



**AAMA 1503-09 THERMAL PERFORMANCE  
TEST REPORT**

**Rendered to:**

**CR LAURENCE CO., INC.**

**SERIES/MODEL: ENTICE Door  
TYPE: Swinging Door with Frame**

<b>Summary of Results</b>			
Thermal Transmittance (U-Factor)		0.57	
Condensation Resistance Factor - Frame (CRF <sub>f</sub> )		34	
Condensation Resistance Factor - Glass (CRF <sub>g</sub> )		59	
<b>Unit Size:</b>	37-3/4" x 82-3/8"		
<b>Layer 1:</b>	1/4"	Clear	
<b>Gap:</b>	0.52"	A1-D: Aluminum Spacer	100% Air**
<b>Layer 2:</b>	1/4"	PPG Solarban 70XL (e=0.018*, #3)	

Reference must be made to Report No. E8222.02-301-46, dated 12/02/15 for complete test specimen description and data.



**AAMA 1503-09 THERMAL PERFORMANCE TEST REPORT**

Rendered to:

CR LAURENCE CO., INC.  
2100 East 38th Street  
Vernon, California 90058

Report Number: E8222.02-301-46  
Test Date: 08/30/15  
Report Date: 12/2/2015

**Test Sample Identification:**

**Series/Model:** ENTICE Door

**Type:** Swinging Door with Frame

**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                  | -0.37 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 <sub>f</sub> ) | 34   |
| Condensation resistance factor - Glass (CRF <sub>g</sub> )    | 59   |
| 2. Thermal transmittance due to conduction (U)                | 0.57 |
| (U-factors expressed in Btu/hr·ft <sup>2</sup> ·F)            |      |

**Test Sample Description:****Frame:**

<b>Material:</b>	Head/Jambs: AL: Aluminum (Non-thermally broken) Sill: AT: Aluminum w/ Thermal Breaks (0.29")		
<b>Size:</b>	37-3/4" x 82-3/8"		
<b>Daylight Opening:</b>	N/A	<b>Glazing Method:</b>	N/A
<b>Exterior Color:</b>	Black	<b>Exterior Finish:</b>	Paint
<b>Interior Color:</b>	Black	<b>Interior Finish:</b>	Paint
<b>Corner Joinery:</b>	Square Cut / No Fasteners / Unsealed		

**Panel:**

<b>Material:</b>	AT (0.38"): Aluminum with Thermal Breaks - All Members - Skip & Debridge*		
<b>Size:</b>	35" x 80-7/8"		
<b>Daylight Opening:</b>	32-1/2" x 72-3/4"	<b>Glazing Method:</b>	Channel
<b>Exterior Color:</b>	Black	<b>Exterior Finish:</b>	Paint
<b>Interior Color:</b>	Black	<b>Interior Finish:</b>	Paint
<b>Corner Joinery:</b>	Square Cut / Screws / Sealed		

**Glazing Information:**

<b>Layer 1:</b>	1/4"	Clear	
<b>Gap:</b>	0.52"	A1-D: Aluminum Spacer	100% Air**
<b>Layer 2:</b>	1/4"	PPG Solarban 70XL (e=0.018*, #3)	
<b>Gas Fill Method:</b>	N/A**		
<b>Desiccant:</b>	Yes		

\*See Drawings in Appendix D for Skip/Debridge Measurements

\*\*Stated per Client/Manufacturer

N/A Non-Applicable

**Test Sample Description: (Continued)**

**Weatherstripping:**

Description	Quantity	Location
Polypile with center fin	1 Row	Stiles.
Polypile with center fin	2 Rows	Rails.

**Hardware:**

Description	Quantity	Location
Dead bolt lock	1	Top rail. Bottom rail.
Hinge	1	Hinge stile, at the head. Hinge stile, at the sill.

**Drainage:**

Drainage Method	Size	Quantity	Location
No visible weeps.			

**Test Duration:**

1. The environmental systems were started at 13:25 hours, 08/29/15.
2. The thermal performance test results were derived from 06:53 hours, 08/30/15 to 10:53 hours, 08/30/15.

