Architectural Testing

AAMA 1503-09 THERMAL PERFORMANCE TEST REPORT

Rendered to:

INTERNATIONAL ARCHITECTURAL PRODUCTS, INC.
DBA: UNITED STATES ALUMINUM

SERIES/MODEL: 7600 Projected Vent
TYPE: Projecting (Awning)

Summary of Results	
Thermal Transmittance (U-Factor)	0.46
Condensation Resistance Factor - Frame (CRF_f)	62
Condensation Resistance Factor - Glass (CRF_g)	67

Unit Size	59-1/8" x 23-5/8" (1502 mm x 600 mm)
Layer 1	1/4" Comfort Ti-AC36 (e=0.034*, #2)
Gap	0.50" Gap, Stainless Steel Spacer (SS-D), 100% Air-Filled*
Layer 2	1/4" Clear

Reference must be made to Report No. A2573.02-301-46, dated 10/12/10 for complete test specimen description and data.

2524 E. Jensen Ave
Fresno, CA 93706
phone: 559-233-8705
fax: 559-233-8360
www.archtest.com

Architectural Testing

AAMA 1503-09 THERMAL PERFORMANCE TEST REPORT

Rendered to:

INTERNATIONAL ARCHITECTURAL PRODUCTS, INC.
200 Singleton Drive
Waxahachie, Texas 75165

Report Number:	A2573.02-301-46
Test Date:	08/27/10
Report Date:	09/13/10
Revision 1 Date:	10/12/10
Test Record Retention Date:	08/27/14

Test Sample Identification:

Series/Model: 7600 Projected Vent

Type: Projecting (Awning)

Test Sample Submitted by: Client

Test Procedure: The condensation resistance factor (CRF) and thermal transmittance (U) were determined in accordance with AAMA 1503-09, *Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections*

1. Average warm side ambient temperature 69.80 F
2. Average cold side ambient temperature -0.18 F
3. 15 mph dynamic wind applied to test specimen exterior.
4. 0.0" $\pm$0.04" static pressure drop across specimen.

Test Results Summary:

1. Condensation resistance factor - Frame (CRF_f) 62
   Condensation resistance factor - Glass (CRF_g) 67
2. Thermal transmittance due to conduction (U) 0.46
   (U-factors expressed in Btu/hr·ft^2·F)

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Test Sample Description:

CONSTRUCTION	Frame	Vent
Size (in.) Non-Standard	59-1/8 x 23-5/8	58-3/4 x 23-1/4
Daylight Opening (in.)	N/A	54-3/4 x 19-1/4
CORNERS	Coped	Mitered
Fasteners	Screws	Keys & Stakes
Sealant	Yes	Yes
MATERIAL	AL	AT (0.25")
Color Exterior	Gray	Gray
Finish Exterior	Anodized	Anodized
Color Interior	Gray	Gray
Finish Interior	Anodized	Anodized
GLAZING METHOD	N/A	Exterior

Glazing Information:

Layer 1	1/4" Comfort Ti-AC36 (e=0.034*, #2)
Gap	0.50" Gap, Stainless Steel Spacer (SS-D), 100% Air-Filled*
Layer 2	1/4" Clear
Gas Fill Method	N/A*

**Stated per Client/Manufacturer*
NA Non-Applicable
See Description Table Abbreviations

Test Sample Description: (Continued)

COMPONENTS			
	Type	**Quantity**	**Location**
WEATHERSTRIP			
	Hollow bulb vinyl gasket	1 Row	All members of the frame & vent.
	Single leaf vinyl gasket	1 Row	All members of the vent.
HARDWARE			
	Muluti arm hinge	1	Each jamb.
	Handle with three point lock assembly	1	Bottom rail.
	Keeper	3	Sill.
DRAINAGE			
	None		

Test Duration:

1. The environmental systems were started at 10:01 hours, 08/26/10.

2. The thermal performance test results were derived from 01:57 hours, 08/27/10 to 05:57 hours, 08/27/10.

Condensation Resistance Factor (CRF):

The following information, condensed from the test data, was used to determine the condensation resistance factor:

T_h	=	Warm side ambient air temperature	69.80 F
T_c	=	Cold side ambient air temperature	-0.18 F
FT_p	=	Average of pre-specified frame temperatures (14)	43.58 F
FT_r	=	Average of roving thermocouples (4)	37.36 F
W	=	$[(FT_p - FT_r) / (FT_p - (T_c + 10))] \times 0.40$	0.074
FT	=	$FT_p(1-W) + W (FT_r)$ = Frame Temperature	43.12 F
GT	=	Glass Temperature	46.71 F
CRF_g	=	Condensation resistance factor – Glass	67
		$CRF_g = (GT - T_c) / (T_h - T_c) \times 100$	
CRF_f	=	Condensation resistance factor – Frame	62
		$CRF_f = (FT - T_c) / (T_h - T_c) \times 100$	

The CRF number was determined to be 62 (on the size as reported). When reviewing this test data, it should be noted that the frame temperature (FT) was colder than the glass temperature (GT) therefore controlling the CRF number. Refer to the 'CRF Report' page and the 'Thermocouple Location Diagram' page of this report.

Thermal Transmittance (U_c):

T_h	=	Average warm side ambient temperature	69.80	F
T_c	=	Average cold side ambient temperature	-0.18	F
P	=	Static pressure difference across test specimen 15 mph dynamic perpendicular wind at exterior	0.00	psf
Nominal sample area			9.70	ft^2
Total measured input to calorimeter			445.18	Btu/hr
Calorimeter correction			135.72	Btu/hr
Net specimen heat loss			309.46	Btu/hr
U	=	Thermal Transmittance	0.46	$Btu/hr \cdot ft^2 \cdot F$

Glazing Deflection (in.):

	Vent
Edge Gap Width	0.50
Estimated center gap width upon receipt of specimen in laboratory (after stabilization)	0.55
Center gap width at laboratory ambient conditions on day of testing	0.55
Center gap width at test conditions	0.45

The sample was inspected for the formation of frost or condensation, which may influence the surface temperature measurements. The sample showed no evidence of condensation/frost at the conclusion of the test.

