NATIONAL CERTIFIED TESTING LABORATORIES

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U-Factor, Solar Heat Gain Coefficient, Visible Transmittance and Condensation Resistance Calculation Report

REPORT NO:	NCTL-110-18674-1E1A1
SIMULATION DATE:	04/28/17
REPORT DATE:	04/28/17
REVISION DATE:	12/05/19

Client: Glass Flooring Systems, Inc.
10 Leslie Court
Whippany, NJ 07981

Product Line: Glass Flooring Systems, Inc.'s Thermally Broken Walkable Exterior Skylight

Specification: ANSI/NFRC 100-2014: "Procedure for Determining Fenestration Product U-Factors".
ANSI/NFRC 200-2014: "Procedure for Determining Fenestration Product Solar Heat Gain Coefficients and Visible Transmittance at Normal Incidence".
NFRC 500-2014: "Procedure for Determining Fenestration Product Condensation Resistance Values".
Therm 7.x / Window 7.x NFRC Simulation Manual (Approved at test date)
NFRC 2010 Technical Interpretations Manual

Procedures and Compliance: All U-factor, Solar Heat Gain Coefficients, Visible Transmittance and Condensation Resistance values were calculated using the following characteristics: a default value of 0.30 solar absorptance for all products other than window glazed wall and sloped glazing which have a solar absorptance of 0.50. The best glazing option was used as the configuration for SHGC and VT specialty products table. NCTL is a NFRC accredited simulation laboratory and this simulation was conducted in full compliance with NFRC requirements. This report does not constitute an opinion or endorsement by the laboratory. Ratings values included in this report are for submittal 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. Rounding per NFRC 601-2014: "NFRC Unit and Measurement Policy". The values included in this report are not considered in compliance with ANSI/NFRC 100, ANSI/NFRC 200, and/or NFRC 500 unless the associated validation test requirements have been satisfied, as applicable. Component 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 approved and identified on a valid CMA Label Certificate are to be used for labeling purposes. The component(s) values included in this report are not considered in compliance with ANSI/NFRC 100 or ANSI/NFRC 200 unless the associated validation test requirements have been satisfied, as applicable.

PRODUCT LINE DESCRIPTION

General: The product line modeled is Glass Flooring Systems, Inc.'s Thermally Broken Walkable Exterior Skylight.

Model Size Simulations: 1200 mm x 1200 mm (47" x 47")

Weatherseals: Not applicable

Gas Fillings: Not applicable.

Gas Type	Filling Technique	Percentage
Argon	Single probe	90%

Reinforcement: Not applicable.

Edge - of - Glass - Construction: Exterior (backer rod) foam weather strip back filled with silicone sealant. Interior ethylene propylene diene monomer (EPDM) back bedding

Finish: Painted aluminum

Thermal Break Material:

Code	Type
U	Urethane

Frame Description:

Code	Type	Definition
AT	Aluminum w/ Thermal Breaks – All Members	All members contain thermal breaks

Sash Description:

Code	Type	Definition
N	Not applicable	Product component does not require a code

Spacer and Sealant:

Code	Type	Definition
A1-D	Aluminum	Aluminum spacer system – Dual seal

Dividers: Where applicable, dividers were not modeled because the gap between dividers and lites were greater than 3mm. For Solar Heat Gain and Visual Light Transmittance default dividers less than 1" and greater or equal to 1" and default patterns were used for simulations.

Divider Description: Not applicable.

Laminate Description:

Window ID	Glass 1	Interlayer 1	Glass 2	Interlayer 2	Glass 3
30001	10mm Clear (892)	.060 SGP	10mm Clear (892)	.060 SGP	10mm Clear (892)
30002	3mm Clear (887)	.035 SGP	3mm Clear (887)		
30005	10mm Clear (892)	.060 PVB	10mm Clear (892)	.060 PVB	10mm Clear (892)
30115	3mm Solarban 70XL (5432)	.035 SGP	3mm Starphire (5001)		
30117	3mm Guardian DISC 71X (3233)	.035 SGP	3mm Clear (887)		
30118	3mm Solarban 60 (5281)	.035 SGP	3mm Clear (887)		
30119	3mm Solarban 90 (5444)	.035 SGP	3mm Clear (887)		
30120	3mm Cool-Lite Xtreme 60/28 (11452)	.035 SGP	3mm Clear (887)		
30129	4mm SunGuard SN 70/37 HT (11705)	.035 SGP	4mm ExtraClear		
35000	3mm Solarban 90 (5444)	.035 SGP	3mm Clear (887)		
30050	10 mm Low Iron	.060PVB	10 mm Low Iron	.060PVB	10 mm Low Iron
80004	4mm Guardian SunT	.060PVB	4mm Clear		

Modeling Assumptions and Comments Deemed Important:

Sealing Rules:

All cavities that are opened to the exterior within a frame section shall be modeled according to ISO 15099, Section 6.7.1, which states that cavities greater than 2mm but equal to or less than 10 mm shall be modeled as “slightly ventilated air cavities”. For physical testing purposes the product is sealed at the inside surface with tape or equivalent to prevent air infiltration. Air cavities created by this sealing technique must be simulated with the standard NFRC “Frame Cavity” material. If cavities on the frame are sealed (covered) to the surround panel with tape or equivalent, those cavities are also filled with NFRC “Frame Cavity” material within the simulation model. If the frame is not covered or sealed, those areas are left hollow or opened within the simulation model.

Continuous elements:

All elements continuous within the product line are identified from the Bill-of-Materials and detailed drawings via the referenced dimensions and cut lengths as compared to the overall size of the product.

General Notes:

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.

Miscellaneous assumptions:

1. The screen extrusions were not modeled.
2. All radii are simulated at angles.
3. The modeling was performed in accordance with the manufacturer’s assembly drawing.

Component Area and Frame Heights:

Frame heights, calculated areas, area weighted values for U-factor, SHGC, and VT, and center –of-glazing are located in approved NFRC simulation programs for all individual products.

NCTL .THM Filename Format Key

Filename Codes Example: HD-CU-D-F1_003.THM	
HD	Frame Section
CU-D	NFRC Spacer Code
F1	Frame ID
_003	Glazing ID

Frame ID Key:

Frame ID	Description
F1	Frame for rating
F3	Validation Test – modeled to tested method

A baseline product test in accordance with the "NFRC 102: Test Procedure for Measuring the Steady-State Thermal Transmittance of Fenestration Systems" is required in order to validate the "Model Size Matrix of U-Values" as previously indicated. Per Section 1.4.3 of ANSI/NFRC 100-2014, “the baseline product is the individual product selected for validation testing”. **The individual product selected as the baseline product shall be the lowest simulated individual product or an individual product having a simulated U-factor within 0.60 W/ (m^2*K) (0.10 BTU/HR/ft^2/ºF) or 20% of the listed lowest simulated U-factor.**

Note:

1. For lowest U-factor listings where multiple individual products are shown, validation testing can be conducted on any within 20% of the lowest simulated u-factor.
2. Actual simulated individual products are required for product line validation testing.

