



All Seasons Door and Window, Inc.

*SIMULATION PERFORMANCE &
SOLAR HEAT GAIN REPORT*

*“V700”
Vertical Slider Double Hung*

NCTL-110-12402-01



NATIONAL CERTIFIED TESTING LABORATORIES

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Simulation Performance, Solar Heat Gain Coefficient, Visible Transmittance and Condensation Resistance Calculation Report

REPORT NO: NCTL-110-12402-01
SIMULATION DATE: 09/21/09
REPORT DATE: 09/21/09

Client: All Seasons Door and Window, Inc.
28 Edgeboro Road
East Brunswick, NJ 08816

Product Line: All Seasons Door and Window, Inc. "V700" Vertical Slider Double Hung

Specification: NFRC 100-2004: "Procedure for Determining Fenestration Product U-Factors".
NFRC 200-2004: "Procedure for Determining Fenestration Product Solar Heat
Gain Coefficients and Visible Transmittance at Normal Incidence".
NFRC 500-2004: "Procedure for Determining Fenestration Product
Condensation Resistance Values".
Therm 5.x / Window 5.x NFRC Simulation Manual (Approved at test date)

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 IEEE/ASTM SI 10-1997 except section 5.4.1.3.

PRODUCT LINE DESCRIPTION

General: The product line modeled is All Seasons Door and Window, Inc. "V700" Vertical
Slider Double Hung.

Model Size Simulations: 1200mm x 1500mm (47.244" x 59.055")

Weatherseals:

Location	Weather Seal Description
Head	(2) single strips of weather-strip
Bottom Jamb	(2) single strips of weather-strip
Meeting Rail	(3) single strips of weather-strip
Sill	(1) single strips of weather-strip / Bulb Seal
Top Jamb	(2) single strips of weather-strip

Gas Fillings:

Gas Type	Filling Technique	Percentage
Argon	Single probe	90%
Krypton	Single probe	90%

Reinforcement: *Not applicable.*

Edge – of - Glass – Construction: *Exterior Vinyl Glazing Bead and Interior Vinyl Glazing Leg.*

Spacer and Sealant: *Silicone Foam Spacer System.*

Finish: *Vinyl.*

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.*

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. Any spacer simulated using a spacer system from the Frame Spacer Library match the required configurations for this manufacturer's spacer system.*
- 4. The modeling was performed in accordance with the manufacturer's assembly drawing from a DXF file.*

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 Therm Section Filename Methodology

Filename Codes Example: CU_HD2_003.THM	
CU	Spacer (Intercept)
HD	Frame Section (Head)
2	Glass Size (2.5mm)
_003	Glazing ID #3

Individual Product Descriptions and Model Size Matrix of U-Factors, SHGC, VT & CR

All U-factors are given in BTU/HR/ft²/°F

Product Description	Product Number	Pane ID 1	Pane ID 2	Pane ID 5	Pane Thickness 1	Pane Thickness 2	Pane Thickness 5	Gap	Gap	Gap Fill	% of Gap Fill	Emissivity Surface 2	Emissivity Surface 3	Emissivity Surface 5	Tint	Spacer	U-factor	Condensation Resistance	Solar Heat Gain Coefficient (ND)	Visual Transmittance (ND)
SB70#25_3m_Arg	001	5432	5009	5432	0.118	0.118	0.118	0.250	0.187	ARG	90	0.018		0.018	LE	ZF-D	0.26	64	0.18	0.34
SB70#25_3m_Kry	002	5432	5009	5432	0.118	0.118	0.118	0.250	0.187	KRY	90	0.018		0.018	LE	ZF-D	0.21	69	0.18	0.34
SB70#2_3m_Arg	003	5432	5009		0.118	0.118		0.563		ARG	90	0.018			LE	CU-D	0.29	57	0.20	0.48
SB70#3_3m_Arg	004	5009	5432		0.118	0.118		0.563		ARG	90		0.018		LE	CU-D	0.29	57	0.28	0.48

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 NFRC 100-2004, "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/ (m²*K) (0.10 BTU/HR/ft²/°F) 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 of the configurations listed.
2. Actual simulated individual products are required for product line validation testing.
3. All individual products in the product line were simulated using the approved NFRC THERM program.

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.

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. The results only to the fenestration product simulated. The attached diskette(s) contain(s) all required NFRC data and software files.

