



Quality Accuracy Assurance

# Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877  
e-mail: clientservices@ftl-inc.com www.ftl-inc.com

Report Date: 01/05/2018  
Simulation Date: 01/03/2018  
Expiration Date: 01/03/2022  
Report Number: 1002  
Project Number: 17-7652  
Revision Number: 0

## Thermal Simulation Report

**Manufacture:** Coral Architectural Products

**Address:** 4750 Distribution Drive  
Tampa, Florida 33605

**Specifications:** ANSI/NFRC 100-2017: Procedure for Determining Fenestration Product U-Factor  
ANSI/NFRC 200-2017: Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence.  
ANSI/NFRC 500-2017: Procedure for Determining Fenestration Product Condensation Resistance Values

**Software:** Therm 7.4.3.0, Window v7.4.8, Simulation Manual. Optics 6  
**Spectral Data Library:** IGDB v55.0

## Baseline Product Validation

The baseline product must be tested in accordance with NFRC 102 "Test Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems" to validate the U Values indicated. NFRC 100-2017 states "The baseline product is the individual product selected for validation testing". The individual product selected as the baseline product shall have a simulated U-factor within 0.10 Btu/h-ft<sup>2</sup>-F or 20% of the lowest simulated U-factor, whichever is greater.

Product Description	Product Number	Pane Thickness #1	Pane Thickness #2	Gap	Gap Fill	Emissivity Surface # 2	Spacer	U Factor
6 mm LoE 270 - Air- 6mm Clr	01	0.236	0.236	0.500	AIR	0.037	SS-D	0.44

**Window Test Size:** 2000 mm (79") by 2000 mm (79") high



Quality Accuracy Assurance

# Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877  
 e-mail: clientservices@ftl-inc.com www.ftl-inc.com

Report Date: 01/05/2018  
 Simulation Date: 01/03/2018  
 Expiration Date: 01/03/2022  
 Report Number: 1002  
 Project Number: 17-7652  
 Revision Number: 0

<b>Model Designation:</b>	Series; FL600T Storefront System
<b>Operator Code:</b>	GWWW
<b>Simulated Model Size:</b>	2000 mm (79") by 2000 mm (79") high

Frame Construction	
<b>Frame Material and Finish:</b>	(AL) Painted aluminum alloy with thermally broken members

Spacer Type	Sealant Primary	Sealant Secondary	Desiccant
Cardinal XL	PIB	Silicone	Silica Gel (loose fill)

Edge of Glass Construction	
<b>Interior Condition:</b>	EPDM gasket
<b>Exterior Condition:</b>	Extruded aluminum glazing bead with EPDM gasket

Gas Type	Filling Technique	Gas Fill Percentage
None	None	None

Weather Stripping		
Quantity	Description	Location
None	None	None

Hardware		
Quantity	Description	Location
None	None	None

*Only continuous elements which require modeling are listed*



Quality Accuracy Assurance

## Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877  
e-mail: [clientservices@ftl-inc.com](mailto:clientservices@ftl-inc.com) [www.ftl-inc.com](http://www.ftl-inc.com)

Report Date: 01/05/2018  
Simulation Date: 01/03/2018  
Expiration Date: 01/03/2022  
Report Number: 1002  
Project Number: 17-7652  
Revision Number: 0

Reinforcement	
Material	Location
None	None

Dividers/Grids		
Grid Size	Material	Grid Pattern
None	None	None
<i>Note: any deviations in grid pattern are noted here</i>		

**Modeling Assumptions:** Window wall was simulated per NFRC 100 Table 4-3 which states; Window walls shall be tested and simulated with intermediate verticals as jambs and standard head and sill members. The validation unit is not a product that will be found in a real situation. It is required that the intermediate verticals to have glass pockets at jambs replaced with wood block inserts for a validation of the simulated product line.