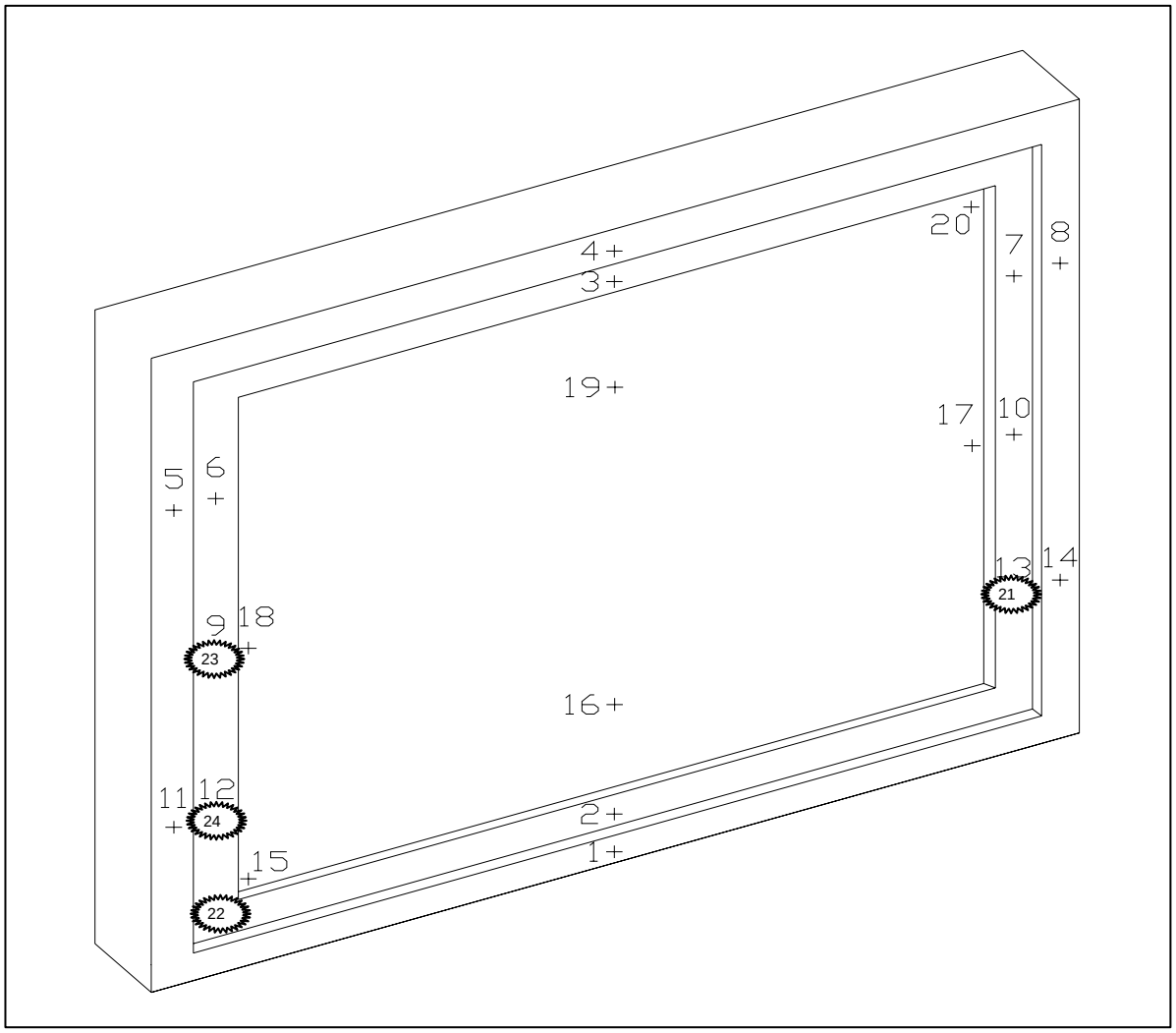
A calibration of the Architectural Testing Inc. 'thermal test chamber' (ICN 004287) in Fresno, California was conducted in April 2010 in accordance with Architectural Testing Inc. calibration procedure.

Prior to testing the specimen was sealed with silicone on the interior side and checked for air infiltration per Section 9.3.4.

CRF Report

Time:	03:57	04:27	04:57	05:27	05:57	AVERAGE
Pre-specified Thermocouples - Frame						
1	47.67	47.64	47.70	47.65	47.67	47.67
2	39.12	39.11	39.11	39.11	39.13	39.12
3	42.30	42.36	42.33	42.34	42.37	42.34
4	52.01	52.01	52.01	52.03	52.04	52.02
5	49.26	49.27	49.26	49.26	49.27	49.26
6	39.03	39.06	39.03	39.03	39.07	39.04
7	40.37	40.39	40.36	40.39	40.39	40.38
8	49.72	49.72	49.72	49.75	49.72	49.73
9	38.95	38.97	38.98	38.98	38.98	38.97
10	40.53	40.48	40.47	40.51	40.53	40.50
11	47.88	47.91	47.87	47.89	47.88	47.89
12	37.38	37.42	37.37	37.39	37.38	37.39
13	37.49	37.48	37.48	37.43	37.42	37.46
14	48.35	48.34	48.32	48.34	48.35	48.34
FT_P	43.58	43.58	43.57	43.58	43.59	43.58
Pre-specified Thermocouples - Glass						
15	36.00	36.02	35.97	36.03	36.02	36.01
16	51.47	51.50	51.47	51.45	51.46	51.47
17	47.20	47.18	47.15	47.17	47.24	47.19
18	46.91	46.94	46.91	46.93	46.96	46.93
19	52.81	52.85	52.85	52.85	52.84	52.84
20	45.78	45.81	45.81	45.86	45.79	45.81
GT	46.70	46.72	46.69	46.71	46.72	46.71
Cold Point (Roving) Thermocouples						
21	38.95	38.97	38.98	38.98	38.98	38.97
22	35.66	35.59	35.60	35.68	35.59	35.62
23	37.49	37.48	37.48	37.43	37.42	37.46
24	37.38	37.42	37.37	37.39	37.38	37.39
FT_R	37.37	37.37	37.36	37.37	37.34	37.36
W	0.07	0.07	0.07	0.07	0.07	0.07
FT	43.12	43.13	43.11	43.12	43.12	43.12
Warm Side - Room Ambient Air Temperature						
	69.80	69.80	69.81	69.81	69.82	69.81
Cold Side - Room Ambient Air Temperature						
	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18
CRF_f	62	62	62	62	62	62
CRF_g	67	67	67	67	67	67

Thermocouple Location Diagram



Cold Point Locations

21. 38.97
22. 35.62
23. 37.46
24. 37.39

Detailed drawings, data sheets, representative samples of test specimens, 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 by Architectural Testing will expire. Results obtained are tested 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 specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.