**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	-0.37 F
$FT_p$	=	Average of pre-specified frame temperatures (14)	23.80 F
$FT_r$	=	Average of roving thermocouples (4)	20.77 F
$W$	=	$[(FT_p - FT_r) / (FT_p - (T_c + 10))]$ x 0.40	0.086
$FT$	=	$FT_p(1-W) + W (FT_r)$ = Frame Temperature	23.54 F
$GT$	=	Glass Temperature	40.78 F
$CRF_g$	=	Condensation resistance factor – Glass	59
		$CRF_g = (GT - T_c) / (T_h - T_c) \times 100$	
$CRF_f$	=	Condensation resistance factor – Frame	34
		$CRF_f = (FT - T_c) / (T_h - T_c) \times 100$	

The CRF number was determined to be 34 (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	-0.37 F
$P$ = Static pressure difference across test specimen	0.00 psf
15 mph dynamic perpendicular wind at exterior	
Nominal sample area	21.59 ft <sup>2</sup>
Total measured input to calorimeter	943.59 Btu/hr
Calorimeter correction	85.55 Btu/hr
Net specimen heat loss	858.04 Btu/hr
$U$ = Thermal Transmittance	0.57 Btu/hr·ft <sup>2</sup> ·F

**Glazing Deflection:**

	<b>Panel</b>
Edge Gap Width	0.52"
Estimated center gap width upon receipt of specimen in laboratory (after stabilization)	0.47"
Center gap width at laboratory ambient conditions on day of testing	0.47"
Center gap width at test conditions	0.41"

The sample was inspected for the formation of frost or condensation, which may influence the surface temperature measurements. At the conclusion of the test a layer of frost was present on all frame and panel members.

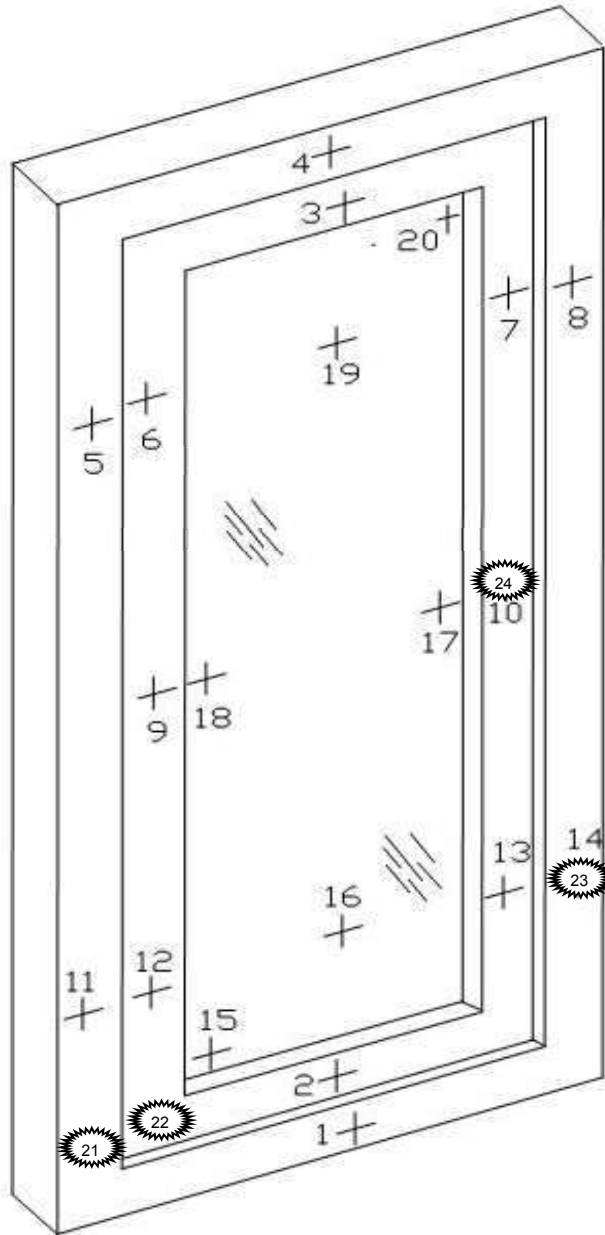
Prior to testing the specimen was sealed with silicone on the interior side and checked for air infiltration per Section 9.3.4.

Required annual calibrations for the Architectural Testing Inc., an Intertek company ("Intertek-ATI"), 'thermal test chamber' (ICN 004287) in Fresno, California were last conducted in April 2015 in accordance with Intertek-ATI calibration procedure. A CTS Calibration verification was performed August 2015. A Metering Box Wall Transducer and Surround Panel Flanking Loss Characterization was performed June 2015.