Quality Accuracy Assurance

# Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877  
e-mail: [clientservices@ftl-inc.com](mailto:clientservices@ftl-inc.com) [www.ftl-inc.com](http://www.ftl-inc.com)

Report Date: 01/05/2018  
Simulation Date: 01/03/2018  
Expiration Date: 01/03/2022  
Report Number: 1002  
Project Number: 17-7652  
Revision Number: 0

## Simulated Data

Product Description	Product ID Number	Pane Thickness #1	Pane Thickness #2	Gap #1	Gap Fill #1	Emissivity Surface #2	Tint	Total Product U-Factor	Condensation Resistance	Total Product SHGC NG	Total Product VT NG
6 mm LoE 270 - Air- 6mm Clr	01	0.236	0.236	0.500	AIR	0.037	CL	0.42	47	0.33	0.58

Low E Coatings Used:  
Cardinal Glass Industries LoE 270 e=0.037



Quality Accuracy Assurance

# Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877  
e-mail: clientservices@ftl-inc.com www.ftl-inc.com

Report Date: 01/05/2018  
Simulation Date: 01/03/2018  
Expiration Date: 01/03/2022  
Report Number: 1002  
Project Number: 17-7652  
Revision Number: 0

Remarks
<p>“Rating 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.”</p> <p>“The values included in this report are not considered in compliance with NFRC 100, NFRC 200, and/or NFRC 500 unless the associated validation test requirements have been satisfied, as applicable.”</p> <p>“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.”</p> <p>Simulations were conducted in full compliance with NFRC requirements. Simulation relates only to the simulated Fenestration product.</p> <p>Rounding is per requirements of NFRC 601, NFRC Unit and Measurement Policy.</p> <p>U factors, Solar Heat Gain Coefficients, Visible Transmittance and Condensation Resistance values are calculated with a default frame absorption of 0.30 for all products other than glazed walls and slope glazing which have a frame absorption of 0.50.</p> <p>Drawings referenced in this document are an integral part of this report, therefore, are required when distributing this test report. Simulation results obtained represent the actual value of the simulated specimen and does not constitute opinion, endorsement or certification by this laboratory.</p> <p>This test report is considered the exclusive property of the client named herein and is applicable to the specimen simulated. This report may not be reproduced without the approval of Fenestration Testing Laboratory, Inc and if so must be in full.</p>

Revision History Table			
Revision	Description	Author	Effective Date
0	Initial Release	Jorge Palomares	01/05/2018

**Simulation Conducted by**

Jorge Palomares

**Simulator**

Jose Sanchez

**Simulator- in- Responsible- Charge**



Quality Accuracy Assurance

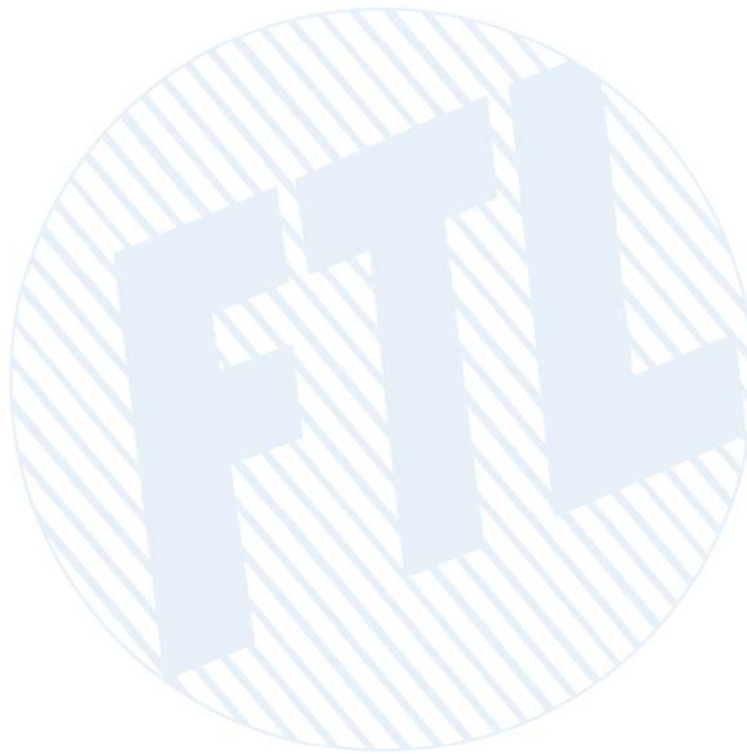
## Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877  
e-mail: [clientservices@ftl-inc.com](mailto:clientservices@ftl-inc.com) [www.ftl-inc.com](http://www.ftl-inc.com)

