



DETAIL "A"
4 X SIZE

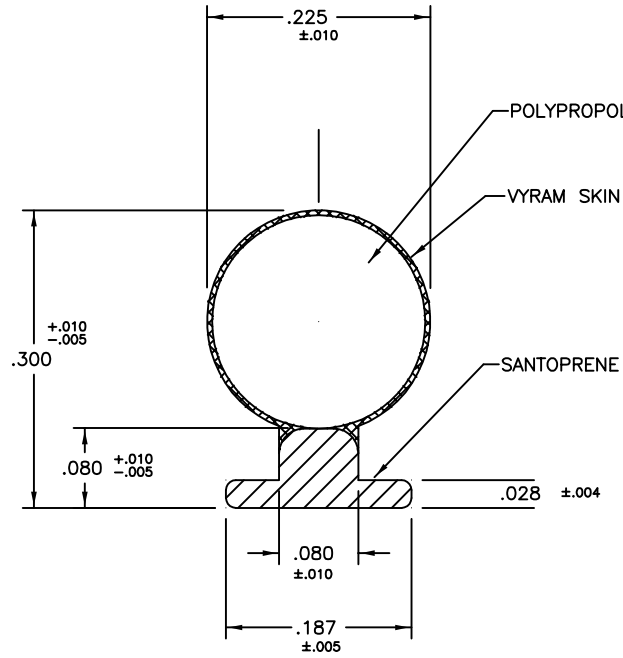
1.150 (C)		P-21548
1.380 (B3) (C)		2.751
19.803 (C)		HOLLOW II
14		

7200 WINDOWS

H-31046 C2

USA–1820

ACTUAL SIZE



NOTE:

1. FACE CLEARANCE = .125
2. MATERIALS: POLYPROPOLENE
   SANTOPRENE ™
   VYRAM ™
3. AMESBURY 32007 or EQUAL

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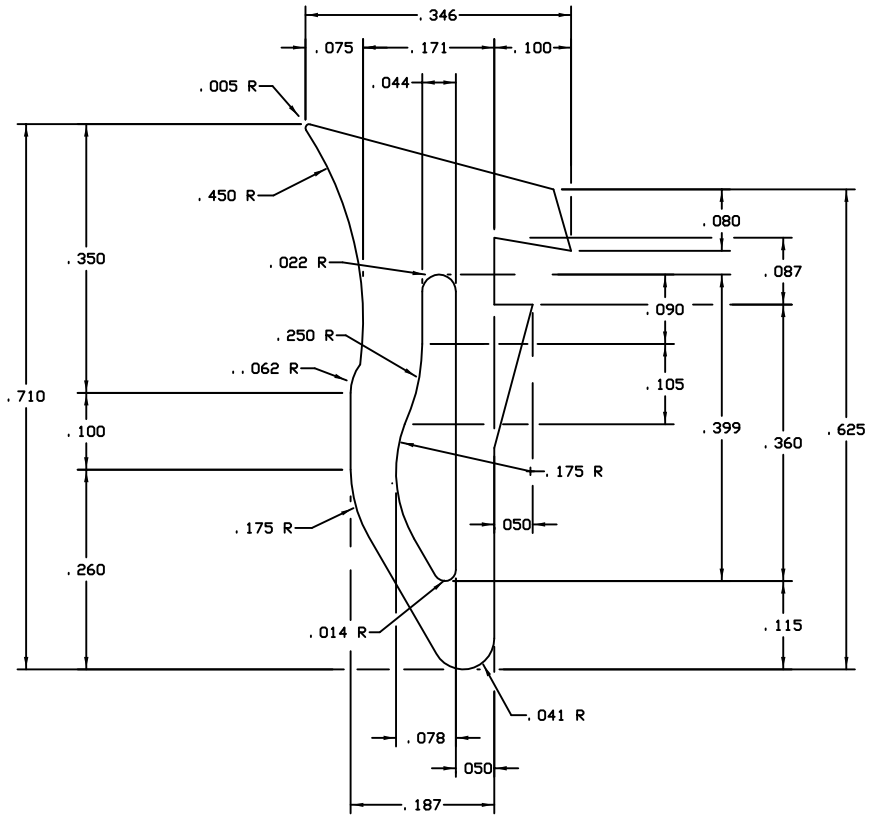
				U.S. ALUMINUM CORP.		
				GLH	PART NO. WH342 BULB GASKET for 7200 WINDOWS	
				7/20/99		USA–1820
				8 X SIZE		