Digitally Signed by: William Smeds

Simon Smeds
Technician

Digitally Signed by:Kenny C. White

Kenny C. White
Laboratory Manager
Individual-In-Responsible-Charge

WSS:ss
A2573.02-301-46

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Description Table Abbreviations (1)

Appendix-B: Drawings (9)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	09/13/10	All	Original Report Issue. Work requested by Mr. Don Willard of International Architectural Products, Inc.
1	10/12/10	Drawings	Added drawings to report.

Appendix A: Description Table Abbreviations

CODE	Frame / Sash Types
AI	Aluminum w/ Vinyl Inserts (Caps)
AL	Aluminum
AP	Aluminum w/ Thermal Breaks - Partial
AS	Aluminum w/ Steel Reinforcement
AT	Aluminum w/ Thermal Breaks - All Members (≥ 0.21")
AU	Aluminum Thermally Improved - All Members (0.062" - 0.209")
AV	Aluminum / Vinyl Composite
AW	Aluminum-clad Wood
FG	Fiberglass
PA	ABS Plastic w/ All Members Reinforced
PC	ABS Plastic-clad Aluminum
PF	ABS Plastic w/ Foam-filled Insulation
PH	ABS Plastic w/ Horizontal Members Reinforced
PI	ABS Plastic w/ Reinforcement - Interlock
PL	ABS Plastic
PP	ABS Plastic w/ Reinforcement - Partial
PV	ABS Plastic w/ Vertical Members Reinforced
PW	ABS Plastic-clad Wood
ST	Steel
VA	Vinyl w/ All Members Reinforced
VC	Vinyl-clad Aluminum
VF	Vinyl w/ Foam-filled Insulation
VH	Vinyl w/ Horizontal Members Reinforced
VI	Vinyl w/ Reinforcement - Interlock
VP	Vinyl w/ Reinforcement - Partial
VV	Vinyl w/ Vertical Members Reinforced
VW	Vinyl-clad Wood
VY	Vinyl
WA	Aluminum / Wood composite
WD	Wood
WV	Vinyl / Wood composite
WF	Fiberglass/Wood Combination
WC	Composite/Wood Composite (Shaped vinyl/wood composite members)
CW	Copper Clad Wood
CO	Vinyl/Wood Composite Material

CODE	Spacer Types (See sealant)
A1	Aluminum
A2	Aluminum (Thermally-broken)
A3	Aluminum-reinforced Polymer
A4	Aluminum / Wood
A5	Aluminum-reinforced Butyl (Swiggle)
A6	Aluminum / Foam / Aluminum
A7	Aluminum U-shaped
A8	Aluminum-Butyl (Corrugated) (Duraseal)
ER	EPDM Reinforced Butyl
FG	Fiberglass
GL	Glass
OF	Organic Foam
P1	Duralite
PU	Polyurethane Foam
SU	Stainless Steel, U-shaped
CU	Coated Steel, U-shaped (Intercept)
S2	Steel (Thermally-broken)
S3	Steel / Foam / Steel
S5	Steel-reinforced Butyl
S6	Steel U-channel w/ Thermal Cap
SS	Stainless Steel
CS	Coated Steel
TP	Thermo-plastic
WD	Wood
ZE	Elastomeric Silicone Foam
ZF	Silicone Foam
ZS	Silicone / Steel
N	Not Applicable
TS	Thermo-plastic w/ stainless steel substrate

CODE	Tint Codes
AZ	Azurlite
BL	Blue
BZ	Bronze
CL	Clear
EV	Evergreen
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
BG	Blinds between the Glazing
DV	Dynamic Glazing-Variable
DY	Dynamic Glazing-NonVariable

CODE	Gap Fill Codes
AIR	Air
AR2	Argon/Krypton Mixture
AR3	Argon / Krypton / Air
ARG	Argon/Air
CO2	Carbon Dioxide
KRY	Krypton/Air
SF6	Sulfur Hexaflouride
XE2	Xenon/Krypton/Air
XE3	Xenon/Argon/Air
XEN	Xenon/Air
N	Not Applicable

DOOR DETAILS	
N	Not Applicable
CODE	Door Type
EM	Embossed
FL	Flush
LF	Full Lite
LH	1/2 - Lite
LQ	1/4 - Lite
LT	3/4 - Lite
RP	Raised Panel
CODE	Skin
AL	Aluminum
FG	Fiberglass
GS	Galvanized Steel
ST	Steel
WD	Wood
VY	Vinyl
CODE	Panel
FG	Fiberglass
PL	Plastic
WP	Wood - Plywood
WS	Wood - Solid
CODE	Sub-Structure
GS	Galvanized Steel
ST	Steel
WD	Wood
VY	Vinyl
CODE	Core Fill
CH	Cellular - Honeycomb
EP	Expanded Polystyrene
PI	Polyisocyanurate
PU	Polyurethane
WP	Wood - Plywood
WS	Wood - Solid
XP	Extruded Polystyrene

CODE	Spacer Sealant
D	Dual Seal Spacer System
S	Single Seal Spacer System

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

CODE	Grid Size Codes
	Blank for no grids
0.75	Grids < 1"
1.5	Grids >= 1"

CODE	Thermal Breaks
F	Foam
U	Urethane
V	Vinyl
FB	Fiberglass
O	Other
AB	ABS
NE	Neoprene
AI	Air
N	Not Applicable
P	Polyamide

Bill of Materials
International Architectural Products, Inc.
CW 7600 Projected Vent

Part Name	Part Number
Jamb	T-61583
Head	T-61582
Sill	T-61582
Vent	H-61581
Finger Gasket	NP810
Bulb Gasket	USA-1820

Architectural Testing, Inc.
Test sample complies with these details
deviations are noted