Report Date:	01/05/2018
Simulation Date:	01/03/2018
Expiration Date:	01/03/2022
Report Number:	1002
Project Number:	17-7652
Revision Number:	0

### Appendix

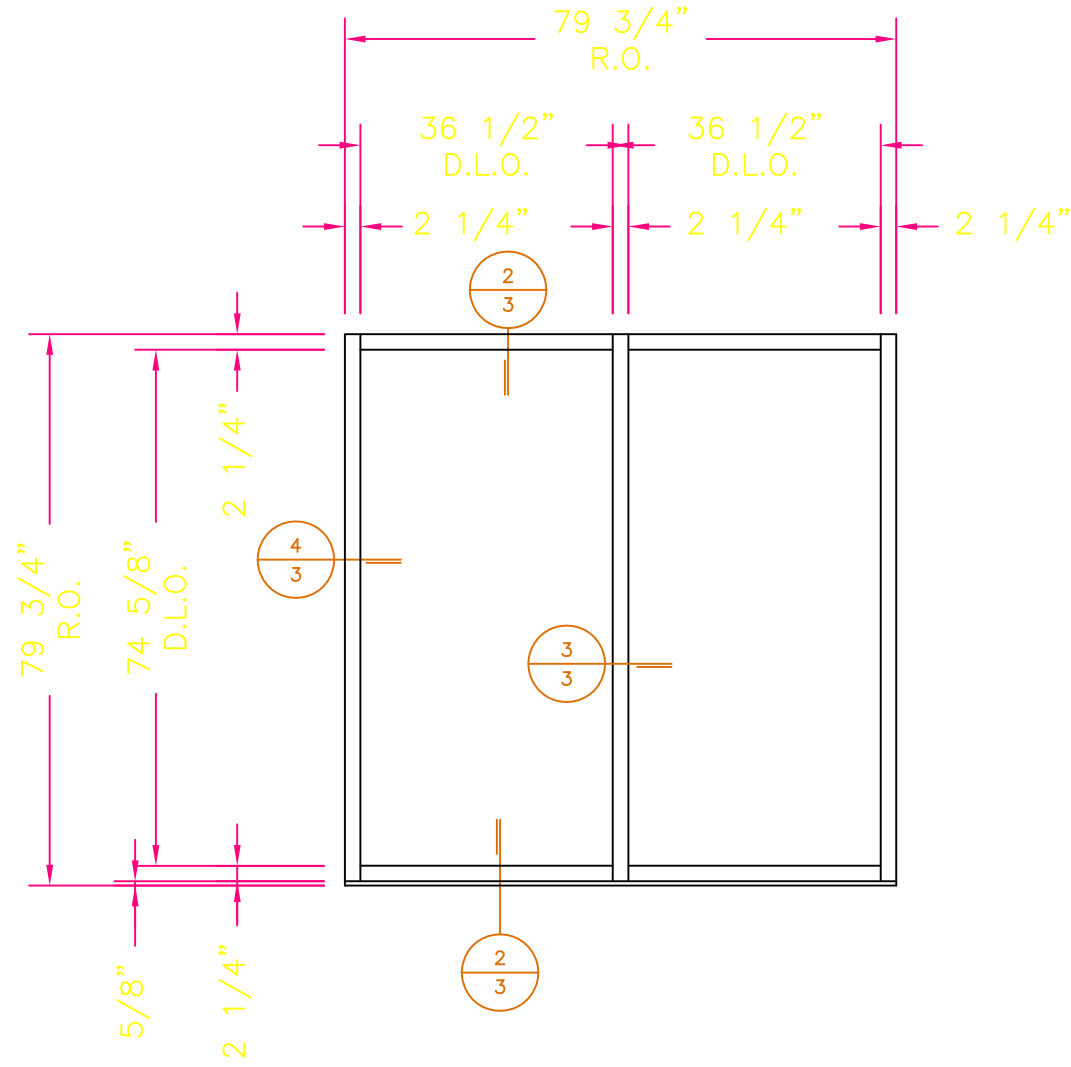
Fenestration Simulated Product Drawings and Bill of Material