USA-1819 B

ACTUAL SIZE



NOTE:

1. FACE CLEARANCE = .188
2. DUROMETER = 70 ±5
3. MATERIAL: EPDM
4. TREMCO PS-1126E or EQUAL
5. (B) SILICONE BATH.

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SYM.	REVISION	DATE	BY
	PART NO. WH344		
(B)	ADD SILICONE BATH NOTE	08/20/03	WCC

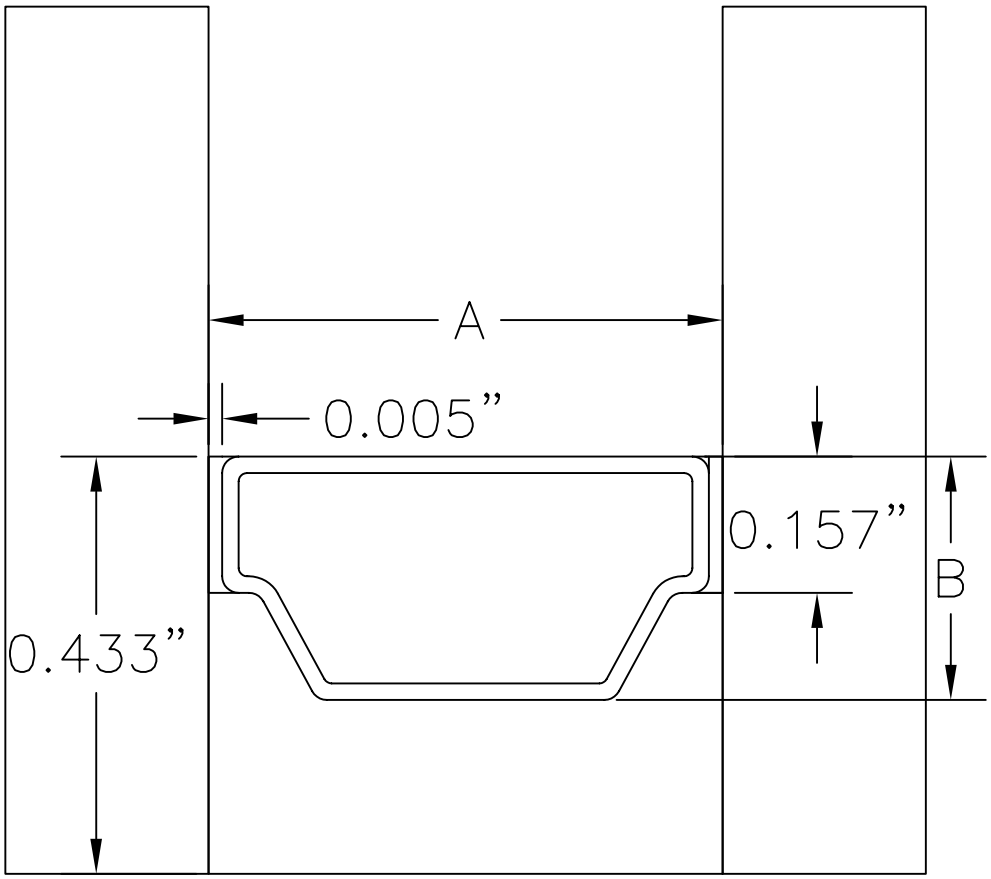
International Aliminum Corporation
DIVISION U.S. ALUMINUM CORP.