A 2 5 7 3 SEP 08 2010

Report # Date

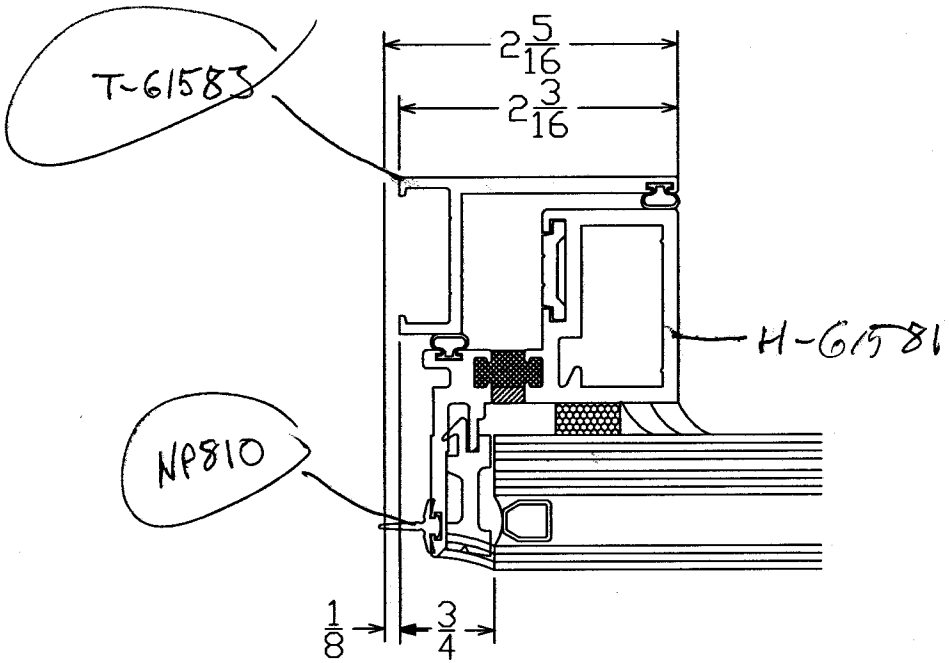
Tech

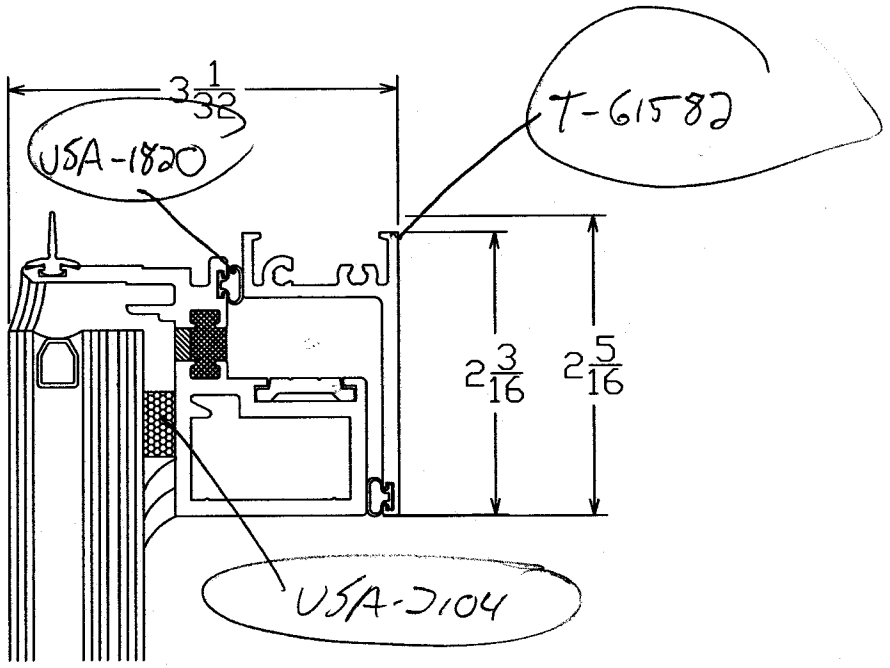
Architectural Testing, Inc.
Test sample complies with these details
deviations are noted