----------> Res sizes

For the purposes of validation testing, production line units and sizes shall be used to represent the baseline product. Per the client, the model size is manufactured as part of their product line; therefore the previously listed model size can be used for baseline product validation testing.

----------> Deviation Sizes

For the purposes of validation testing, production line units and sizes shall be used to represent the baseline products. Representative sizes are therefore defined as the production sizes with the least deviation (D) from the model sizes, calculated per ANSI/NFRC 100. The previously listed model sizes shall be used for baseline product validation testing.

Copies of this report and the detailed product drawings will be retained by NCTL for a period of four (4) years. This report may not be reproduced, except in full, without the approval of NCTL. Results apply only to the fenestration product simulated. The attached data file(s) contain(s) all required NFRC data and software files.

NATIONAL CERTIFIED TESTING LABORATORIES

Performed by:

JOHN W. GORDON
Thermal & Simulation Operations Manager/
NFRC Certified Simulator

DIGITAL SIGNATURE

MARK BENNETT
NFRC Certified Simulator
Simulator-In-Responsible-Charge

Reviewed by:

DIGITAL SIGNATURE

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NFRC Certified Simulator
Simulator-In-Responsible-Charge

Attachments

PRODUCT	Product Number	Pane ID #1	Pane ID #2	Pane Thickness #1	Pane Thickness #2	Gap 1	Gap Fill 1	% of Gap Fill 1	Emissivity Surface 1	Emissivity Surface 2	Emissivity Surface 3	Emissivity Surface 4	Tint	Spacer	Grid Type	Grid Size	U-factor	Condensation Resistance		SHGC NO GRID	SHGC GRID<1"	SHGC GRID>=1"	VT NO GRID	VT GRID<1"	VT GRID >=1"
No Grids	1	10mm Clear / 060SGP / 10mm Clear / 060SGP / 10mm ClimaGuard 1.0	4mm ExtraClear / 035SGP / 4mm ClimaGuard Dry	1.260	0.337	0.438	KRY	90		0.023		0.200	CL	ZF-S	N		0.49	53		0.32			0.49		
No Grids	2	10mm Clear / 060SGP / 10mm Clear / 060SGP / 10mm Clear	3mm Solarban 90 / 035SGP / 3mm Clear	1.230	0.281	0.470	ARG	90			0.023	0.200	CL	A1-D	N		0.53	48		0.28			0.34		
No Grids	3	10mm Clear / 060SGP / 10mm Clear / 060SGP / 10mm Clear	3mm Clear / 035SGP / 3mm Clear	1.230	0.281	0.470	ARG	90					CL	A1-D	N		0.68	48		0.43			0.52		
No Grids	4	10mm Clear / 060PVB / 10mm Clear / 060PVB / 10mm Clear	3mm Clear / 030PVB / 3mm Clear	1.230	0.264	0.470	ARG	90					CL	A1-D	N		0.68	48		0.43			0.52		
No Grids	5	10mm Clear / 060SGP / 10mm Clear / 060SGP / 10mm Clear	3mm Solarban 70XL / 035SGP / 3mm Clear	1.230	0.281	0.470	ARG	90			0.018		CL	A1-D	N		0.57	52		0.30			0.41		
No Grids	6	10mm Clear / 060SGP / 10mm Clear / 060SGP / 10mm Clear	3mm DISC 71X / 035SGP / 3mm Clear	1.230	0.281	0.470	ARG	90			0.027		CL	A1-D	N		0.57	52		0.34			0.45		
No Grids	7	10mm Clear / 060SGP / 10mm Clear / 060SGP / 10mm Clear	3mm Solarban 60 / 035SGP / 3mm Clear	1.230	0.281	0.470	ARG	90			0.035		CL	A1-D	N		0.57	52		0.34			0.47		
No Grids	8	10mm Clear / 060SGP / 10mm Clear / 060SGP / 10mm Clear	3mm Solarban 90 / 035SGP / 3mm Clear	1.230	0.281	0.470	ARG	90			0.023		CL	A1-D	N		0.57	52		0.28			0.34		
No Grids	9	10mm Clear / 060SGP / 10mm Clear / 060SGP / 10mm Clear	3mm COOL-LITE XTREME 60-28 / 035SGP / 3mm Clear	1.230	0.281	0.470	ARG	90			0.013		CL	A1-D	N		0.57	52		0.29			0.40		
VAL, No Grids	10	10mm Low Iron / 060PVB / 10mm Low Iron / 060PVB / 10mm Low Iron	4mm Guardian SunT / 060 PVB / 4mm Clear	1.282	0.394	0.394	KRY	90				0.026	CL	A1-D	N		0.54	53		0.39			0.53		
VAL, No Grids	11	10mm Clear / 060PVB / 10mm Clear / 060PVB / 10mm Clear	4mm SunGuard SN 70/37 HT / 035SGP / 4mm ExtraClear	1.230	0.337	0.438	KRY	90			0.022		CL	A1-D	N		0.55	52		0.31			0.45		

Report Log

Product Line:	Glass Flooring Systems, Inc.'s Thermally Broken Walkable Exterior Skylight
Date:	
04/28/17	- Original Report issued to Glass Flooring Systems and Inspection Agency
06/14/17	-Updated validation option, update report number and revision date.
12/05/19	-Added Options 10 & 11 and issued to Glass Flooring Systems and Inspection Agency

