

# CR LAURENCE CO., INC.

## THERMAL PERFORMANCE TEST REPORT

**SCOPE OF WORK**

OST451 GLAZED WALL SYSTEM

**REPORT NUMBER**

K0573.02-301-46

**TEST DATE**

09/25/19

**ISSUE DATE**

01/09/20

**RECORD RETENTION END DATE**

09/25/24

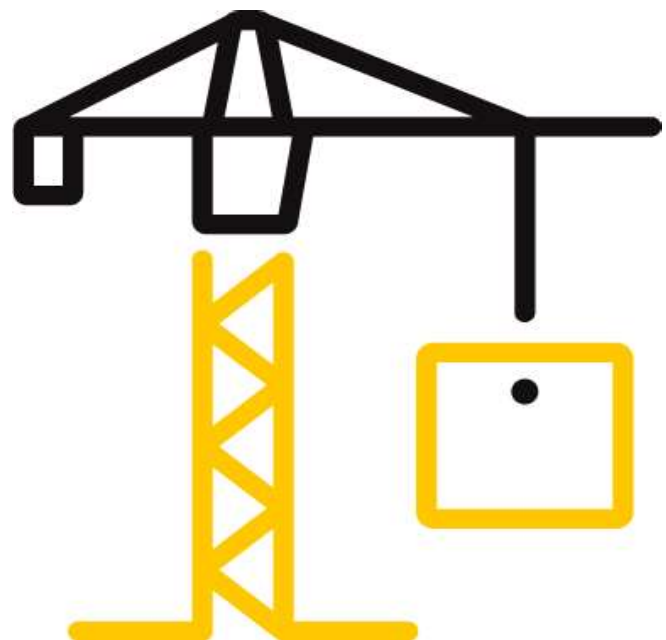
**PAGES**

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**DOCUMENT CONTROL NUMBER**

RTTDS-R-AMER-Test-2822(c) (07/07/18)

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**TEST REPORT FOR CR LAURENCE CO., INC.**

Report No.: K0573.02-301-46  
Date: 01/09/20

**REPORT ISSUED TO**

**CR LAURENCE CO., INC.**  
2503 East Vernon Avenue  
Los Angeles, California 90058

**SECTION 1**

**SCOPE**

**SERIES/MODEL: OST451**  
**TYPE: Glazed Wall System**


Intertek Building & Construction (Intertek B&C) was contracted by CR Laurence Co., Inc. to evaluate the thermal performance per AAMA 1503-09. The purpose of this testing was to evaluate the Condensation Resistance and Thermal Transmittance. Results obtained are tested values and were secured by using the designated test method. Testing was conducted at Intertek B&C test facility in Fresno, California. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.


**SECTION 2**

**SUMMARY OF TEST RESULTS**

Condensation Resistance Factor - Frame (CRFf): 71  
Condensation Resistance Factor - Glass (CRFg): 71  
Thermal Transmittance (U): 0.41 Btu/hr·ft<sup>2</sup>·F

For INTERTEK B&C:

<b>COMPLETED BY</b>	William Simon Smeds
<b>TITLE</b>	Technician
<b>SIGNATURE</b>	 <small>Digitally Signed by William Smeds</small>
<b>DATE</b>	01/09/20

<b>REVIEWED BY</b>	Kenny C. White
<b>TITLE</b>	Laboratory Manager, IIRC
<b>SIGNATURE</b>	 <small>Digitally Signed by Kenny C. White</small>
<b>DATE</b>	01/09/20

WSS:ss

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**SECTION 3**

**TEST SPECIMEN SUMMARY**

<b>SERIES/MODEL</b>	OST451
<b>TYPE</b>	Glazed Wall System
<b>OVERALL SIZE</b>	78-3/4" x 78-3/4"
<b>TEST SAMPLE SUBMITTED BY</b>	C.R. Laurence Co., Inc. - Vernon, California

**SECTION 4**

**TEST METHOD**

The specimens were evaluated in accordance with the following:

*AAMA 1503-09, Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections*

**SECTION 5**

**MATERIAL SOURCE/INSTALLATION**

The test specimen was provided by C.R. Laurence Co., Inc. - Vernon, California. Representative samples of the test specimen will be retained by Intertek B&C for a minimum of two years from the test completion date.

**Test Chamber Installation**

The test sample was installed in a vertical orientation, the exterior of the specimen was exposed to the cold side.

**SECTION 6**

**LIST OF OFFICIAL OBSERVERS**

<b>NAME</b>	<b>COMPANY</b>
William Simon Smeds	Intertek B&C

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**SECTION 7**

**TEST SAMPLE DESCRIPTION**

**Frame**

<b>MATERIAL</b>	AT (0.25"): Aluminum with Thermal Breaks - All Members		
<b>SIZE</b>	78-3/4" x 78-3/4"		
<b>DAYLIGHT OPENING</b>	36" x 74-3/4" (x2)	<b>GLAZING METHOD</b>	Exterior
<b>EXTERIOR COLOR</b>	Grey	<b>EXTERIOR FINISH</b>	Anodized
<b>INTERIOR COLOR</b>	Grey	<b>INTERIOR FINISH</b>	Anodized
<b>CORNER JOINERY</b>	Square Cut / Screws / Sealed		

**Glazing Information**

<b>LAYER 1</b>	1/4"	Solarban 72VT (e=0.018*, #2)	
<b>GAP</b>	0.55"	SS-D: Stainless Steel Spacer	100% Air*
<b>LAYER 2</b>	1/4"	Clear	
<b>GAS FILL METHOD</b>	N/A*		
<b>DESICCANT</b>	Yes		

*\*Stated per Client/Manufacturer*

*N/A Non-Applicable*

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**SECTION 7 (CONTINUED)**

**TEST SAMPLE DESCRIPTION (CONTINUED)**

**Weatherstripping**

DESCRIPTION	QUANTITY	LOCATION
No weatherstripping.		