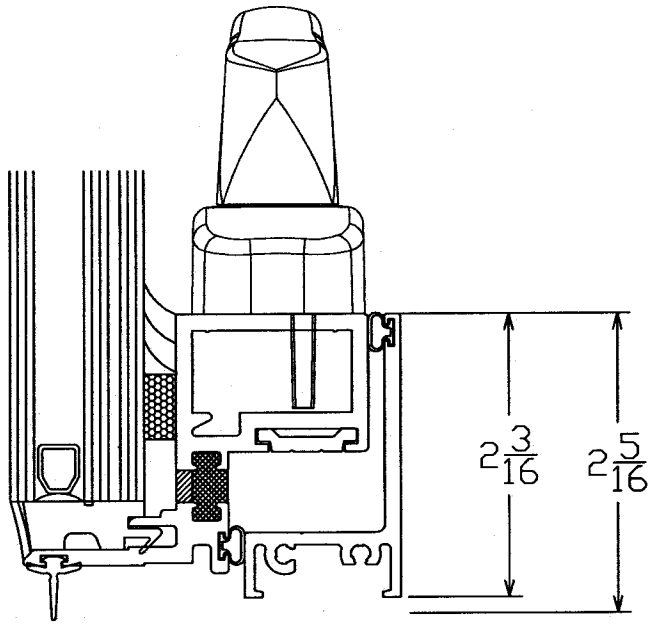
A 2 5 7 3 SEP 08 2010

Report # Date

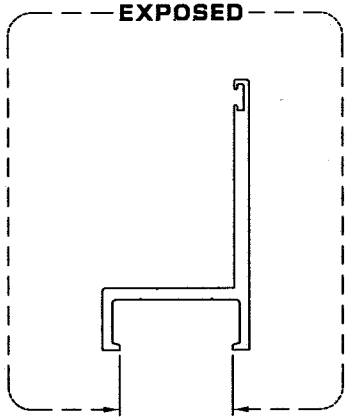
Tech







U.S. ALUMINUM CORP.			T-61583
7500 FRAME JAMB	TER MEER		05/20/09
WN523	2 X SIZE		

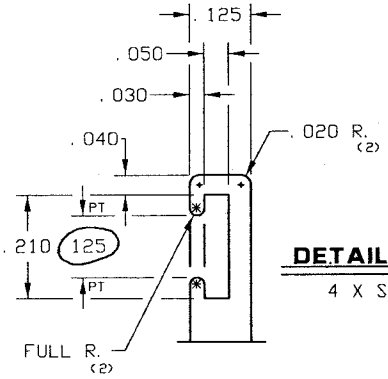


ACTUAL SIZE

Architectural Testing, Inc.
Test sample complies with these details
Date

A 2 5 7 3 SEP 08 2010

Report # Tech



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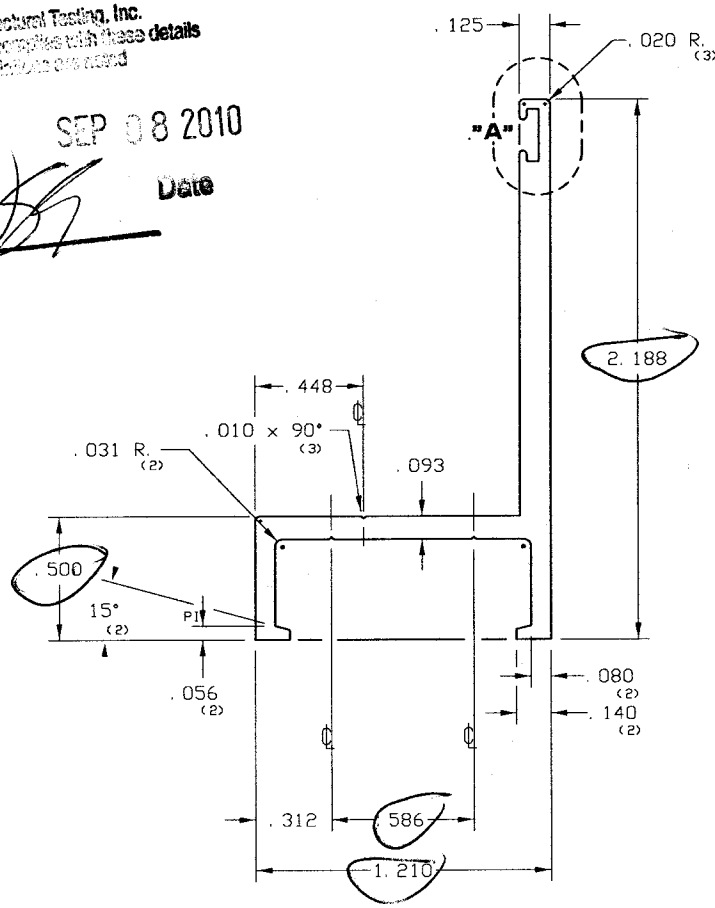
4 X SIZE



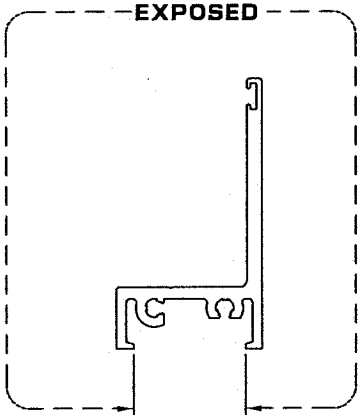
9X2 DIE 1/2 RECESS

NOTES:

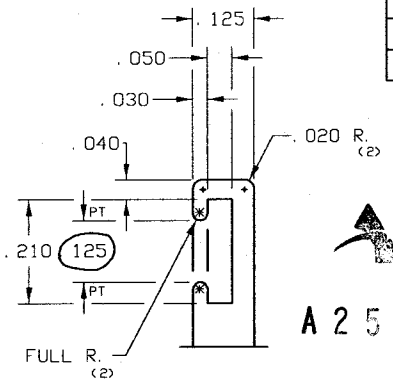
1. 6063-T5 ALLOY AND TEMPER.
2. PAINT PERIMETER: 6.153"

.380	C-1737	2
.456	2.493	9 X 61583
8.098	SOLID	STD-2
18	7" 54/PRESS 2	T-61583

U.S. ALUMINUM CORP.			T-61582
7500 FRAME HEAD AND SILL	TER MEER		05/20/09
WN521	2 X SIZE		



ACTUAL SIZE



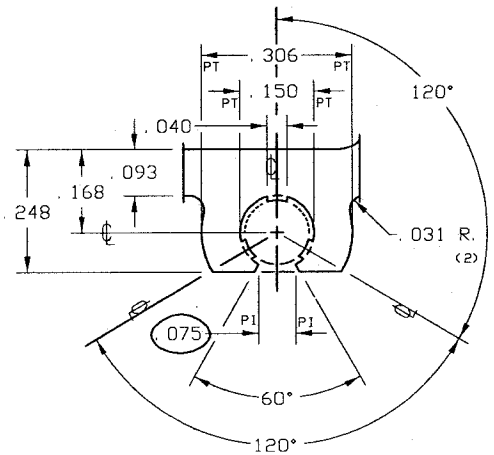
DETAIL "A"
4 X SIZE

Architectural Testing, Inc.
Test sample complies with these details
deviations are noted

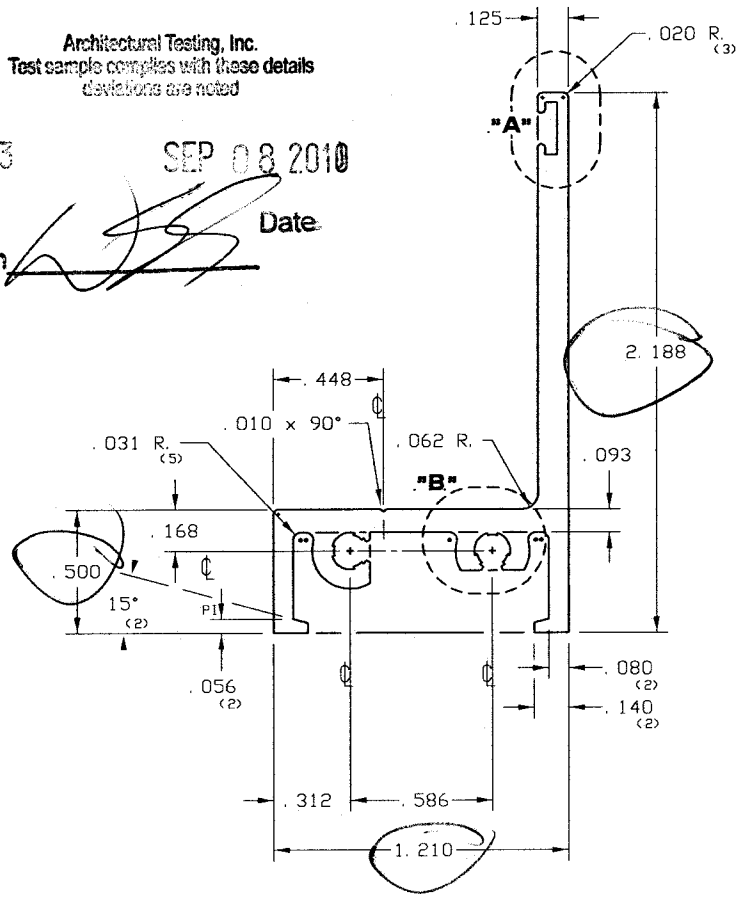
A 2 5 7 3 SEP 08 2010
Report # Date
Tech

NOTES:

1. 6063-T5 ALLOY AND TEMPER.
2. PAINT PERIMETER: 6.153"