ATTACHMENT A

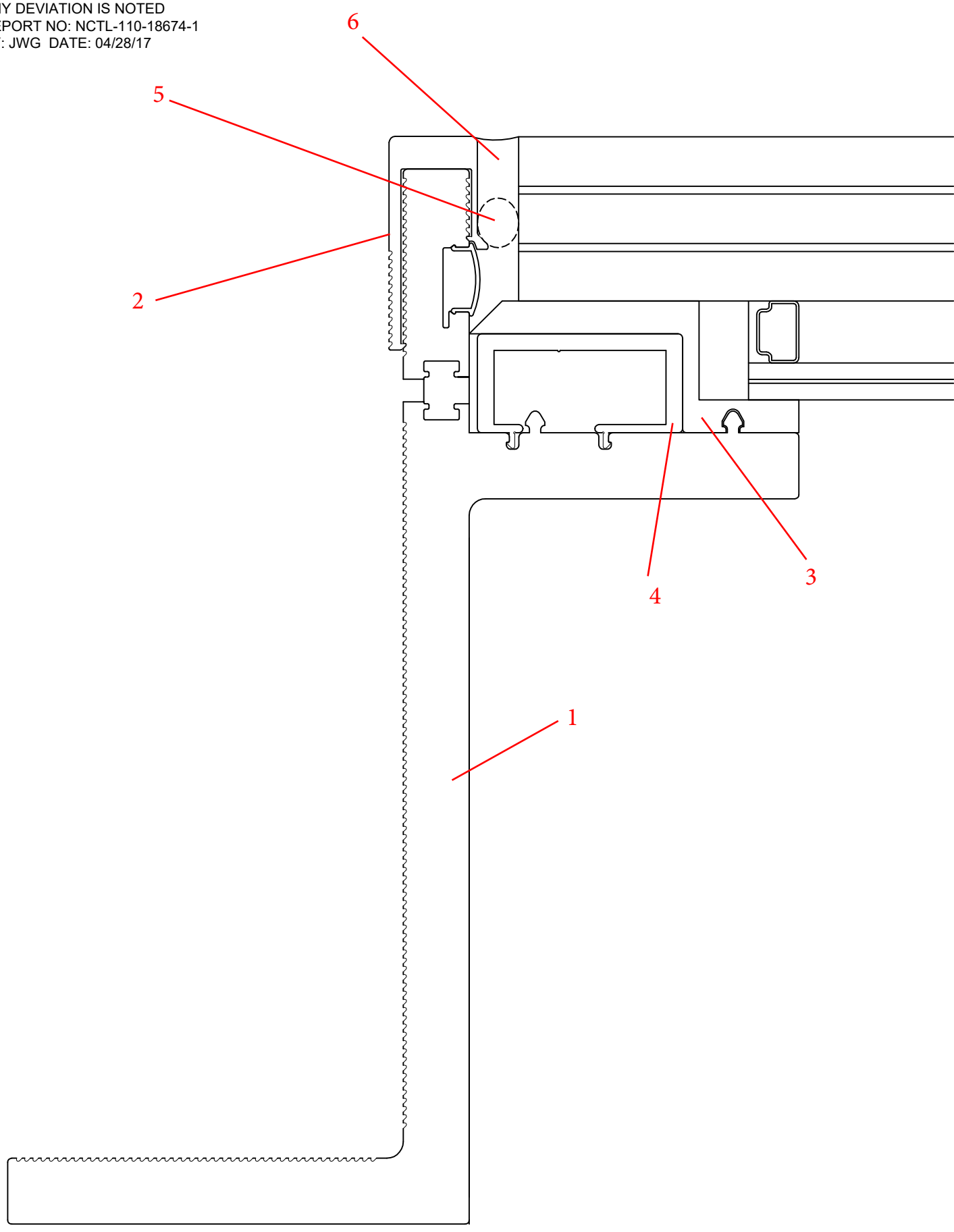
Product Drawings

TEST SPECIMEN COMPLIES
WITH THESE DETAILS
ANY DEVIATION IS NOTED
REPORT NO: NCTL-110-18674-1
BY: JWG DATE: 04/28/17

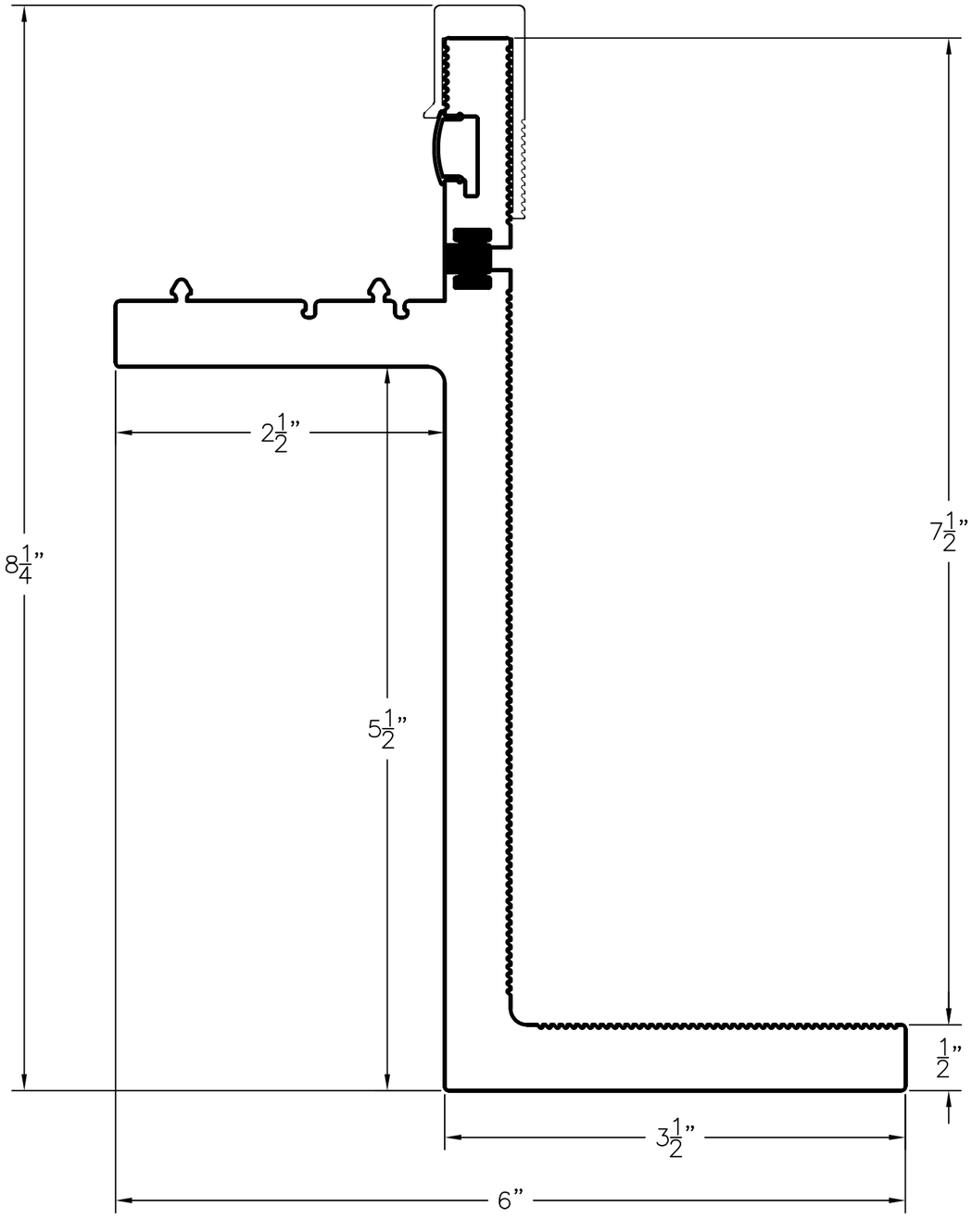
GLASS FLOORING SYSTEMS WALKABLE SKYLIGHT BOM