**CRF Report**

Time:	08:53	09:23	09:53	10:23	10:53	AVERAGE
<b>Pre-specified Thermocouples - Frame</b>						
1	45.14	45.16	45.13	45.14	45.05	45.12
2	22.60	22.61	22.42	22.51	22.47	22.52
3	23.80	24.01	23.80	23.79	23.80	23.84
4	24.64	24.62	24.51	24.45	24.36	24.52
5	22.38	22.40	22.19	22.28	22.21	22.29
6	22.18	22.33	22.20	22.25	22.18	22.23
7	22.29	22.35	22.33	22.35	22.29	22.32
8	22.45	22.51	22.52	22.48	22.43	22.48
9	21.98	21.95	22.04	21.98	22.08	22.01
10	20.92	20.53	20.87	20.85	20.90	20.81
11	21.84	21.73	21.88	21.79	21.83	21.82
12	21.50	21.42	21.49	21.50	21.52	21.49
13	21.29	21.15	21.21	21.28	21.20	21.23
14	20.61	20.60	20.57	20.53	20.57	20.58
FT <sub>P</sub>	23.83	23.81	23.80	23.80	23.78	23.80
<b>Pre-specified Thermocouples - Glass</b>						
15	25.60	25.52	25.59	25.60	25.57	25.58
16	53.37	53.33	53.16	53.29	53.31	53.29
17	36.87	36.80	36.69	36.79	36.78	36.79
18	36.85	36.88	36.85	36.83	36.85	36.85
19	55.33	55.50	55.32	55.37	55.36	55.38
20	36.77	36.89	36.73	36.71	36.76	36.77
GT	40.80	40.82	40.72	40.76	40.77	40.78
<b>Cold Point (Roving) Thermocouples</b>						
21	20.84	20.89	20.85	20.78	20.73	20.82
22	20.86	20.96	20.87	20.93	20.80	20.88
23	20.61	20.60	20.57	20.53	20.57	20.58
24	20.92	20.53	20.87	20.85	20.90	20.81
FT <sub>R</sub>	20.81	20.74	20.79	20.77	20.75	20.77
W	0.08	0.09	0.08	0.09	0.09	0.09
FT	23.57	23.55	23.54	23.54	23.52	23.54
<b>Warm Side - Room Ambient Air Temperature</b>						
	69.83	69.80	69.77	69.73	69.75	69.78
<b>Cold Side - Room Ambient Air Temperature</b>						
	-0.43	-0.32	-0.36	-0.32	-0.35	-0.36
CRF <sub>f</sub>	34	34	34	34	34	34
CRF <sub>g</sub>	59	59	59	59	59	59

### Thermocouple Location Diagram



#### Cold Point Locations

-  21. 20.82
-  22. 20.88
-  23. 20.58
-  24. 20.81



Intertek-ATI will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Intertek-ATI for the entire test record retention period. The test record retention end date for this report is August 30, 2019.

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For INTERTEK-ATI



Digitally Signed by: William Smeds

William Simon Smeds  
Technician



Digitally Signed by: Kenny C. White

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

WSS:ss  
E8222.02-301-46

Attachments (pages): This report is complete only when all attachments listed are included.  
Appendix-A: Drawings (18)