DRWN BY: GLH
DATE: 7/20/99
SCALE: 8 X SIZE

WEDGE GASKET for
7200 WINDOWS & ES350

DWG NO.
USA-1819 B

Aluminum Spacer



Offset: None
Primary Sealant: Butyl Rubber
Secondary Sealant: Butyl Rubber
Material: Aluminum
Width (A): 0.500
Height (B): 0.295
Wall Thickness: 0.016

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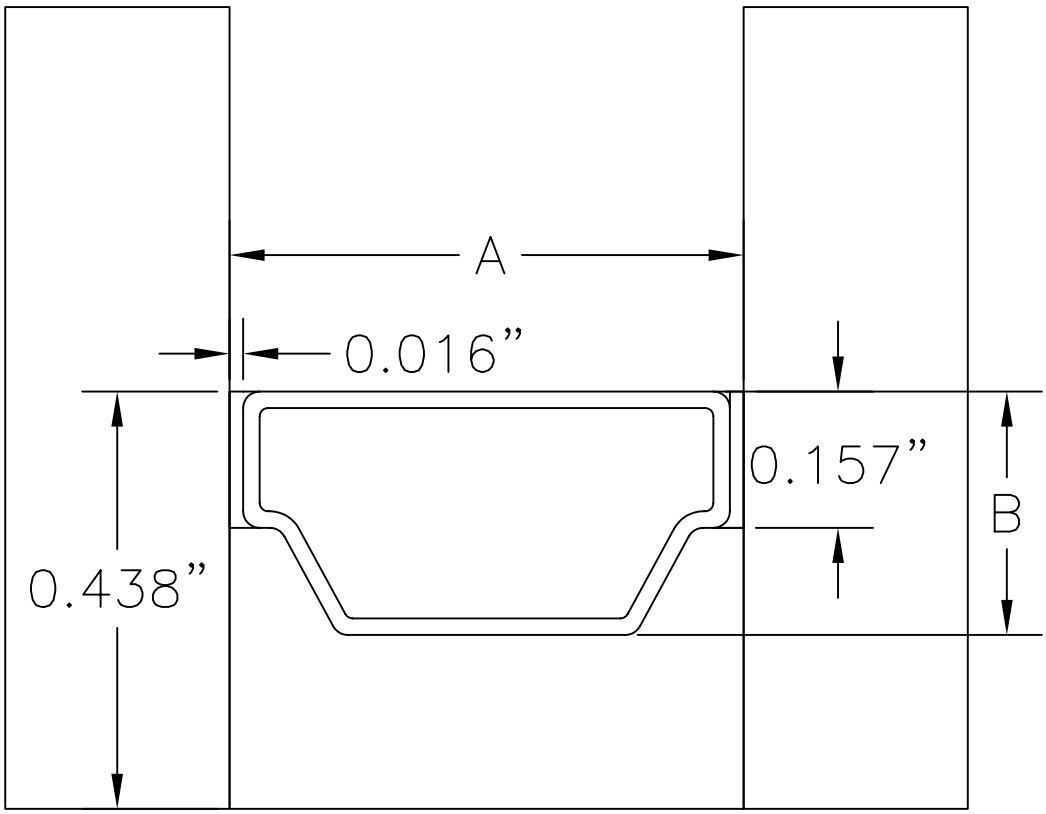
Stainless Steel Spacer



Offset: None
Primary Sealant: Polyisobutylene
Secondary Sealant: Silicone
Material: Stainless Steel
Width (A): 0.500
Height (B): 0.295
Wall Thickness: 0.016