Item #	Part Number	Part Name	Material
1	CONK-5	Thermal Perimeter	Painted Aluminum
2	CONK-3	Adjustable Cap	Painted Aluminum
3	DWG-1	Z-Gasket	EPDM
4	GFS-8	Perimeter Snap Block	Painted Aluminum
5		Foam Backer Rod	Foam
6		Silocne Sealant	Silicone

TEST SPECIMEN COMPLIES
WITH THESE DETAILS
ANY DEVIATION IS NOTED
REPORT NO: NCTL-110-18674-1
BY: JWG DATE: 04/28/17



TEST SPECIMEN COMPLIES
WITH THESE DETAILS
ANY DEVIATION IS NOTED
REPORT NO: NCTL-110-18674-1
BY: JWG DATE: 04/28/17

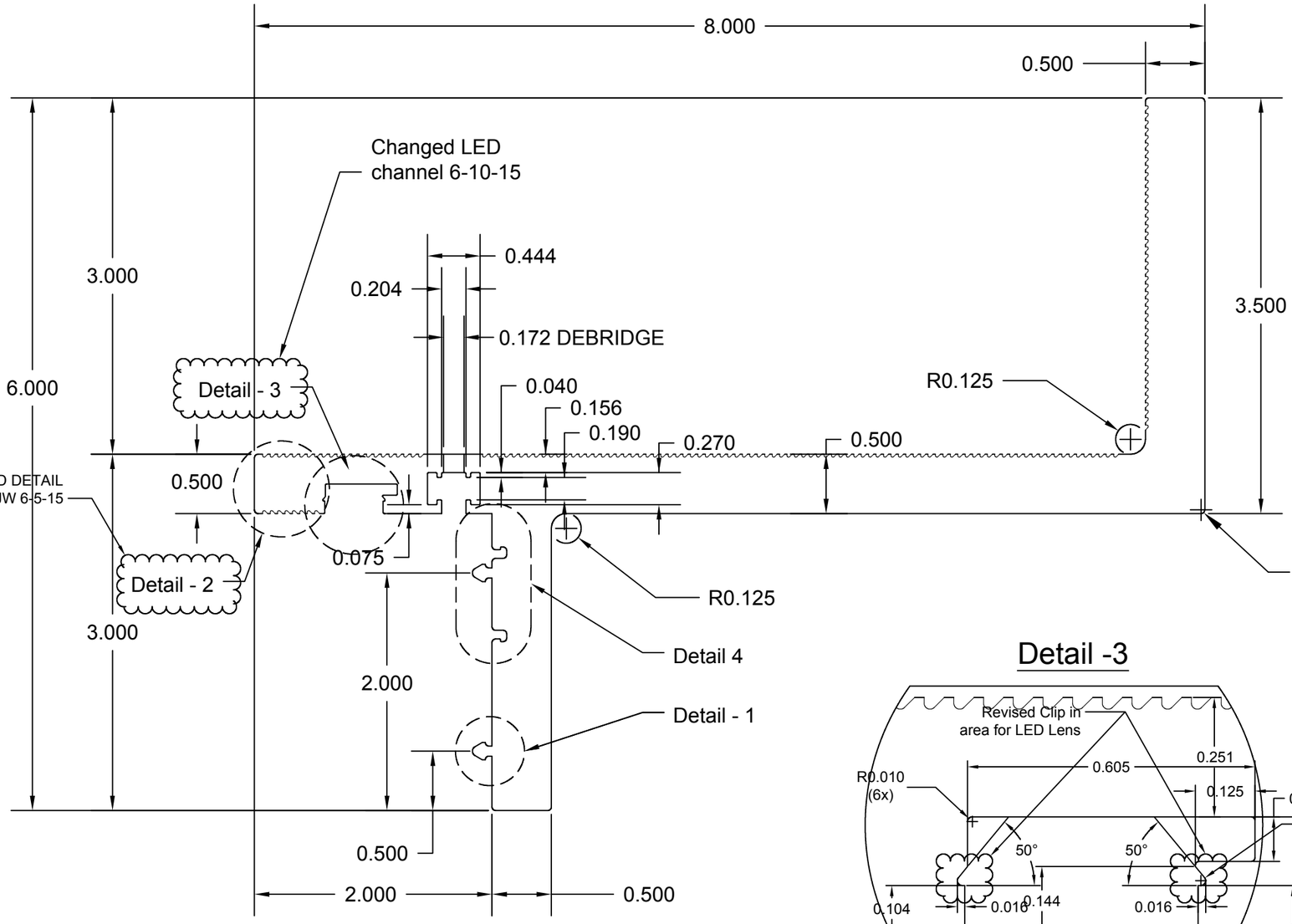


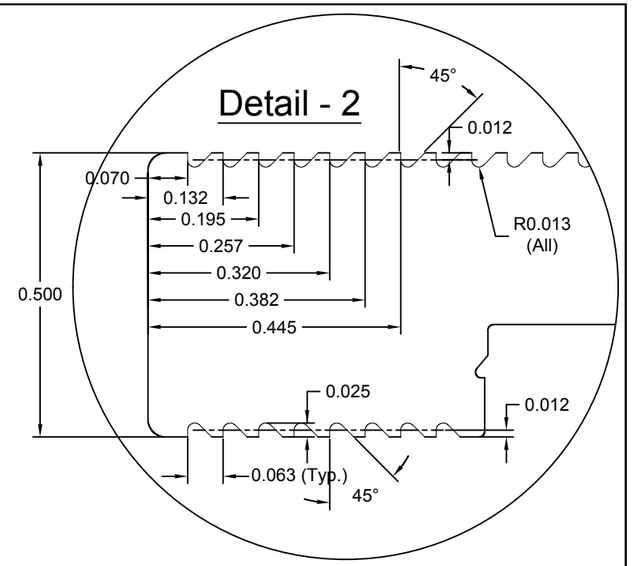
GLASS FLOORING SYSTEMS INC

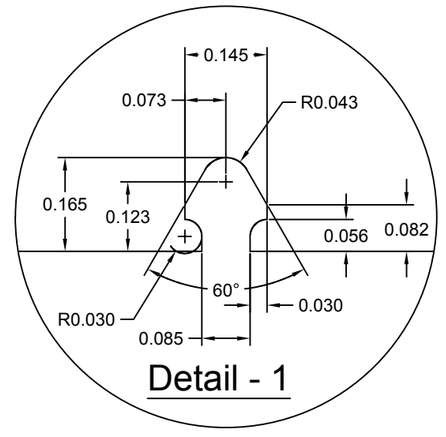
MULTIPLE PATENTS PENDING

Glass Flooring Systems, Inc.			
TITLE: Skyflooor™ Pedestal Perimeter			
REFERENCE FIXTURE:			SHEET 1 of 1
SCALE NTS	PART NUMBER GFS–5	DATE 2–2–16	REVISION