NATIONAL CERTIFIED TESTING LABORATORIES


DIGITAL SIGNATURE

Zachary Mundorff
Simulator


DIGITAL SIGNATURE

STEVEN H. COBLE
NFRC Accredited Simulator
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Report Log

Product Line: *All Seasons Door and Window, Inc. "V700" Vertical Slider Double Hung*

Date:
09/21/09 *- Original Report issued to All Season Windows and Inspection Agency*

NFRC CODES

Door	
Code	Description
EM	Embossed
FL	Flush
LF	Full Lite
LH	1/2 - Lite
LQ	1/4 - Lite
LT	3/4 - Lite
N	Not Applicable
RP	Raised Panel

Grid	
Code	Description
G	Grids between the glass
N	No Muntins
S	Simulated Divided Lites
T	True Muntins

Sealant	
Code	Description
D	Dual Seal Spacer System
N	Not Applicable
S	Single Seal Spacer System

Gap Fill	
Code	Description
AIR	Air
AR3	Argon/Krypton/Air Mixture
ARG	Argon
KRY	Krypton
N	Not Applicable

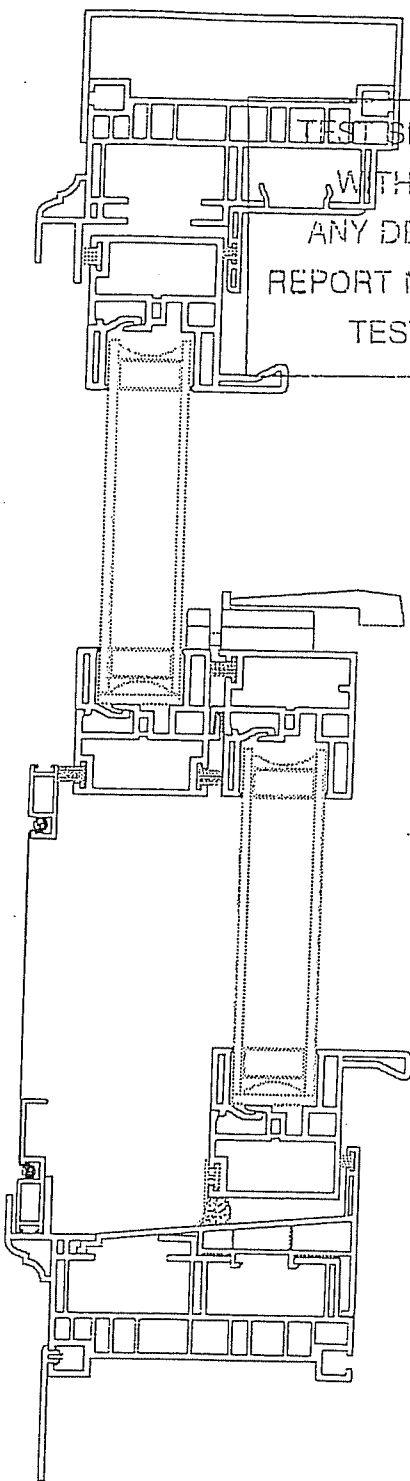
Glass Tint	
Code	Description
AZ	Azurlite
BG	Blinds between the Glazing
BL	Blue
BZ	Bronze
CL	Clear
DV	Dynamic Glazing (Variable)
DY	Dynamic Glazing (Non-Variable)
EV	Evergreen
GC	Gold (reflective coating)
GD	Gold
GR	Green
GY	Gray
LE	Low 'e' Coating
OT	Other (use comment field)
RC	Solar or Reflective Coating
RG	Roller shades between Glazing
RS	Silver (reflective coating)
SF	Suspended Polyester Film
SR	Silver

Spacer		
Code	Type	Definition
A1-D	Aluminum	Aluminum spacer system - dual sealed.
A1-S	Aluminum	Aluminum spacer system - single sealed.
A2-D	Aluminum (thermally-broken)	Thermally improved aluminum spacer system - dual sealed.
A2-S	Aluminum (thermally-broken)	Thermally improved aluminum spacer system - single sealed.
A3-D	Aluminum-reinforced polymer	Polymer spacer material with aluminum substance - dual sealed.
A3-S	Aluminum-reinforced polymer	Polymer spacer material with aluminum substance - single sealed.
A4-D	Aluminum/Wood	Composite spacer system of two materials - dual sealed.
A4-S	Aluminum/Wood	Composite spacer system of two materials - single sealed.
A5-D	Aluminum-reinforced butyl	Butyl spacer material with aluminum substrate - dual sealed.
A5-S	Aluminum-reinforced butyl	Butyl spacer material with aluminum substrate - single sealed.
A6-D	Aluminum/Foam/Aluminum	Two aluminum spacers separated by foam-type material - dual sealed
A6-S	Aluminum/Foam/Aluminum	Two aluminum spacers separated by foam-type material - single sealed
A7-D	Aluminum U-shaped	U-shaped spacer system embedded in sealant - dual sealed.
A7-S	Aluminum U-shaped	U-shaped spacer system embedded in sealant - single sealed.
A8-D	Aluminum-Butyl Composite	Exposed corrugated aluminum spacer with butyl - dual sealed.