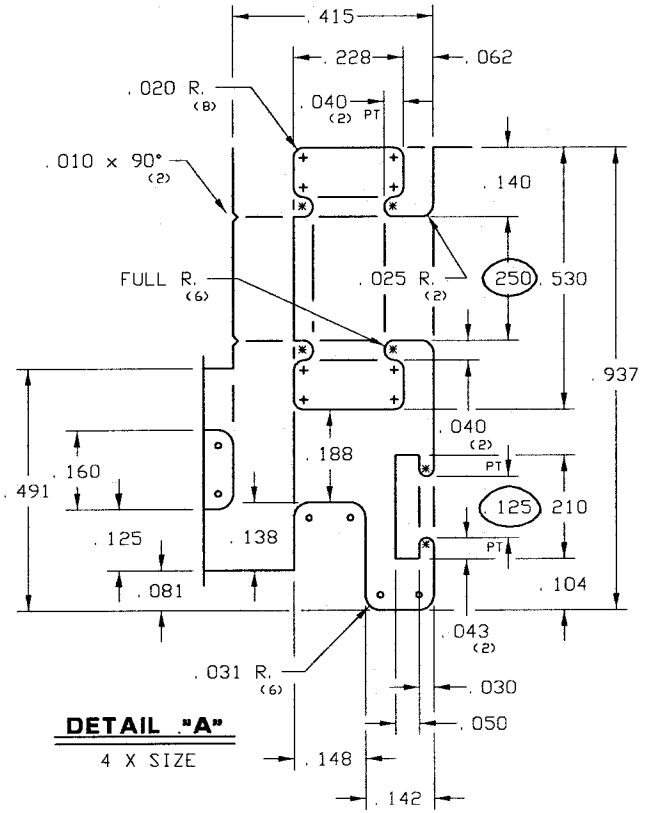
DETAIL "B"
4 X SIZE
(SIM 2 PLACES)



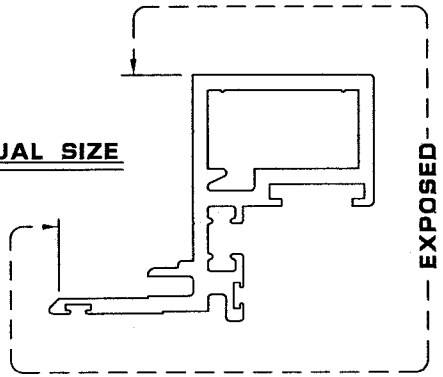
9X2 DIE 1/2 RECESS

.441	C-1736	2
.529	2.493	9 X 61582
9.474	SOLID	STD-2
18	7" 46/PRESS 2	T-61582

U.S. ALUMINUM CORP.			H-61581
7500 VENT	TER MEER		05/20/09
WN520	2 X SIZE		



DETAIL "A"
4 X SIZE



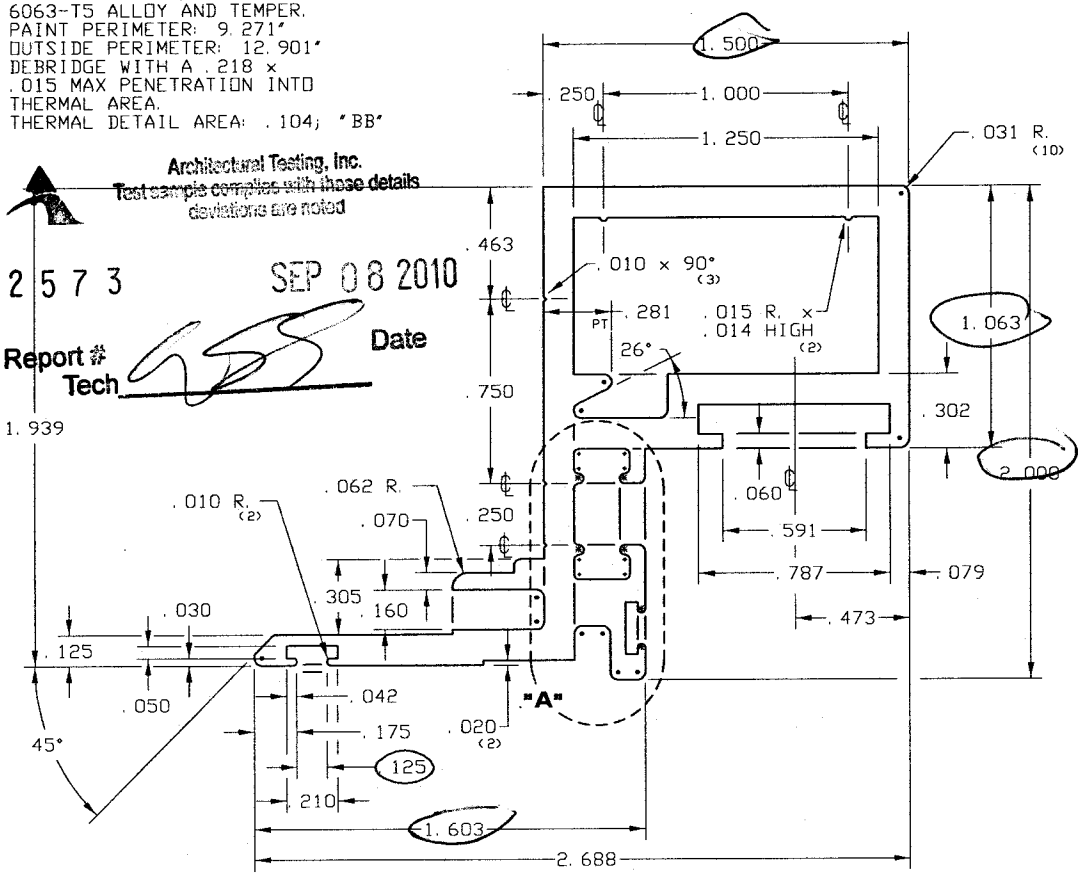
ACTUAL SIZE

NOTES:

1. 6063-T5 ALLOY AND TEMPER.
2. PAINT PERIMETER: 9.271"
3. OUTSIDE PERIMETER: 12.901"
4. DEBRIDGE WITH A .218 x .015 MAX PENETRATION INTO THERMAL AREA.
5. THERMAL DETAIL AREA: .104; "BB"

Architectural Testing, Inc.
Test sample complies with these details
deviations are noted