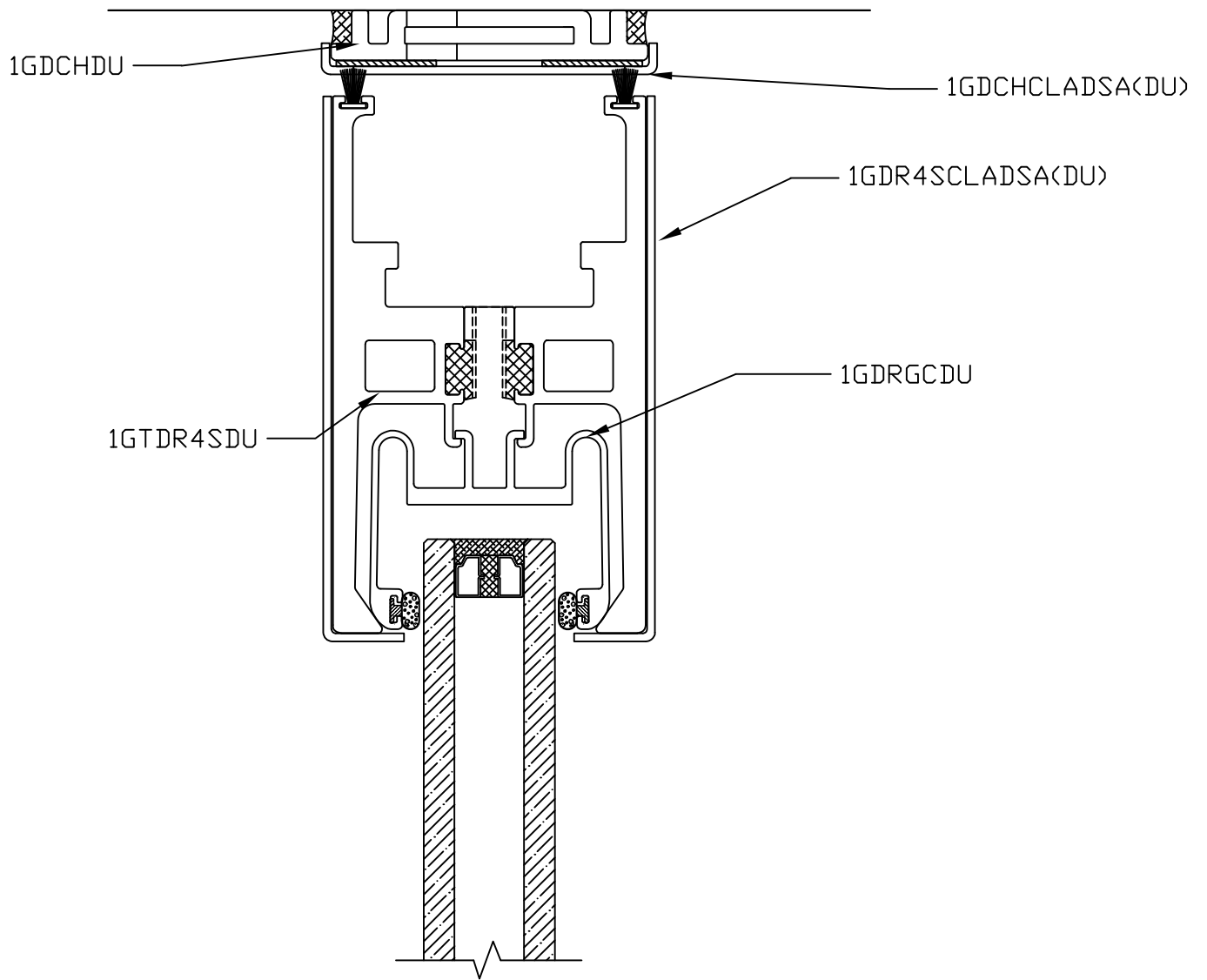
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### Revision Log

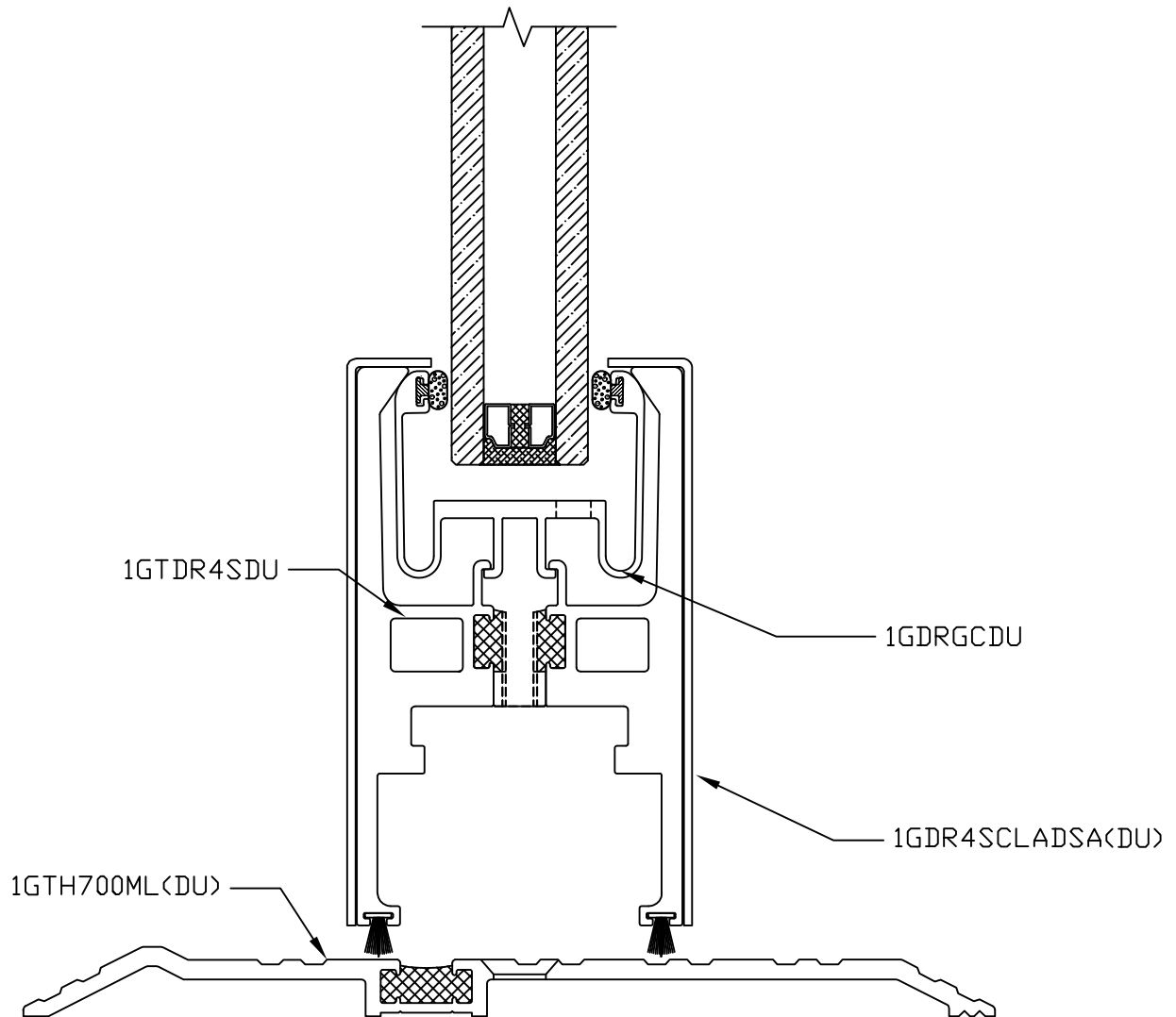
<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	12/02/15	All	Original Report Issue. Work requested by Mr. Gyu-Hyeon Kim of CR Laurence Co., Inc.