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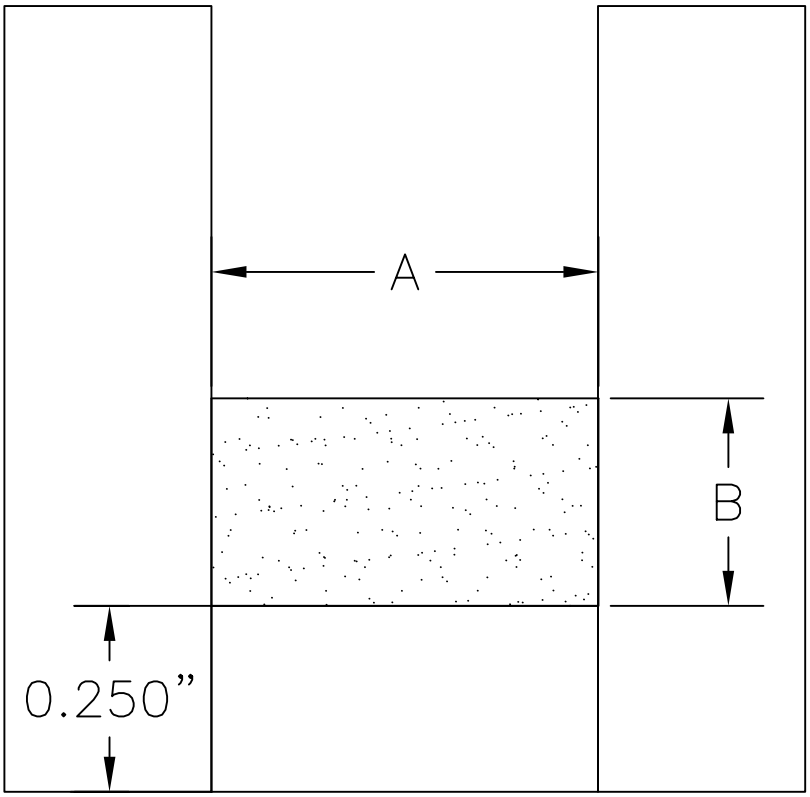
SUPER SPACER



Offset: None

Primary Sealant: Butyl Rubber

Secondary Sealant: None

Material: Silicone Foam

Width (A): 0.500”

Height (B): 0.188”

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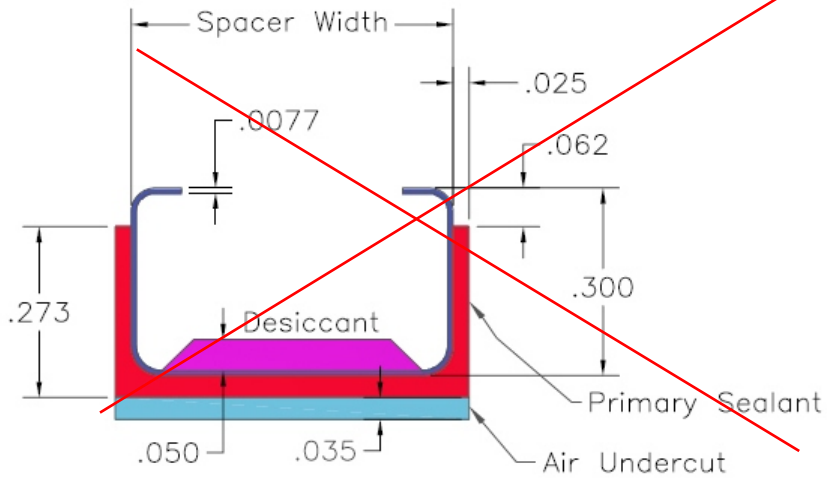
Date 12/10/09