A 2573 SEP 08 2010
Report # Date
Tech

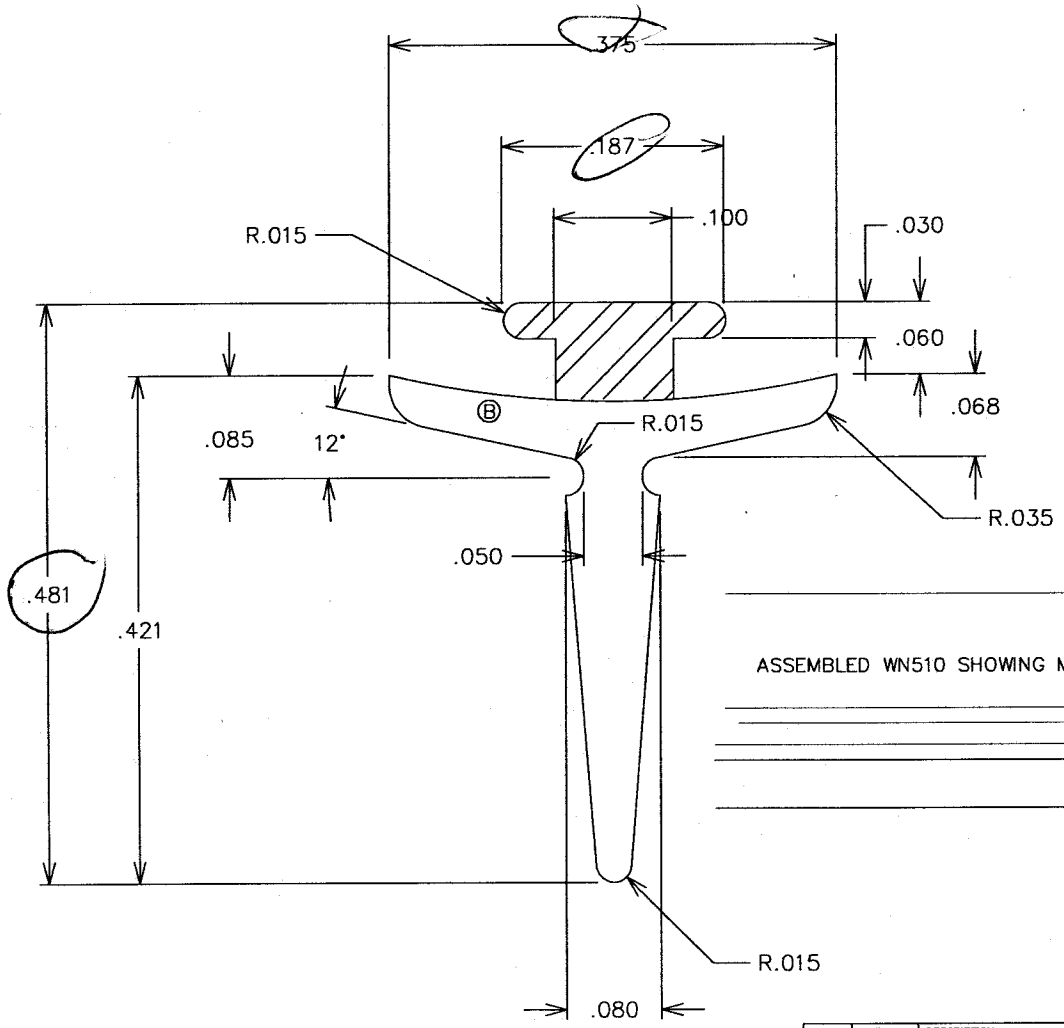


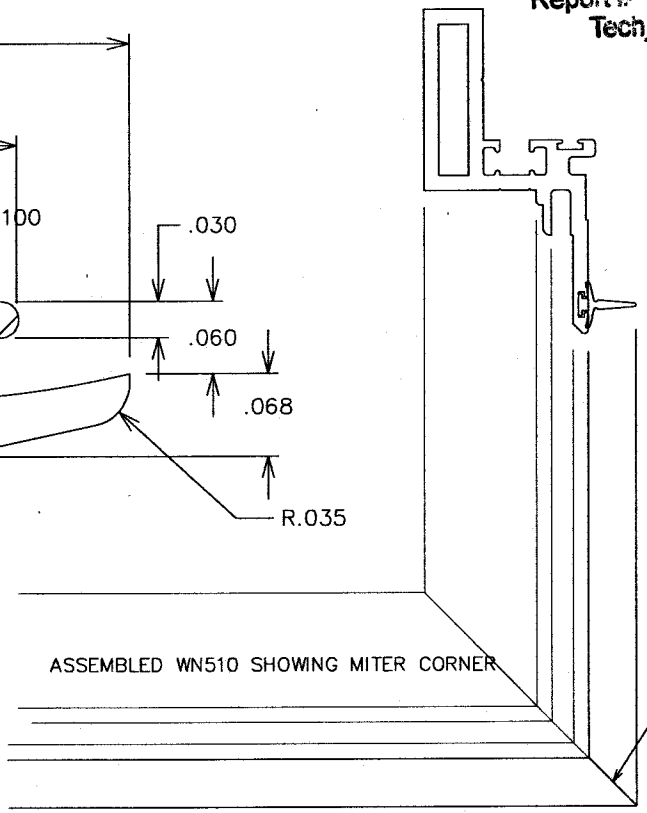
			.125
	.985	C-1735	1
	1.182	3.290	PORTHOLE 10X5.5
	17.263	HOLLOW II	15X45694
	15	8" 54/PRESS 4	H-61581

Architectural Testing, Inc.
Test sample complies with these details
deviations are noted

A 2 5 7 3 SEP 08 2010

Report # Tech Date

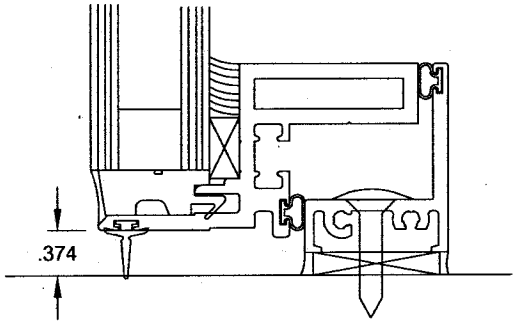




ASSEMBLED WN510 SHOWING MITER CORNER

MITER CUT GASKET AT CORNERS

ACTUAL SIZE



ASSEMBLY DRAWING WITH WN510

Ⓑ NOTES:
1. BASE MATERIAL;
   POLYPROPYLENE
   AREA = (.0104 in.²)
2. BULB MATERIAL;
   591-65 AES SANTOPRENE
   AREA = (.0341 in.²)
3. CENTRAL PLASTICS PART # 9337
4. ASSEMBLED WITH WN535 & WN510