Window wall was simulated per NFRC 100 Table 4-3 which states; Window walls shall be tested and simulated with intermediate verticals as jambs and standard head and sill members. The validation unit is not a product that will be found in a real situation. It is required that the intermediate verticals to have glass pockets at jambs replaced with wood block inserts for a validation of the simulated product line.

Simulated Specimen complies with this detail except where noted  
 Simulation Report Number: 1002  
 Date: 3/5/2018  
 Initials: MS



**TYPICAL ELEVATION**

ELIZABETH A. BROADWAY  
 PROFESSIONAL ENGINEER  
 FLORIDA REGISTRATION NO. 38558

**BROADWAY ENGINEERING, P.A.**  
 CIVIL, MECHANICAL, STRUCTURAL AND BUILDING DESIGN  
 See Us At [www.Broadway-Eng.Com](http://www.Broadway-Eng.Com)  
 1335 W. Cass Street  
 Tampa, Florida 33606 813-251-9244  
 Fax 813-251-9330 Bus. Email: [Info@Broadway-Eng.Com](mailto:Info@Broadway-Eng.Com)  
 Cadd. Email: [DGorr@Broadway-Eng.Com](mailto:DGorr@Broadway-Eng.Com)  
**BE-4545** Certificate of Authorization No. 4599

REV	BY	DATE	DESCRIPTION

FL600T AAMA  
 TEST DRAWINGS  
 FRAMING ELEVATIONS

PROJECT NO.	FL600T
DRAWN	DATE
MRG	10/13/17
CHECKED	APPROVED
WS	###
SHEET	2 OF 5





## BILL OF MATERIALS

ITEM NO.	P/N	DESCRIPTION	DIMENSIONS	MATERIAL	MANUFACTURER	NOTES
1	NG1	EXTERIOR GLAZING GASKET	0.120 SPACE	EPDM	VARIES	
2	795	SILICONE	FILL SPACE	SILICONE	DOW CORNING	
3	SB3	SETTING BLOCK @ SILL & HORIZONTAL	0.625 X 1.218 X 4.000	EPDM	VARIES	2 PER LITE
<del>4</del>	<del>WD300</del>	<del>WATER DIVERTER</del>	<del>1.358 X 1.344 X 4.000</del>	<del>INJECTION MOLDED PLASTIC</del>	<del>CORAL INDUSTRIES, INC.</del>	<del>@ EACH END OF HORIZONTAL</del>
5	FL639T	SUBSILL FLASHING	2.500 X 6.250 X 0.094	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
6	FL626T	SILL	2.500 X 5.969 X 0.100	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
7	FL303	GLASS STOP	1.207 X 1.543 X 0.050	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
8	FL634T	STD. VERTICAL MULLION / HEAD	2.500 X 6.000 X 0.093	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
9	FL625T	OPEN BACK MULLION FILLER	0.862 X 5.670 X 0.078	6063-T6 ALUMINUM	CORAL INDUSTRIES, INC.	
<del>11</del>	<del>ED519</del>	<del>SILL FLASHING END DAM</del>	<del>2.500 X 1.000 X 0.062</del>	<del>6063 T6 ALUMINUM</del>	<del>CORAL INDUSTRIES, INC.</del>	
<del>12</del>	<del>AS16</del>	<del>FASTENER</del>	<del>#14 X 1" HHGTS</del>	<del>STEEL</del>	<del>VARIES</del>	<del>TYP. SPLINE SCREW VERTICAL/HORIZONTAL JOINTS</del>
<del>13</del>	<del>AS56</del>	<del>FASTENER</del>		<del>STEEL</del>	<del>VARIES</del>	<del>ANCHOR (FL626T)-TO (FL639T)</del>