TEST SPECIMEN COMPLIES
WITH THESE DETAILS
ANY DEVIATION IS NOTED
REPORT NO: NCTL-110-18674-1
BY: JWG DATE: 04/28/17



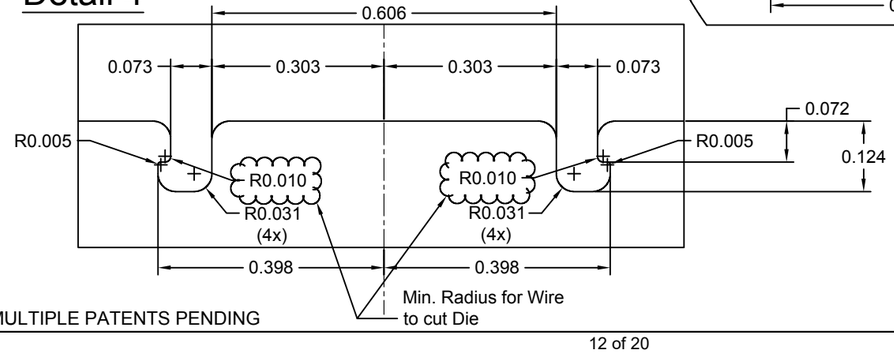




R0.0313 (All)
Unless Specified

Detail -3

Detail 4



A.L. REVISION	DESCRIPTION OF CHANGES	BY	DATE
2	Revised width & height to max per extruder	JW	5/30/15
1	Adjusted per WC modifications	JW	5/12/15

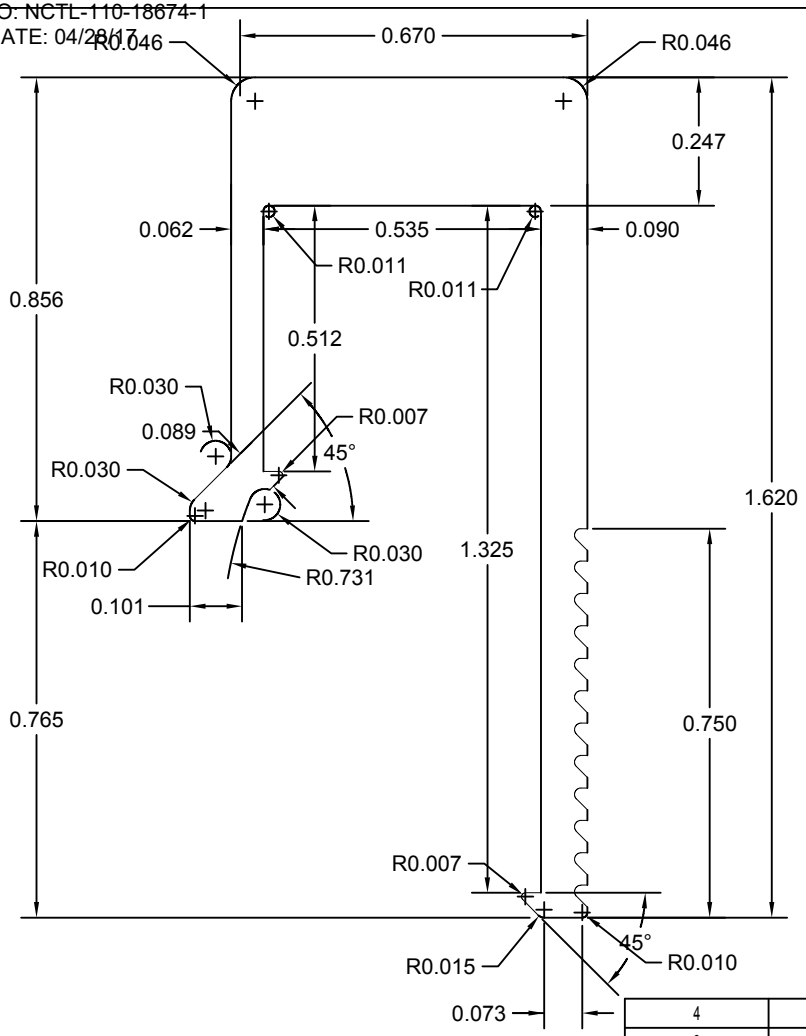
MAX MICROFINISH UNLESS SPECIFIED	DRAWN BY: JW	DATE 032915	Glass Flooring Systems, Inc.
MAX INSIDE RADII	DRAWN BY:	DATE	TITLE: Thermal Perimeter Option–1
MAX OUTSIDE RADII	APPROVED BY:	DATE	REFERENCE FIXTURE: SHEET 1 OF 1
DOS FILENAME:	EXTENDED FILENAME:	APPROVED BY:	DATE