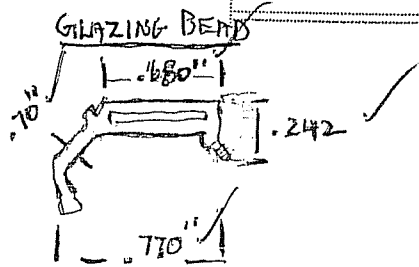
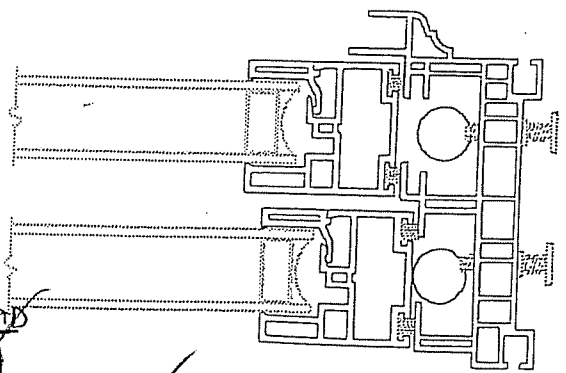
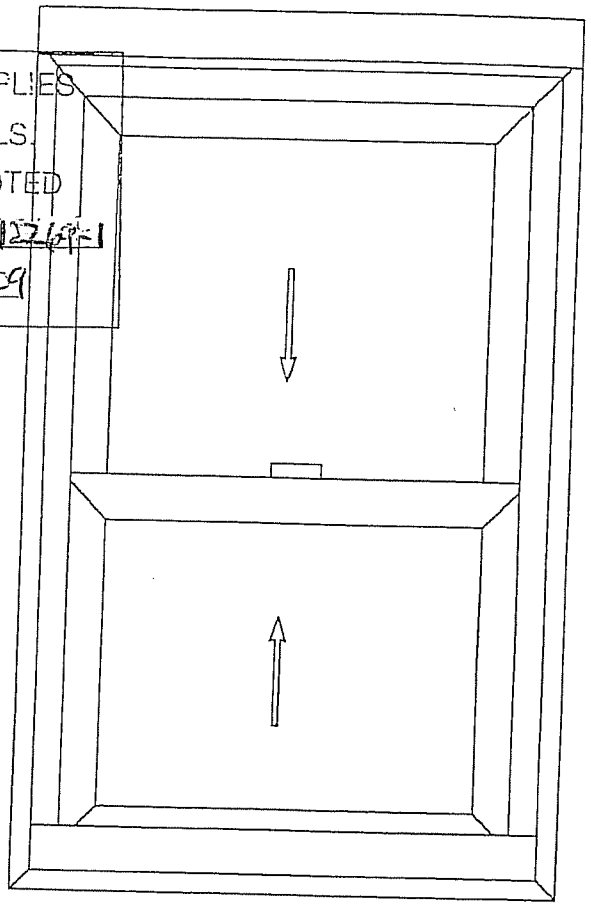
Spacer		
Code	Type	Definition
A8-S	Aluminum-Butyl Composite	Exposed corrugated aluminum spacer with butyl - single sealed.
CS-D	Coated Steel	Coated Steel (galvanized or tinplated) - Dual seal
CS-S	Coated Steel	Coated Steel (galvanized or tinplated) - Single seal
CU-D	Coated Steel U-Shaped	Coated Steel (galvanized or tinplated) U-shaped spacer system embedded in sealant - Dual sealed
CU-S	Coated Steel U-Shaped	Coated Steel (galvanized or tinplated) U-shaped spacer system embedded in sealant - Single sealed
ER-D	EPDM Reinforced Butyl	EPDM reinforced butyl spacer system - dual sealed.
ER-S	EPDM Reinforced Butyl	EPDM reinforced butyl spacer system - single sealed.
FG-D	Fiberglass	Fiberglass - dual sealed.
FG-S	Fiberglass	Fiberglass - single sealed.
GL-S	Glass	Welded glass edge condition at glazing perimeter.
N	Not Applicable	
OF-D	Organic Foam	Organic-based foam spacer system - dual sealed.
OF-S	Organic Foam	Organic-based foam spacer system - single sealed.
P1-D	Polycarbonate- Butyl Composite	Exposed corrugated polycarbonate spacer with butyl - dual sealed.
P1-S	Polycarbonate- Butyl Composite	Exposed corrugated polycarbonate spacer with butyl - single sealed.
PU-D	Polyurethane foam	Polyurethane foam - dual sealed.
PU-S	Polyurethane foam	Polyurethane foam - single sealed.
S2-D	Steel (thermally-broken)	Stainless steel spacer with urethane thermal break - dual sealed.
S2-S	Steel (thermally-broken)	Stainless steel spacer with urethane thermal break - single sealed.
S3-D	Steel/Foam/Steel	Two steel spacers separated by foam-type material - dual sealed.
S3-S	Steel/Foam/Steel	Two steel spacers separated by foam-type material - single sealed.
S5-D	Steel reinforced butyl	Butyl spacer material with stainless steel substrate - dual sealed.
S5-S	Steel reinforced butyl	Butyl spacer material with stainless steel substrate - single sealed.
S6-D	Steel U-channel w/ thermal cap	U-shaped steel spacer system with a thermal cap - dual sealed.
S6-S	Steel U-channel w/ thermal cap	U-shaped steel spacer system with a thermal cap - single sealed.
SS-D	Stainless Steel	Stainless Steel - Dual Seal
SS-S	Stainless Steel	Stainless Steel - Single Sealed
SU-D	Stainless Steel U-Shaped	Stainless Steel U-shaped spacer system embedded in sealant - Dual sealed
SU-S	Stainless Steel U-Shaped	Stainless Steel U-shaped spacer system embedded in sealant - Single sealed
TP-D	Thermo-plastic	Thermo-plastic - dual sealed.
TP-S	Thermo-plastic	Thermo-plastic - single sealed.
TS-D	Thermo-plastic	Thermoplastic spacer with stainless steel substrate - dual-sealed
TS-S	Thermo-plastic	Thermoplastic spacer with stainless steel substrate - single-sealed
WD	Wood	Wood spacer system
ZF-D	Silicone Foam	Silicone foam spacer system - dual sealed.
ZF-S	Silicone Foam	Silicone foam spacer system - single sealed.
ZS-D	Silicone/Steel	Combination of two separate spacers: a steel spacer and silicone spacer - dual sealed.
ZS-S	Silicone/Steel	Combination of two separate spacers: a steel spacer and silicone spacer - single sealed.