GLASS INDEX BY MANUFACTURER	
MARK	DESCRIPTION
(G1)	1" INSULATED UNIT 1/4" TEMPERED LOW E ON SURFACE 2 1/2" AIR SPACE 1/4" CLEAR TEMPERED

Simulated Specimen complies with this  
 detail except where noted  
 Simulation Report Number: 1002  
 Date: 3/5/2018  
 Initials: MS

ELIZABETH A. BROADWAY  
 PROFESSIONAL ENGINEER  
 FLORIDA REGISTRATION NO. 38558

**BROADWAY ENGINEERING, P.A.**  
CIVIL, MECHANICAL, STRUCTURAL AND BUILDING DESIGN  
See Us At [www.Broadway-Eng.Com](http://www.Broadway-Eng.Com)

1335 W. Cass Street  
 Tampa, Florida 33606 813-251-9244

Fax 813-251-9330 Bus. Email: [Info@Broadway-Eng.Com](mailto:Info@Broadway-Eng.Com)  
 Cadd. Email: [DGarr@Broadway-Eng.Com](mailto:DGarr@Broadway-Eng.Com)

**BE-4545** Certificate of Authorization No. 4599

PROJECT NO.	FL600T
DRAWN	MRG
DATE	10/13/17
CHECKED	WS
APPROVED	###
SHEET	

FL600T AAMA  
 TEST DRAWINGS  
 BILL OF MATERIALS

REQ	BY	DATE	DESCRIPTION



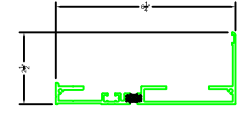
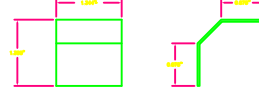
1 EXT. GLAZING GASKET FULL SCALE



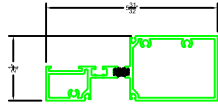
3 SETTING BLOCK FULL SCALE



4 WATER DRAINER HALF SCALE



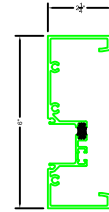
5 SUBSILL



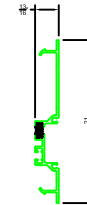
6 SILL



7 GLASS STOP

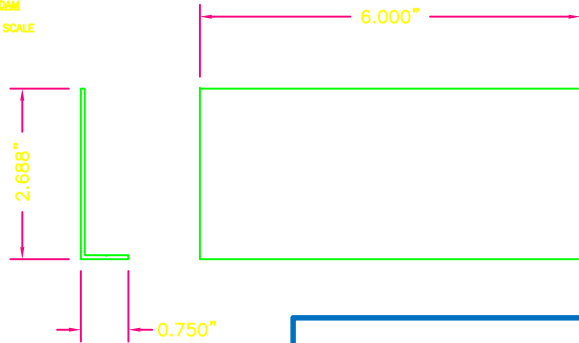


8 VERTICAL MULLION/HEAD



9 OPEN-BACK MULLION-FILLER

11 END DAM HALF SCALE



12 ASS12



13 ASS56



Simulated Specimen complies with this detail except where noted  
 Simulation Report Number: 1002  
 Date: 3/5/2018  
 Initials: MS

ELIZABETH A. BROADWAY  
 PROFESSIONAL ENGINEER  
 FLORIDA REGISTRATION NO. 38558

**B BROADWAY ENGINEERING, P.A.**  
 CIVIL, MECHANICAL, STRUCTURAL AND BUILDING DESIGN  
 See Us At [www.Broadway-Eng.Com](http://www.Broadway-Eng.Com)  
 1335 W. Cass Street  
 Tampa, Florida 33606 813-251-9244  
 Fax 813-251-9330 Bus. Email: [Info@Broadway-Eng.Com](mailto:Info@Broadway-Eng.Com)  
 Cadd. Email: [DGorr@Broadway-Eng.Com](mailto:DGorr@Broadway-Eng.Com)  
 BE-4545 Certificate of Authorization No. 4599