#	DATE	DESCRIPTION	INITIALS
Ⓑ	08/07	REVISE SHAPE, MATERIAL, SUPPLIER	JSM

United States ALUMINUM COMMERCIAL PRODUCTS GROUP

NAME	JSM
DATE	11-6-06
SCALE	10X

DESCRIPTION
FINGER GASKET FOR
7500 WINDOW
PART # NP810

NUMBER
FAB-6B

USA–1820

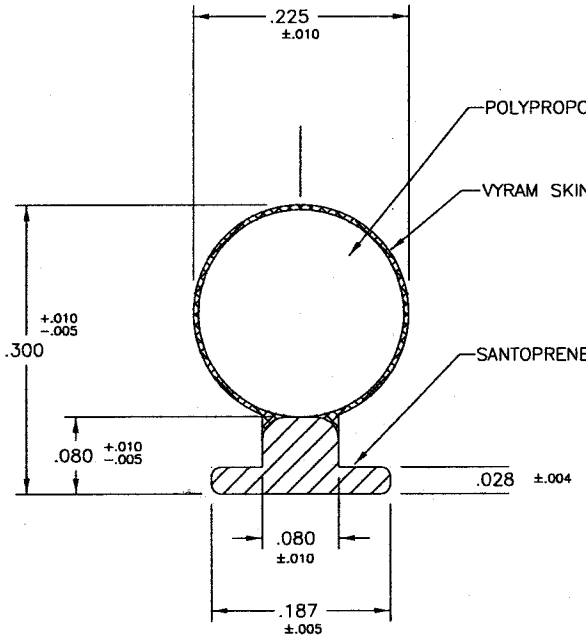
Architectural Testing, Inc.
Test sample complies with those details
deviations are noted

A 2 5 7 3 SEP 08 2010

Report # Date

Tech

ACTUAL SIZE



NOTE:

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

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

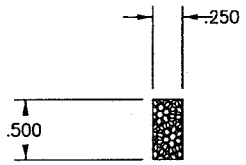
USA–2104

Architectural Testing, Inc.
Test sample complies with these details
deviations are noted

A 2 5 7 3 SEP 8 2010

Report # Date

Tech



NOTES:

1. NORTON V2100 TAPE OR EQUAL.
2. SILICONE COMPATIBILITY REQUIRED.
3. SHIPS LOOSE WITH INVISOVENT UNIT IN LENGTHS OF GLAZING PERIMETER PLUS 1 FOOT.

ECN 2000 173

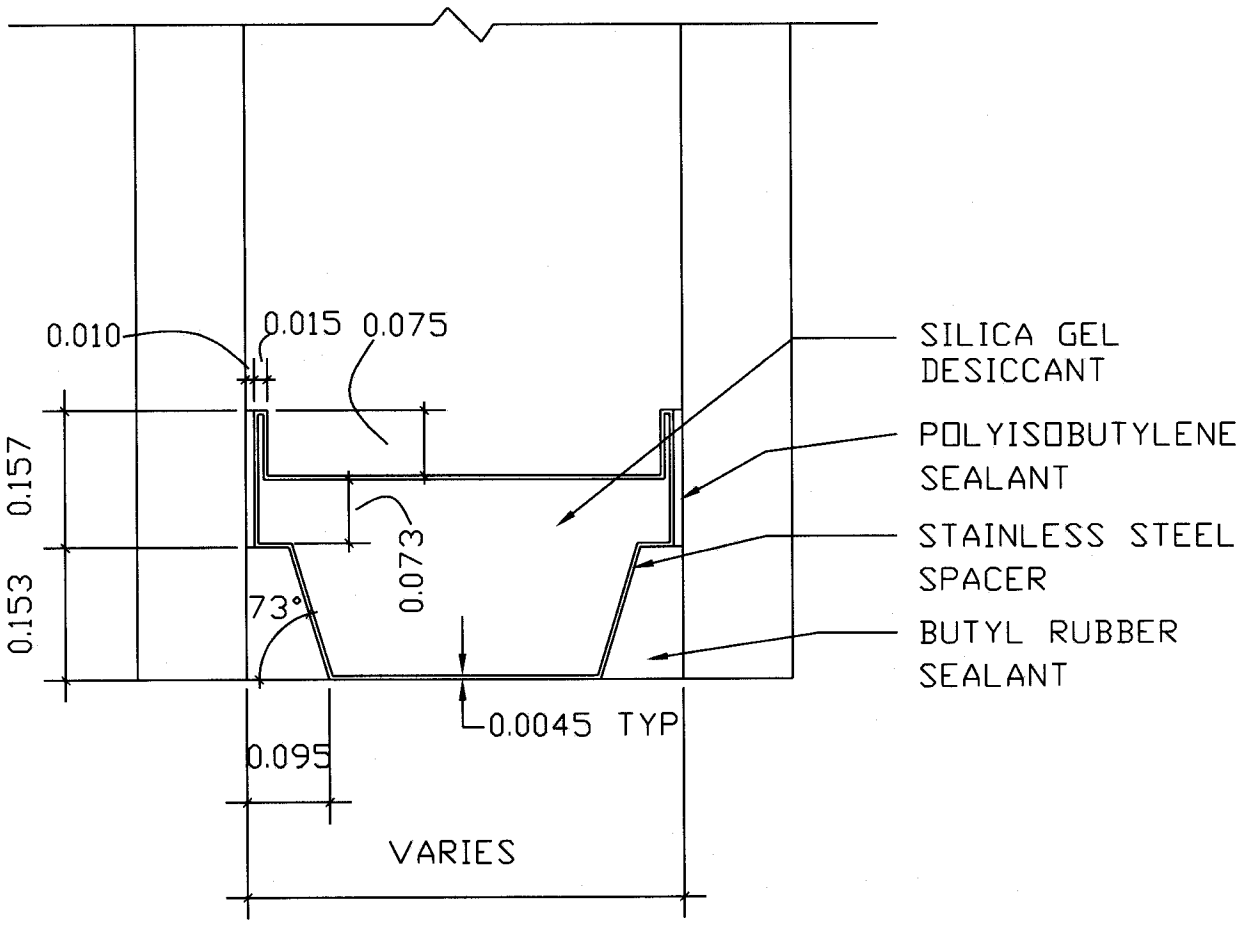
				U.S. ALUMINUM CORP.		
				DWJ	SPACER TAPE INVISOVENT PART NO.: GT900	
				11/14/00		USA–2104
				FULL SIZE		

Architectural Testing, Inc.
Test sample complies with these details
deviations are noted

A 2 5 7 3 SEP 08 2010

Report # Date

Tech



DETAIL FOR THERMAL MODELING OF
CARDINAL XL EDGE (SS)