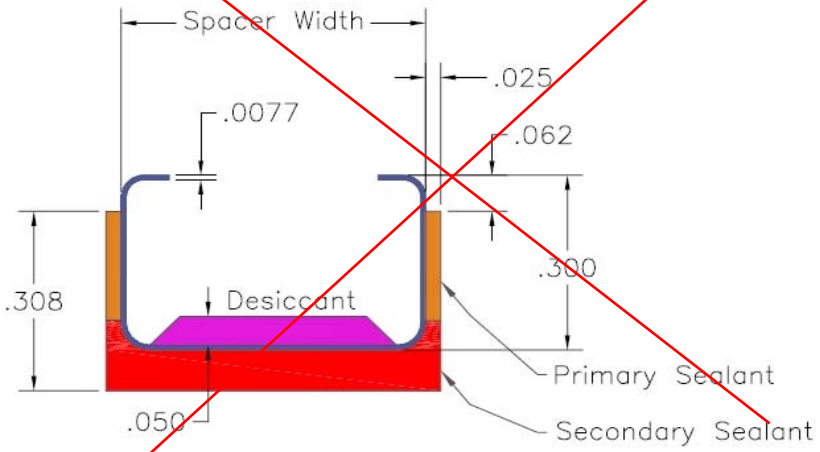
Simulator

Intercept® Technologies —Correct Geometry

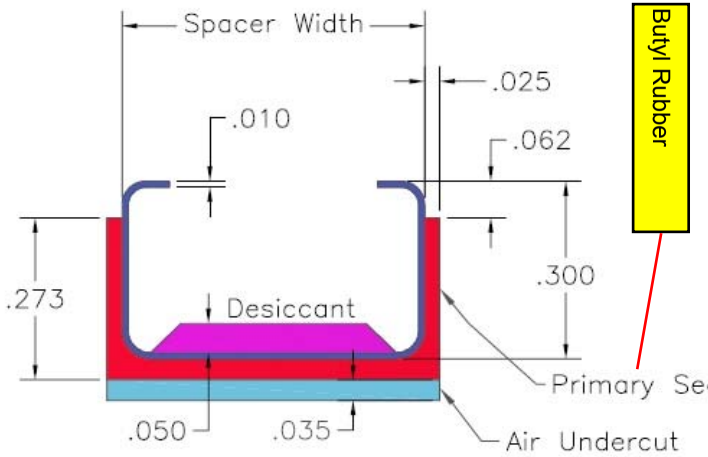
Intercept® ULTRA Stainless Steel—Standard Profile
SINGLE SEAL



Intercept® ULTRA Stainless Steel—Standard Profile
DUAL SEAL



Intercept® *Blackline* or Electrolytic Tin Plated Steel—Standard Profile
SINGLE SEAL