ATTACHMENT A

Product Drawings



TEST SPECIMEN COMPLIES
 WITH THESE DETAILS.
 ANY DEVIATION IS NOTED
 REPORT NO. NCTL-110-12269-1
 TEST DATE 9/2/09



ALL SEASONS
 DOOR & WINDOW MFG.

V600 D/H

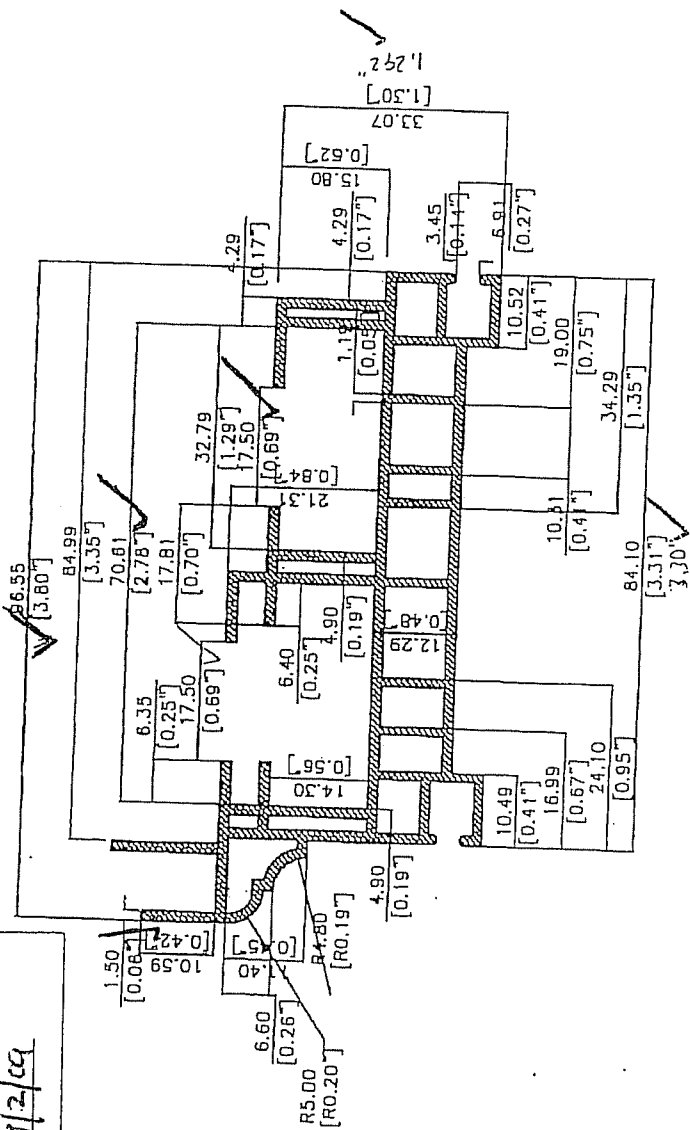
TEST SPECIMEN COMPLIES

WITH THESE DETAILS.