SCALE	PART NUMBER	CUSTOMER REVISION	CONKLIN REVISION
NTS	CONK-5		

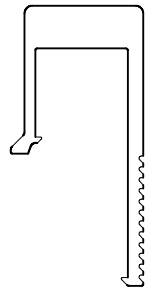
GLASS FLOORING SYSTEMS INC

MULTIPLE PATENTS PENDING

TEST SPECIMEN COMPLIES
WITH THESE DETAILS
ANY DEVIATION IS NOTED
REPORT NO: NCTL-110-18674-1
BY: JWG DATE: 04/28/17



Actual Size



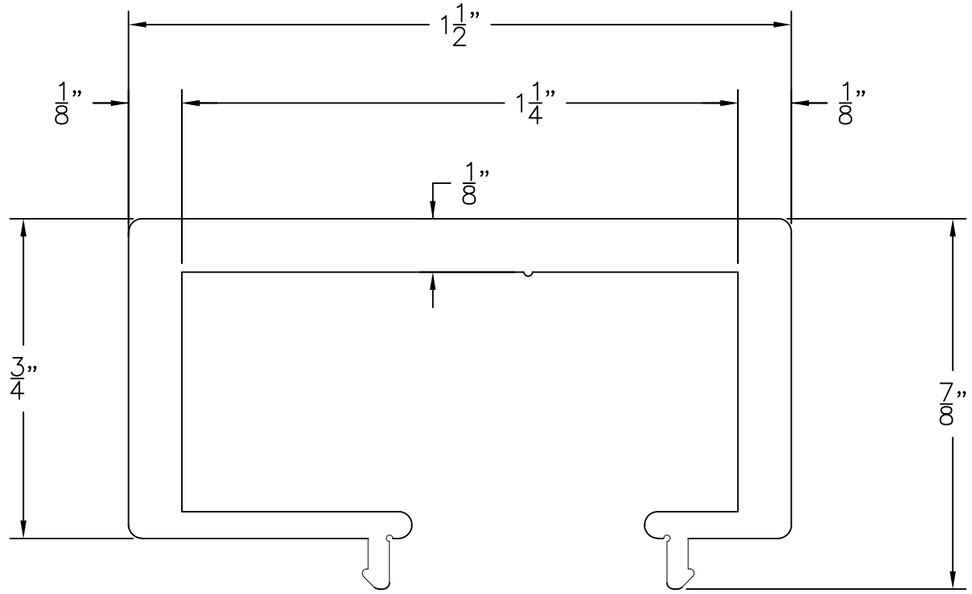
A.L. REVISION	DESCRIPTION OF CHANGES	BY	DATE
4	Modified left side leg	JW	6/6/15
3	Modified top wall thickness & right side leg	JW	6/1/15
2	Added backer rod stop	JW	5/25/15
1	Changed wall thickness per extrution co.	JW	5/12/15

MAX MICROFINISH UNLESS SPECIFIED	DRAWN BY: JW	DATE 032915	Glass Flooring Systems, Inc.
MAX INSIDE RADII	DRAWN BY:	DATE	TITLE: Adjustable Cap
	APPROVED BY:	DATE	
MAX OUTSIDE RADII	APPROVED BY:	DATE	REFERENCE FIXTURE: SHEET 1 OF 1
DOS FILENAME:	EXTENDED FILENAME:	SCALE A NTS / PART NUMBER CONK-3	CUSTOMER REVISION / CONKLIN REVISION

GLASS FLOORING SYSTEMS INC

MULTIPLE PATENTS PENDING

TEST SPECIMEN COMPLIES
WITH THESE DETAILS
ANY DEVIATION IS NOTED
REPORT NO: NCTL-110-18674-1
BY: JWG DATE: 04/28/17



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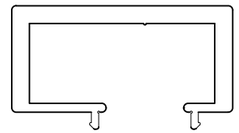
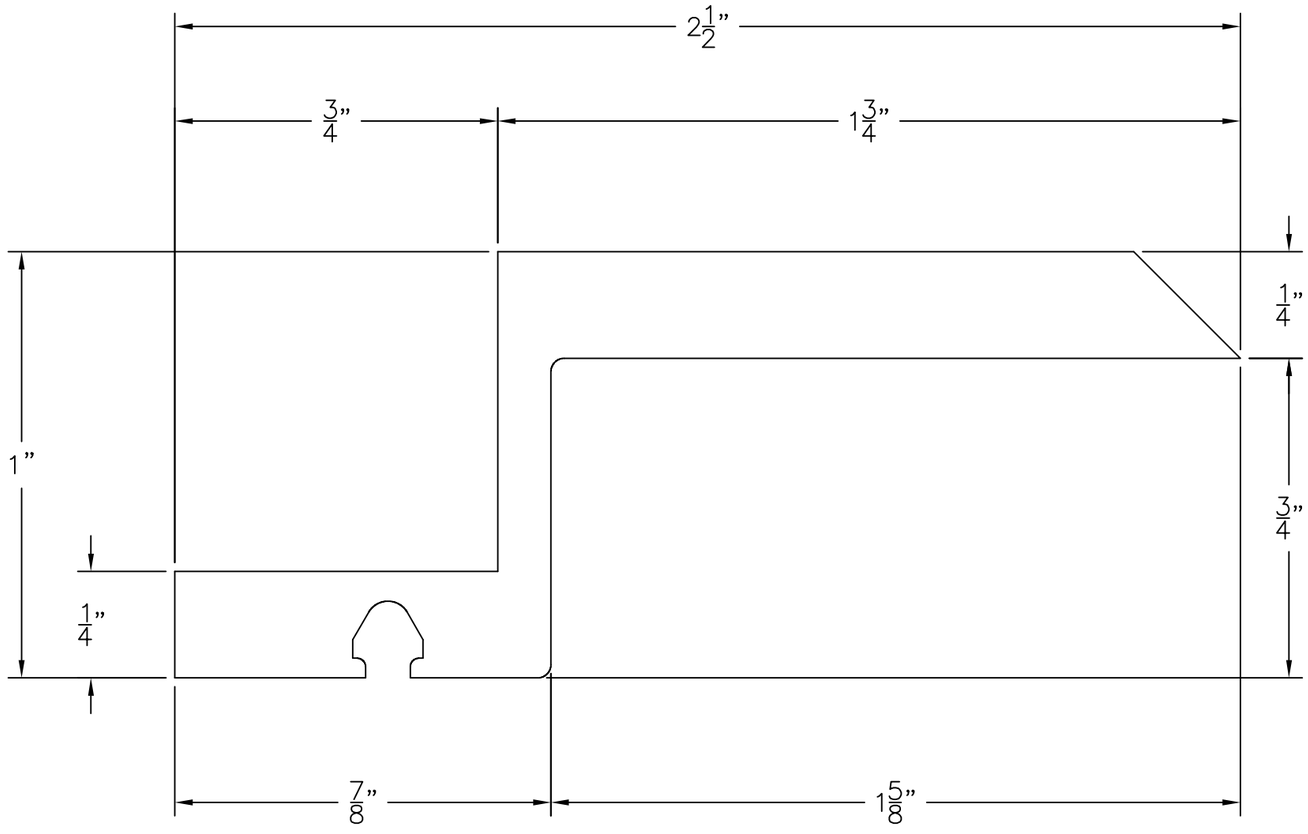


GLASS FLOORING SYSTEMS INC

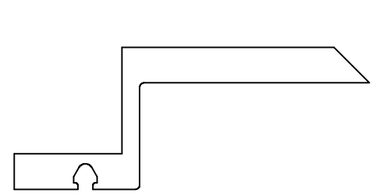
MULTIPLE PATENTS PENDING

Glass Flooring Systems, Inc.			
TITLE: Skyflooor™ Perimeter Snap-in Block			
REFERENCE FIXTURE:			SHEET 1 of 1
SCALE NTS	PART NUMBER GFS-8	DATE 2-2-16	REVISION