Butyl Rubber

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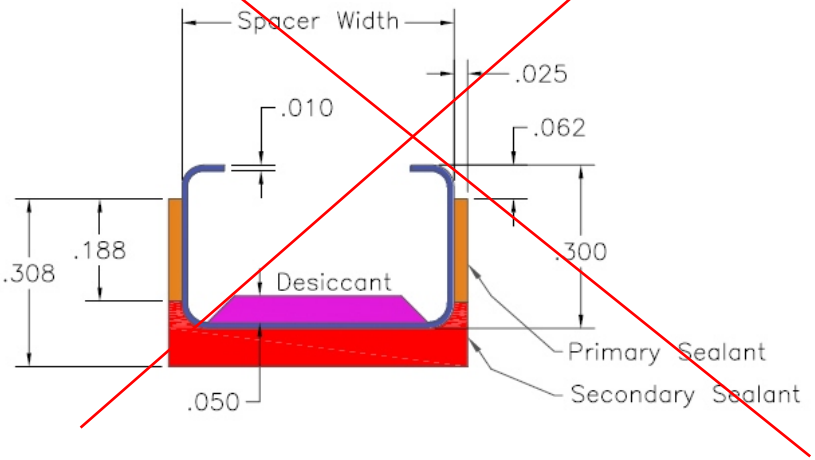
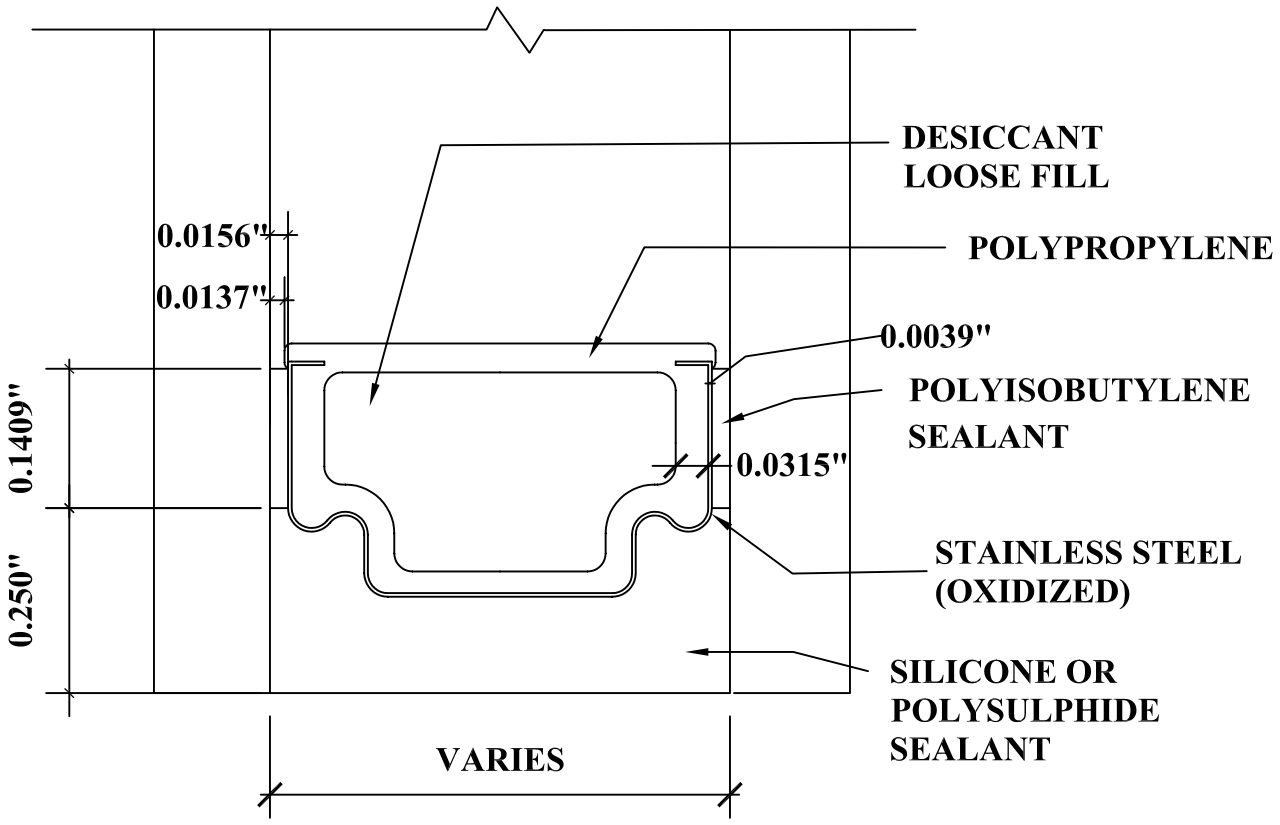
Simulator ATI

Intercept® *Blackline* or Electrolytic Tin Plated Steel—Standard Profile
DUAL SEAL



GED Integrated Solutions, Inc., 9280 Dutton Drive, Twinsburg, OH 44087 330.963.5401 Fax: 330.425.8741 www.gedusa.com
GEDUSA®



DETAIL FOR THERMAL MODELING OF
TECHNOFORM I SPACER - WAVE (TS-D)