ANY DEVIATION IS NOTED

REPORT NO. NCTL-110-12248-1

TEST DATE 9/2/09



DOUBLE HUNG
FRAME

V214A

ALL SEASONS

SIZE:	FORM No.:	DATE:	REV.:
SCALE: 1:1		SHEET: -	

DATE
03-04-03

APPROVED

REVISION

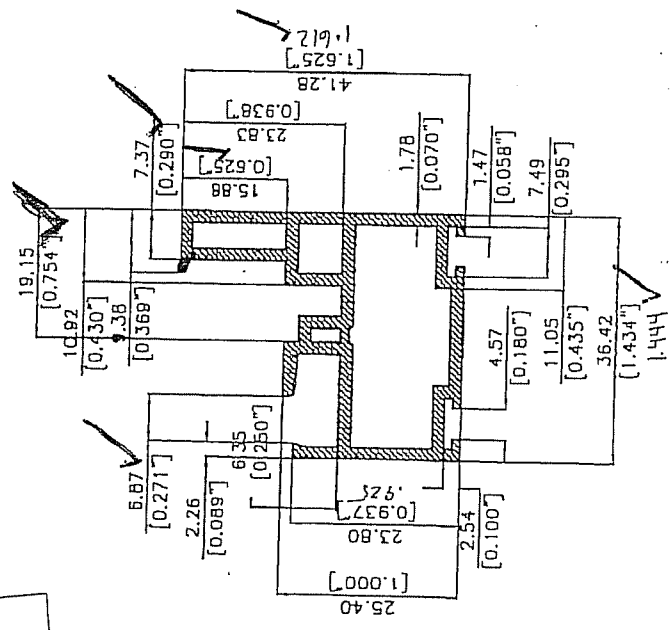
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DESCRIPTION

DATE

BY

TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED REPORT NO. NCTL-110-12269-1 TEST DATE 9/2/01



V250

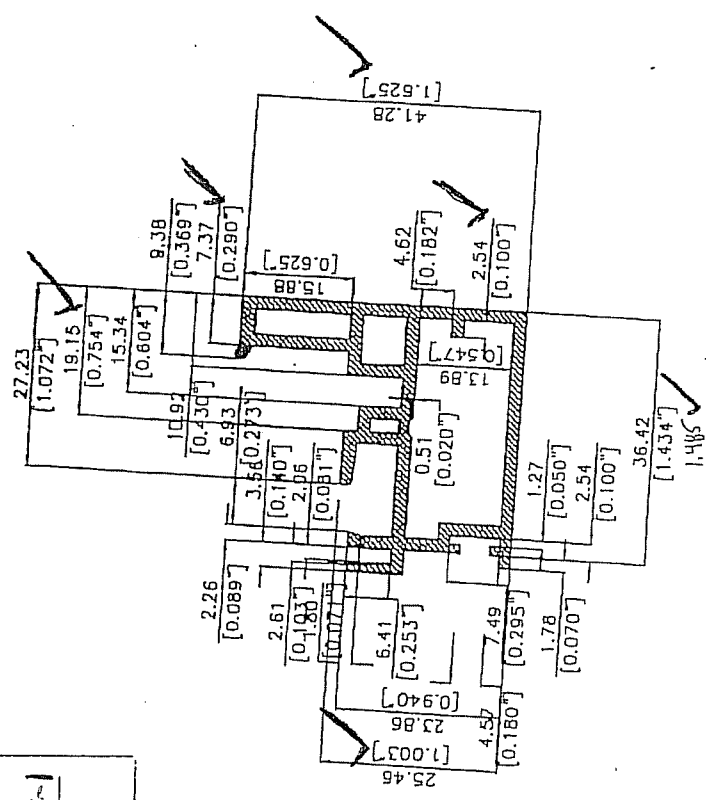
SASH

ALL SEASONS
DOOR & WINDOW, MFG.

SIZE	1 7/8mm	DWG No.	REV:
SCALE	1:1	SHEET	

DATE 03-04-03 APPROVED

TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED REPORT NO. NCTL-110-12266-1 TEST DATE 9/2/09



SASH

V252

ALL SEASONS DOOR & WINDOW MFG.