TEST SPECIMEN COMPLIES
WITH THESE DETAILS
ANY DEVIATION IS NOTED
REPORT NO: NCTL-110-18674-1
BY: JWG DATE: 04/28/17



Actual Size



GLASS FLOORING SYSTEMS INC

MULTIPLE PATENTS PENDING

Glass Flooring Systems, Inc.			
TITLE: Skyflooor™ Perimeter Z-Gasket			
REFERENCE FIXTURE:			SHEET 1 of 1
SCALE NTS	PART NUMBER DWG-1	DATE 2-2-16	REVISION

TEST SPECIMEN COMPLIES
WITH THESE DETAILS
ANY DEVIATION IS NOTED
REPORT NO: NCTL-110-18674-1 DUAL AND TRIPLE GLAZED SPACER INFORMATION
BY: JWG DATE: 04/28/17

SPACER MANUFACTURER: All Metal, Quanex

SPACER NAME OR ID: A1-D, ZF-S

SPACER MATERIAL: Anodized Aluminum Alloy, Silicone

PRIMARY SEALANT: PIB, Bytyl

SECONDARY (BACKING) SEALANT: Butyl, NA

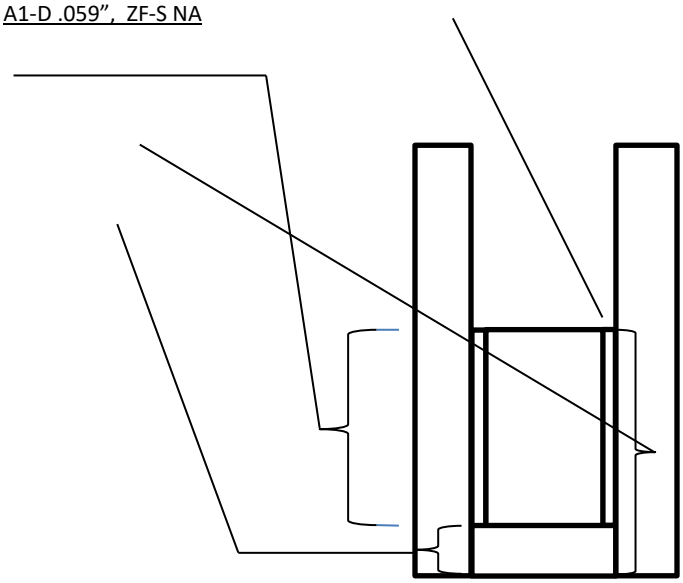
SPACER WIDTH: 0.438", 0.470"
Gas Fill: argon
Gas Fill percentage: 90%

Thickness of sealant between glass and spacer (if applicable): A1-D .059", ZF-S NA

Spacer height: A1-D .315", ZF-S .438"

Setback/Bite from edge of glass: A1-D .465", ZF-S .37"

Secondary sealant height: A1-D .150", ZF-S NA"



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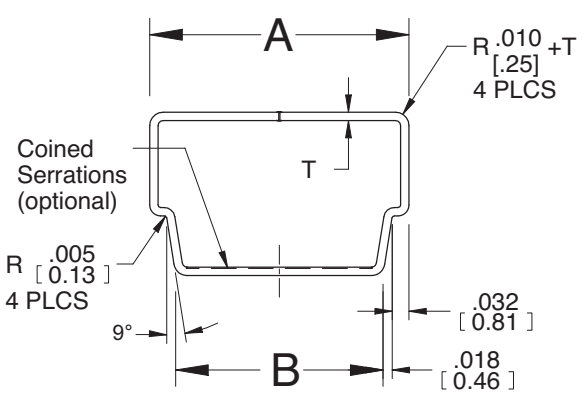
BY: JWG DATE: 04/28/17

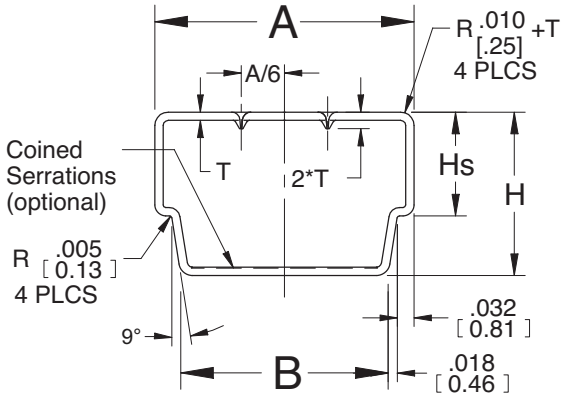
STD

ALLMETAL®

Standard Air Spacer



Zippered (all sizes)



Perforated (1/4" [6.5mm] and wider)

Tolerance: All dimensions .005 [.13 mm] unless otherwise specified.

Material	H		Hs		T	
	IN	MM	IN	MM	IN	MM
.008" [.20mm] Hi-Q Steel	.305	7.75	.185	4.70	.008	.20
.010" [.25mm] Anodized Aluminum	.308	7.82	.188	4.78	.010	.25
.012" [.30mm] Hi-Q Steel	.310	7.87	.190	4.83	.012	.30
.014" [.36mm] Anodized Aluminum	.311	7.90	.191	4.85	.014	.36
.014" [.36mm] EG Steel	.311	7.90	.191	4.85	.014	.36
.015" [.38mm] Black Steel	.315	8.00	.195	4.95	.015	.38
.016" [.41mm] Anodized Aluminum	.315	8.00	.195	4.95	.016	.41
.016" [.41mm] Mill Finish Aluminum	.316	8.03	.196	4.98	.016	.41
.0185" [.47mm] Anodized Aluminum	.320	8.13	.200	5.08	.0185	.47

Notes:

1. Dimensions are in decimal inches; dimensions in [] brackets are in mm.
2. Available with serrations at no extra charge on inside of **Aluminum** spacer at location indicated above; **not** recommended for spacer to be used for bending.
3. 5/32 size currently available in E.G. &Black Steel only.
4. Material tolerances can befound on Material Specifications Data page (ii).
5. Thermal properties can be found on Thermal Performance Data page (iii).