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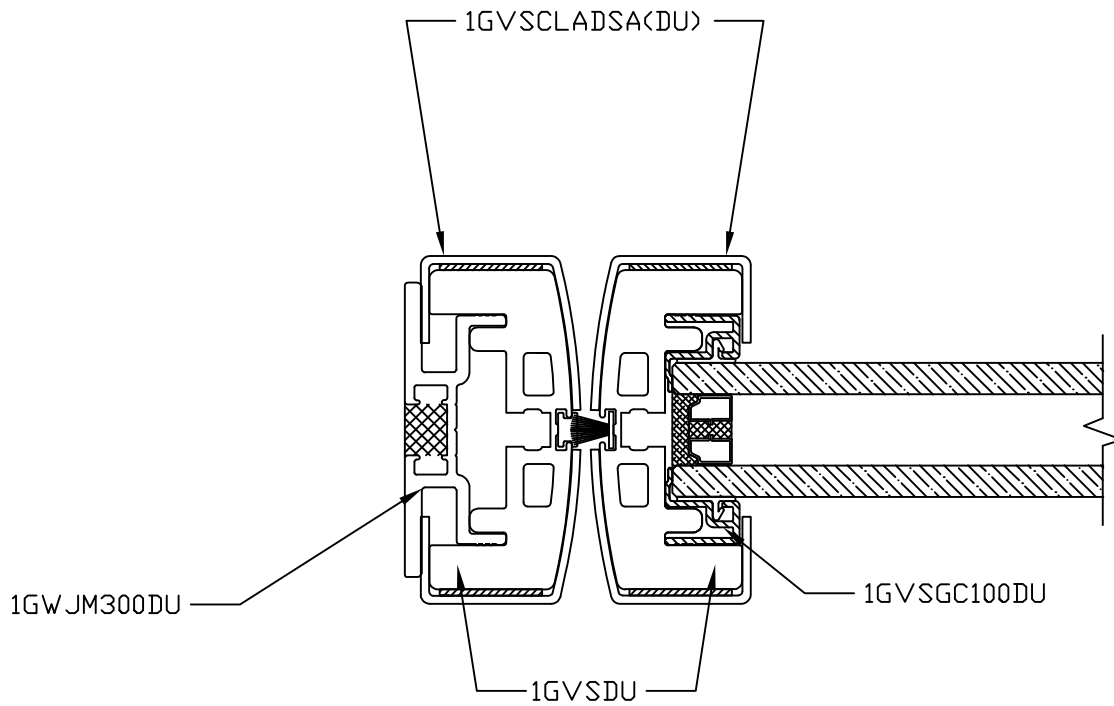
## **Appendix A: Drawings**



ENTICE DOOR TOP RAIL  
ALUMINUM CLAD



ENTICE DOOR BOTTOM RAIL  
OFFSET PIVOT  
SADDLE THRESHOLD  
ALUMINUM CLAD



ENTICE DOOR ULTRA NARROW STILE  
OFFSET PIVOT  
WALL JAMB MOUNT  
ALUMINUM CLAD