SCALE: 1:1

REVISIONS

DATE

03-04-03

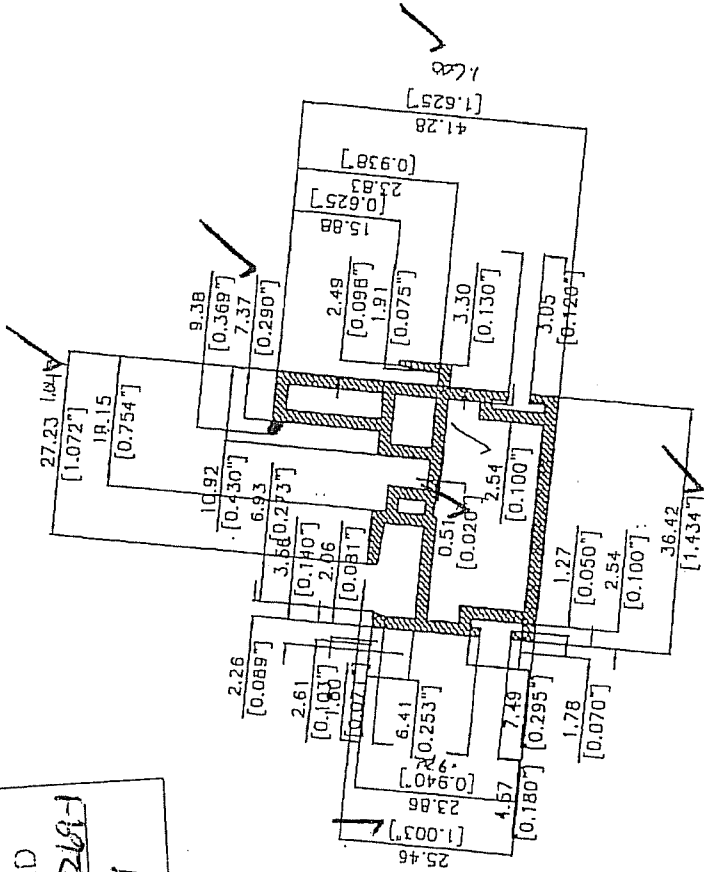
APPROVED

TEST SPECIMEN COMPLIES WITH THESE DETAILS.

ANY DEVIATION IS NOTED

REPORT NO. NCTL-110-12269-1

TEST DATE 9/2/09



V255

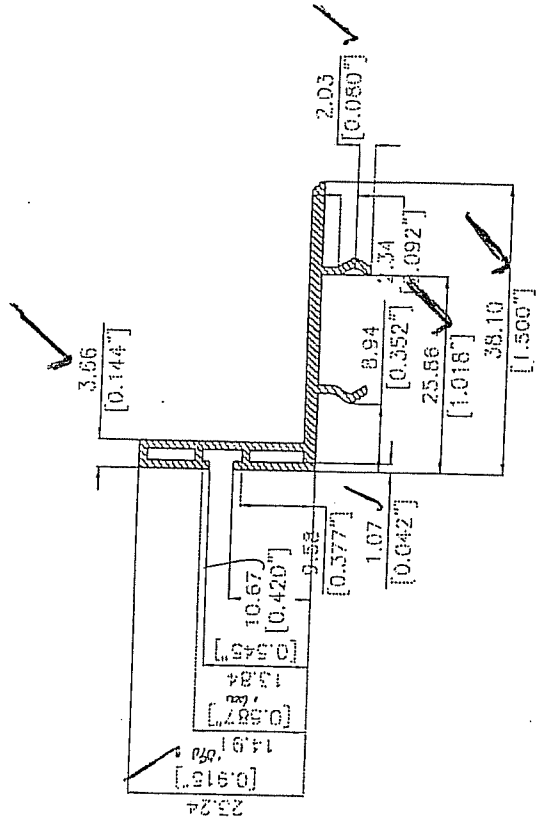
ALL SEASONS
DOOR & WINDOW MFG.