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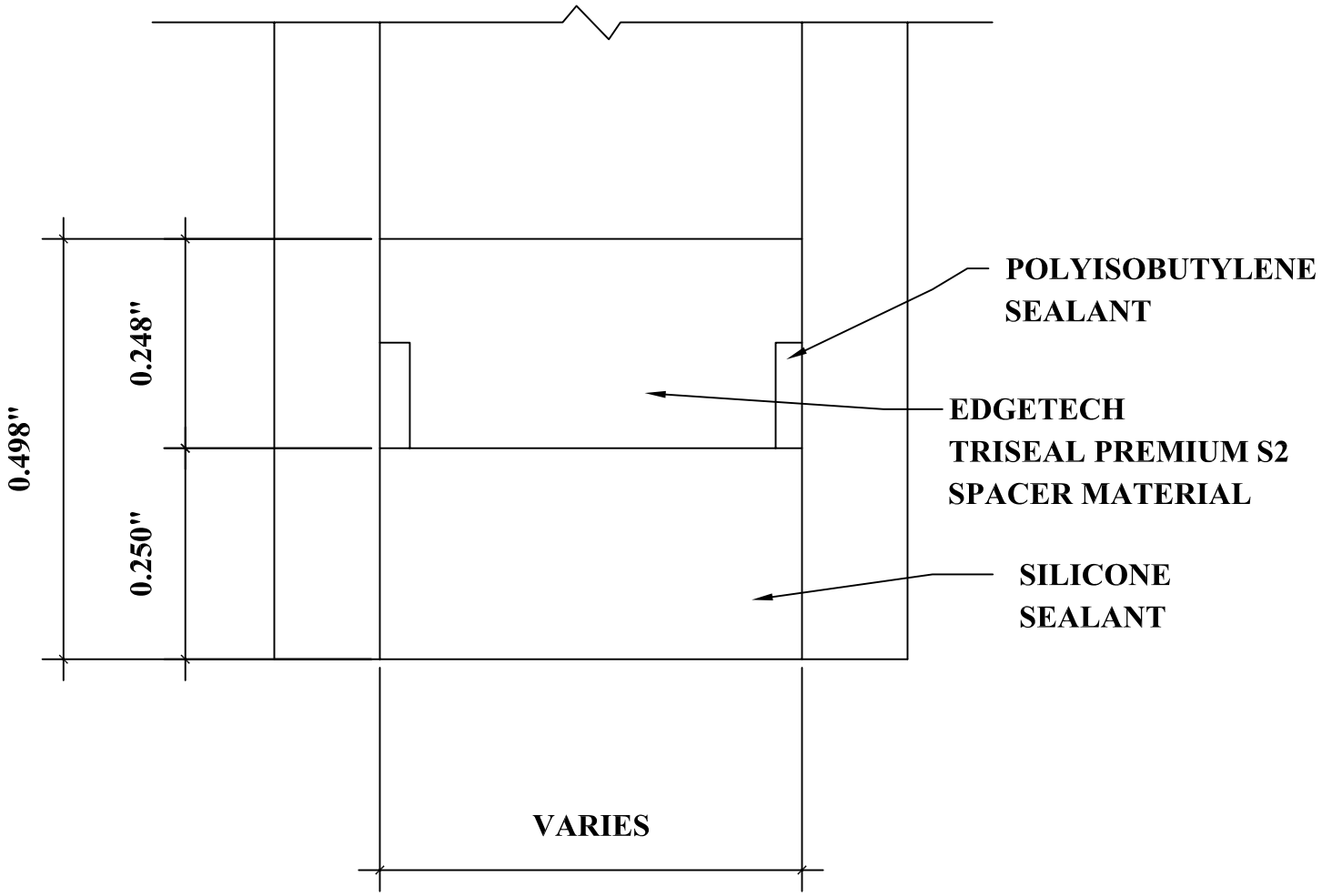
Simulator



DETAIL FOR THERMAL MODELING OF
EDGETECH SUPER SPACER TRISEAL / T-SPACER PREMIUM (ZF-D)

ATI

Report # 96062

Date 12/10/09

Simulator