PROJECT NO.		FL600T
DRAWN	DATE	
MRG	10/13/17	
CHECKED	APPROVED	
WS	###	
SHEET		

REQ	BY	DATE	DESCRIPTION



FL600T AAMA  
 TEST DRAWINGS

DIE DRAWINGS

# Cardinal® IG

## XL Edge Simulation Model



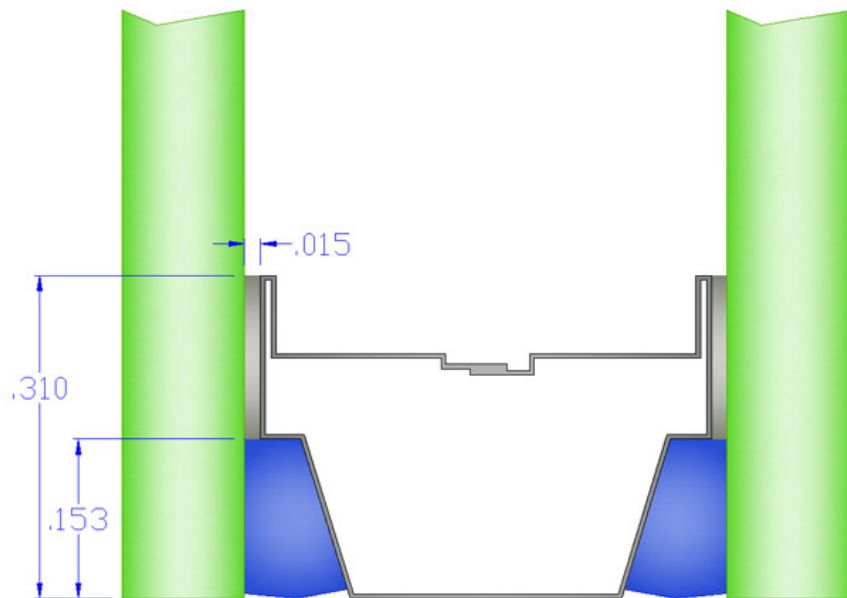
The purpose of this guide is to help properly model the XL Edge seal system when performing Therm window simulations.

### XL Edge geometry.

Shown here is the proper XL Edge geometry that should be used for thermal models. This geometry is also included within the attached XL Edge.dxf CAD file.

Some important items are:

- PIB thickness is 0.015".
- Spacer back even with glass edge.
- Stainless steel thickness is 0.0045" for most airspaces.