1.78mm

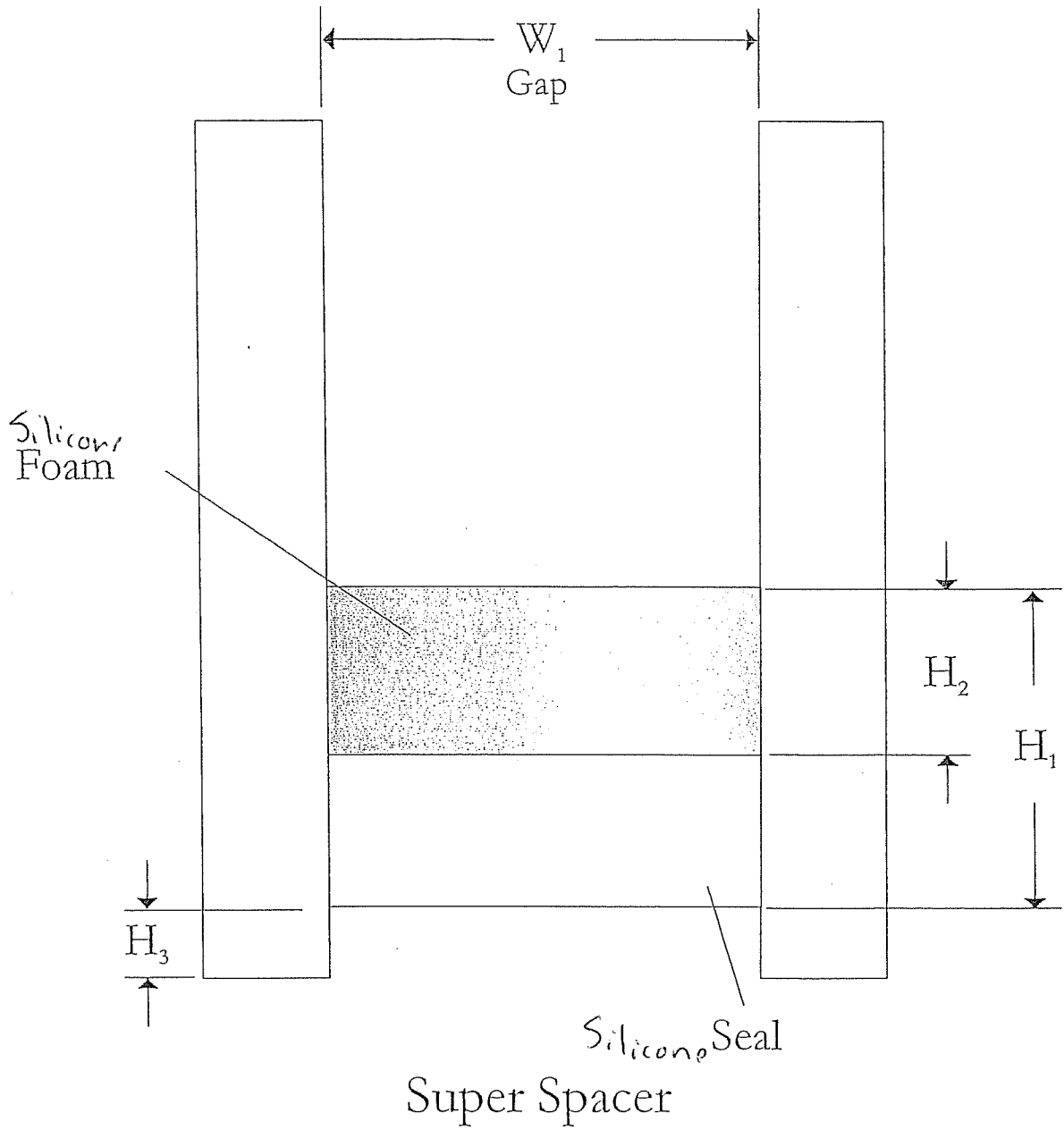
SASH

REVISIONS:		DATE: 03-04-03	APPROVED:
ZONE	REV:	DESCRIPTION:	

TEST SPECIMEN COMPLIES WITH THESE DETAILS. ANY DEVIATION IS NOTED REPORT NO. NCTL-110-12249-H TEST DATE 9/2/09



HEAD INSERT		V-013	
 ALL SEASONS DOOR & WINDOW, INC.			
SIZE: 1.6711111	FSCH No: --	DWG No: --	REV: --
SCALE: 1:1			SHEET: --



Spacer Dimensions - Fill dimensions where applicable - Please fill out a spacer sheet for each spacer used whether spacer type or size.

Gap	Top Primary Seal	Bottom Secondary Seal	Material	Fill
<input type="checkbox"/> W_1 <u>.514</u> "	<input type="checkbox"/> Butyl	<input type="checkbox"/> Butyl	<input type="checkbox"/> Aluminum	<input type="checkbox"/> Dessicant
<input type="checkbox"/> W_2 _____ "	<input type="checkbox"/> PIB	<input type="checkbox"/> PIB	<input type="checkbox"/> Steel - Mild	<input type="checkbox"/> Air
<input type="checkbox"/> W_3 _____ "	<input type="checkbox"/> Polysulphide	<input type="checkbox"/> Polysulphide	<input type="checkbox"/> Steel - Stainless	<input type="checkbox"/> Other _____
<input type="checkbox"/> W_4 _____ "	<input type="checkbox"/> Silicone	<input checked="" type="checkbox"/> Silicone	<input type="checkbox"/> Steel - Galvanized	
<input type="checkbox"/> H_1 <u>.375</u> "	<input type="checkbox"/> Urethane	<input type="checkbox"/> Urethane	<input type="checkbox"/> Vinyl	
<input type="checkbox"/> H_2 <u>.187</u> "	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Foam _____	
<input type="checkbox"/> H_3 _____ "	<input checked="" type="checkbox"/> Other <u>Silicon foam</u>	<input type="checkbox"/> Other _____	<input type="checkbox"/> Other _____	
<input type="checkbox"/> H_4 _____ "				
<input type="checkbox"/> H_5 _____ "				
<input type="checkbox"/> T_1 _____ "				

Intercept[®] Tinplate Simulation Model

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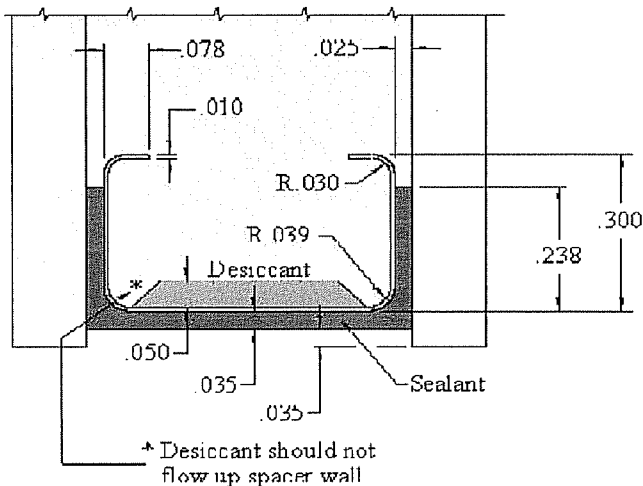
**GED Integrated Solutions
9280 Dutton Drive
Twinsburg, OH
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**Telephone:
330.963.5401
Fax: 330.963.0584
www.gedusa.com**