TEST SPECIMEN COMPLIES
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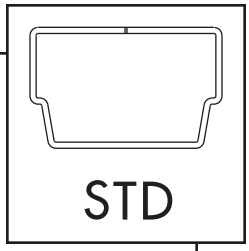
REPORT NO: NCTL-110-18674-1
BY: JWG DATE: 04/28/17

ALLMETAL®



Standard Air Spacer Specifications

Air Spacer Width Fractional	Decimal Equivalent	
	A	B
5/32	.156	.096
3/16	.188	.088
7/32	.219	.119
1/4	.250	.150
17/64	.266	.166
9/32	.281	.181
19/64	.297	.197
5/16	.313	.213
11/32	.344	.244
23/64	.359	.259
3/8	.375	.275
13/32	.406	.306
7/16	.438	.338
15/32	.469	.369
1/2	.500	.400
17/32	.531	.431
9/16	.563	.463
19/32	.594	.494
5/8	.625	.525
21/32	.656	.556
11/16	.688	.588
23/32	.719	.619
3/4	.750	.650
25/32	.781	.681
13/16	.813	.713
27/32	.844	.744
7/8	.875	.775

Air Spacer Width Millimeter	Decimal Equivalent	
	A	B
5	.197	.097
5.5	.217	.117
6	.236	.136
7	.276	.176
7.5	.295	.195
8	.315	.215
9	.354	.254
10	.394	.294
11	.433	.333
11.5	.453	.353
12	.472	.372
13	.512	.412
13.2	.520	.420
14	.551	.451
15	.591	.491
15.5	.610	.510
16	.630	.530
17	.669	.569
17.5	.689	.589
18	.709	.609
18.5	.728	.628
19	.748	.648
20	.787	.687
22	.866	.766

TEST SPECIMEN COMPLIES
WITH THESE DETAILS
ANY DEVIATION IS NOTED
REPORT NO: NCTL-110-18674-1
BY: JWG DATE: 04/28/17

Quanex
building products

Insulating Glass Systems

Super Spacer® Premium Enhanced

Super Spacer® Premium is a flexible, silicone foam spacer product that provides the maximum in perimeter insulation for sealed glazing units. Desiccant-filled with pre-applied side adhesive, the structural foam spacer significantly simplifies insulating glass (IG) production.

Basic Use

Super Spacer is a dual seal insulating glass spacer system that uses a high-performance acrylic adhesive for its structural seal and is backed with a proprietary multi-layer moisture vapor seal.

Featuring a vapor barrier backing, the spacer must be used in combination with conventional IG sealants. For a list of verified sealants, please reference IG sealants Technical Bulletin RDQ0018, which is available on our website at www.quanex.com in the technical section.

Colors

Super Spacer Premium is available in Black, Aluminum, Grey and Almond.

Composition

Silicone foam base with desiccant pre-fill.

Desiccant Fill

3A molecular-sieve; 47% minimum by weight.

Continuous Packaged Length

For regular insulating glass production, Super Spacer Premium is supplied on reels with the continuous packaged length varying depending on the spacer width.

Protective Packaging

To provide desiccant protection, the reels are vacuum-sealed in moisture-proof foil bags. The reels are then shipped in recyclable cardboard boxes.

Performance	Norm
Thermal conductivity 0.102 W/m°K	ASTM C 518
Gas / Moisture vapor barrier WVTR < 0.020 gm/m^2/day Oxygen < 0.009 cc/m^2/day	ASTM F 1249 ASTM D 3985
Primary structural seal Acrylic adhesive	
Intermittent temperature range -40°C to 121°C / -40°F to 250°F	—
Verified secondary sealants Reference IG sealants Technical Bulletin RDQ0018	—
Fogging No fog in visual area.	ASTM E 2190 EN 1279 - 6 CAN/CGSB 12.8
Gas Retention Pass with hot-melt butyl or curative butyl	EN 1279 - 3
I.G. Durability Pass with hot-melt butyl or curative butyl	ASTM E 2190 EN 1279 - 2

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building products

Insulating Glass Systems

Super Spacer® Premium Enhanced

Warm-Edge Silicone Foam Features & Benefits

- Superior silicone foam insulation
- Low thermal conductivity
- Substantially reduced perimeter condensation
- Typical overall 0.2 W/m²K (0.04 BTU/h-ft²-°F) U-value window improvement (vs. aluminum)
- Excellent UV resistance
- Extreme temperature performance
- Fast dew-point drop
- Superior compression-set resistance
- Excellent color stability
- Enhanced sound dampening

Edge-Seal Durability

- Continuous vapor barrier at corners
- No chemical fogging
- High desiccant content
- Same spacer material and edge-seal technology as the proven Premium Plus product.

Unique Dual-Seal Design

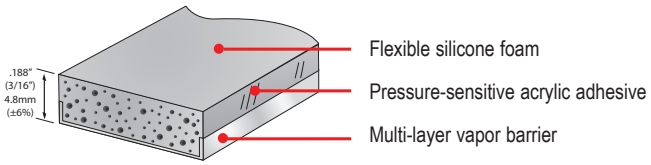
- Outer hot-melt butyl sealant for enhanced gas retention
- Inner structural acrylic side adhesive
- Immediate unit handling
- No cold flow or spacer/seal migration problems

Improved Productivity

- Fast application
- Elimination of desiccant filling
- No corner key assembly
- Simplified production of shaped units
- Limited equipment investment
- High-volume production with reduced labor force

Pleasing Aesthetic Appearance

- Black, Aluminum, Grey or Almond colors
- Smooth matte surface finish
- No surface blistering or bubbling
- Straight-line application with sharp 90° corners



Reel Sizes

Width mm	Width inches	Meter/ Reel	Feet/ Reel	Meter/ Auto Reel	Feet/ Auto Reel
4.8 mm	0.188"	610	2000	N/A	N/A
6.4 mm	0.250"	457	1500	1372	4500
7.9 mm	0.313"	335	1100	1006	3300
9.5 mm	0.375"	305	1000	914	3000
11.1 mm	0.438"	274	900	823	2700
11.9 mm	0.469"	244	800	731	2400
12.7 mm	0.500"	244	800	731	2400
14.3 mm	0.563"	213	700	640	2100
15.9 mm	0.625"	206	675	617	2025
17.5 mm	0.688"	183	600	549	1800
19.1 mm	0.750"	175	575	526	1725
20 mm*	0.787"	152	500	457	1500

* All even metric sizes are not available in North American market.

Note: Nominal sizes larger than 0.375" (3/8") have a tolerance of +/- 3% for the width (airspace) and +/- 6% for the height (thickness).
For nominal sizes 0.375" (3/8") and lower the tolerance is +/- 0.010" on the width (airspace) and +/- 6% for the height (thickness).
Note: All metric dimension equivalent sizes are for reference only.

Quanex warm-edge IG spacer systems are used by our customers to assemble ENERGY STAR® qualified windows and doors.

ISO 9001:2008 with design Certificate Registration 08.185.1

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