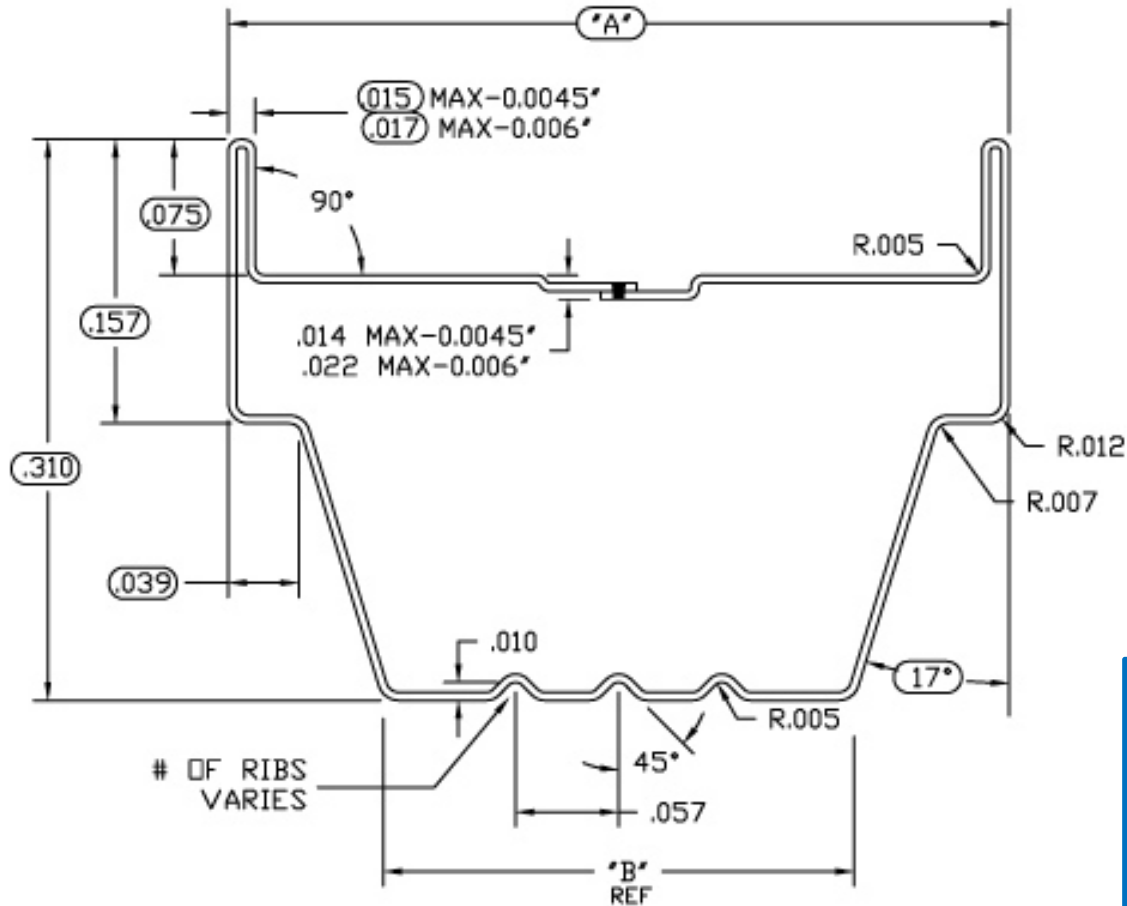
### Thermal conductivity

The following thermal conductivity values should be used when modeling XL Edge.

- Silicone: 0.202 BTU/hr-ft-F (0.350 W/m-K)
- PIB: 0.116 BTU/hr-ft-F (0.200 W/m-K)
- Desiccant: 0.017 BTU/hr-ft-F (0.030 W/m-K)
- Stainless Steel: 8.197 BTU/hr-ft-F (14.187 W/m-K)

Simulated Specimen complies with this detail except where noted  
Simulation Report Number: 1002  
Date: 3/5/2018  
Initials: MS

# SPACER GEOMETRY FOR XL EDGE SIMULATIONS



MATERIAL: 201 STAINLESS STEEL

P/N	NAME	A	B	WALL	# RIBS
58-065	6.5	.236	.064	.0045	1
58-075	7.5	.276	.104	.0045	1
58-080	8.0	.295	.123	.0045	2
58-098	9.8	.366	.194	.0045	3
58-105	10.5	.394	.222	.0045	3
58-112	11.2	.422	.250	.0045	3
58-115	11.5	.432	.260	.0045	3
58-122	12.2	.460	.288	.0045	3
58-130	13.0	.492	.320	.0045	5
57-130	13.0	.492	.320	.006	5
57-145	14.5	.550	.378	.006	5
57-158	15.8	.602	.430	.006	5
57-160	16.0	.610	.438	.006	7
57-165	16.5	.630	.458	.006	7
57-175	17.5	.669	.497	.006	7
57-195	19.5	.748	.576	.006	9
57-210	21.0	.807	.635	.006	9

Simulated Specimen complies with this detail except where noted  
 Simulation Report Number: 1002  
 Date: 3/5/2018  
 Initials: MS

CARDINAL IG			
TITLE		FBR SPACERS	
ALL RIGHTS ARE EXPRESSLY RESERVED BY CARDINAL IG	SCALE	DATE	DRAWN BY APPROV
TOLERANCES .XXX±.003 ANGULAR±1°	PARTS		