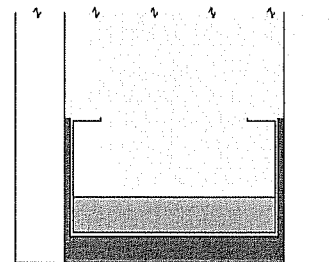
For THERM

- ✓ Spacer wall thickness: Tinplate material = 0.010"
Blackline material = 0.010"
- ✓ Thermal conductivity: Tinplate material = 62 W/m⁰K
Blackline material = 50 W/m⁰K
Desiccant = 0.29 W/m⁰K
Sealant = 0.24 W/m⁰K
- ✓ Spacer should be below sight line
- ✓ All dimensions in inches

Accurate Geometry



Inaccurate Geometry

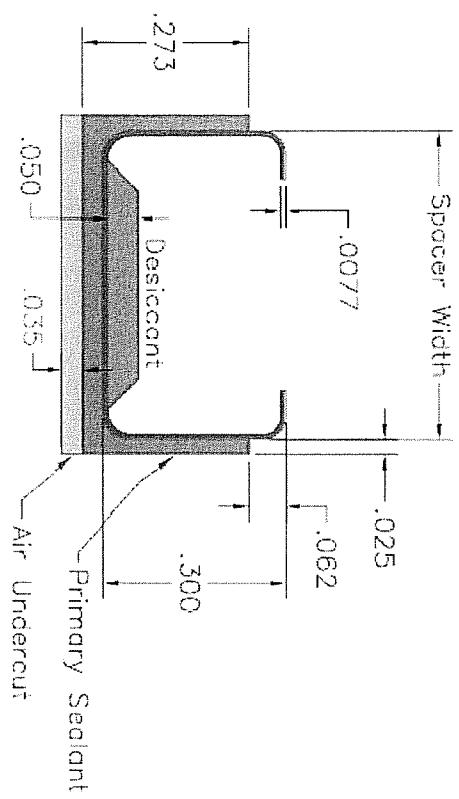




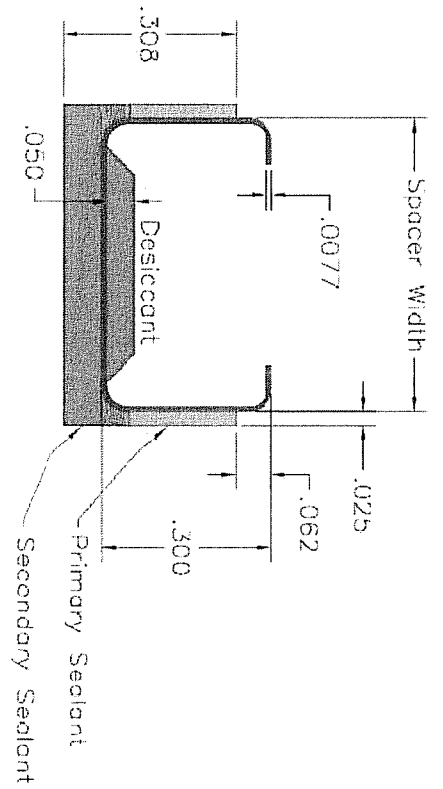
Integrated Solutions

Intercept® Technologies —Correct Geometry

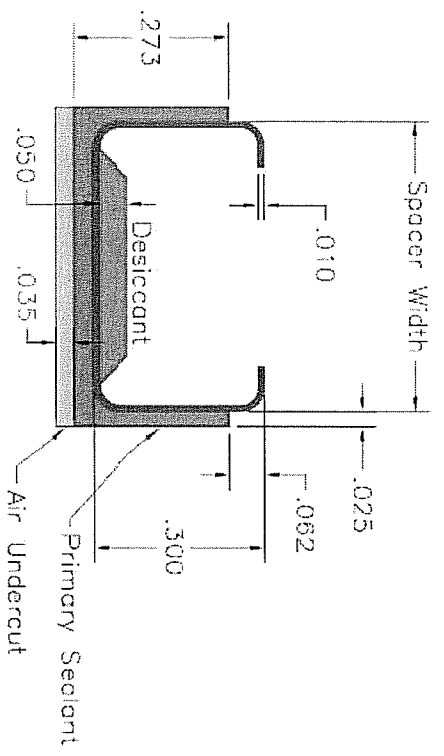
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SINGLE SEAL**



**Intercept® ULTRA Stainless Steel—Standard Profile
DUAL SEAL**



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



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