**Hardware**

DESCRIPTION	QUANTITY	LOCATION
No hardware.		

**Drainage**

DRAINAGE METHOD	SIZE	QUANTITY	LOCATION
No visible weeps.			

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**SECTION 8**

**CONDENSATION RESISTANCE FACTOR**

1. Average Metering Room Air Temperature (th)	69.81 F
2. Average Cold Side Air Temperature (tc)	-0.42 F
3. Average of 14 Pre-Specified Frame Temperatures (FTp)	51.11 F
4. Average of 4 Roving Thermocouples (FTr)	37.54 F
5. Weighting Factor (W)	0.131
6. Weighted Frame Temperature (FT)	49.33 F
7. Average Glass Temperature (GT)	49.46 F
8. Condensation Resistance Factor – Frame (CRFf)	71
9. Condensation Resistance Factor – Glass (CRFg)	71

The CRF number was determined to be 71 (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.

**SECTION 9**

**THERMAL TRANSMITTANCE**

1. Average Metering Room Air Temperature (th)	69.81 F
2. Average Cold Side Air Temperature (tc)	-0.42 F
3. Measured Static Pressure Difference Across Test Specimen	0.00" ± 0.04" H <sub>2</sub> O
4. Test Specimen Projected Area (As)	43.07 ft <sup>2</sup>
5. Total Measured Input into Metering Box (Qtotal)	1354.72 Btu/hr
6. Total Correction	128.17 Btu/hr
7. Net Specimen Heat Loss (Qs)	1226.54 Btu/hr
8. Thermal Transmittance (U)	0.41 Btu/hr-ft <sup>2</sup> -F

**SECTION 10**

**TEST DURATION**

1. The environmental systems were started at 13:14 hours, 09/24/19.
2. The test parameters were considered stable for two consecutive four hour test periods from 23:06 hours, 09/24/19 to 07:06 hours, 09/25/19.
3. The thermal performance test results were derived from 03:06 hours, 09/25/19 to 07:06 hours, 09/25/19.

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**SECTION 11**

**TEMPERATURE AND CONDENSATION RESISTANCE CALCULATION**

Time	05:05	05:35	06:05	06:35	07:06	Average
<b>Pre-Specified Thermocouples - Frame</b>						
1	46.62	46.64	46.63	46.70	46.69	46.65
2	48.09	48.00	48.03	48.09	48.11	48.06
3	47.85	47.80	47.86	47.86	47.84	47.84
4	53.65	53.66	53.73	53.73	53.74	53.70
5	54.82	54.84	54.88	54.85	54.89	54.86
6	52.37	52.39	52.42	52.37	52.37	52.38
7	55.13	55.11	55.15	55.04	55.14	55.11
8	53.91	53.93	53.97	53.93	53.96	53.94
9	52.90	52.88	52.91	52.87	52.91	52.89
10	52.81	52.85	52.81	52.79	52.85	52.82
11	45.39	45.43	45.47	45.42	45.42	45.43
12	45.31	45.40	45.36	45.33	45.36	45.35
13	57.15	57.18	57.19	57.18	57.17	57.17
14	49.26	49.27	49.28	49.25	49.23	49.26
FTp	51.09	51.10	51.12	51.10	51.12	51.11
<b>Pre-Specified Thermocouples - Glass</b>						
15	34.93	34.92	34.92	34.95	34.86	34.92
16	55.60	55.53	55.54	55.55	55.52	55.55
17	50.80	50.81	50.70	50.82	50.83	50.79
18	50.20	50.18	50.19	50.15	50.17	50.18
19	55.67	55.62	55.66	55.75	55.74	55.69
20	49.60	49.61	49.60	49.72	49.63	49.63
GT	49.46	49.45	49.43	49.49	49.46	49.46
<b>Cold Point (Roving) Thermocouples</b>						
21	37.73	37.70	37.75	37.78	37.74	37.74
22	38.01	38.07	38.00	38.13	38.00	38.04
23	36.65	36.90	36.90	36.88	36.86	36.84
24	37.50	37.58	37.58	37.45	37.57	37.53
FTr	37.47	37.56	37.55	37.56	37.54	37.54
W	0.131	0.130	0.131	0.131	0.131	0.131
FT	49.30	49.33	49.35	49.33	49.35	49.33
<b>Warm Side - Room Ambient Air Temperature</b>						
	69.81	69.83	69.83	69.82	69.80	69.82
<b>Cold Side - Room Ambient Air Temperature</b>						
	-0.43	-0.40	-0.42	-0.35	-0.42	-0.40
<b>Condensation Resistance Factor</b>						
CRFf	71	71	71	71	71	71
CRFg	71	71	71	71	71	71

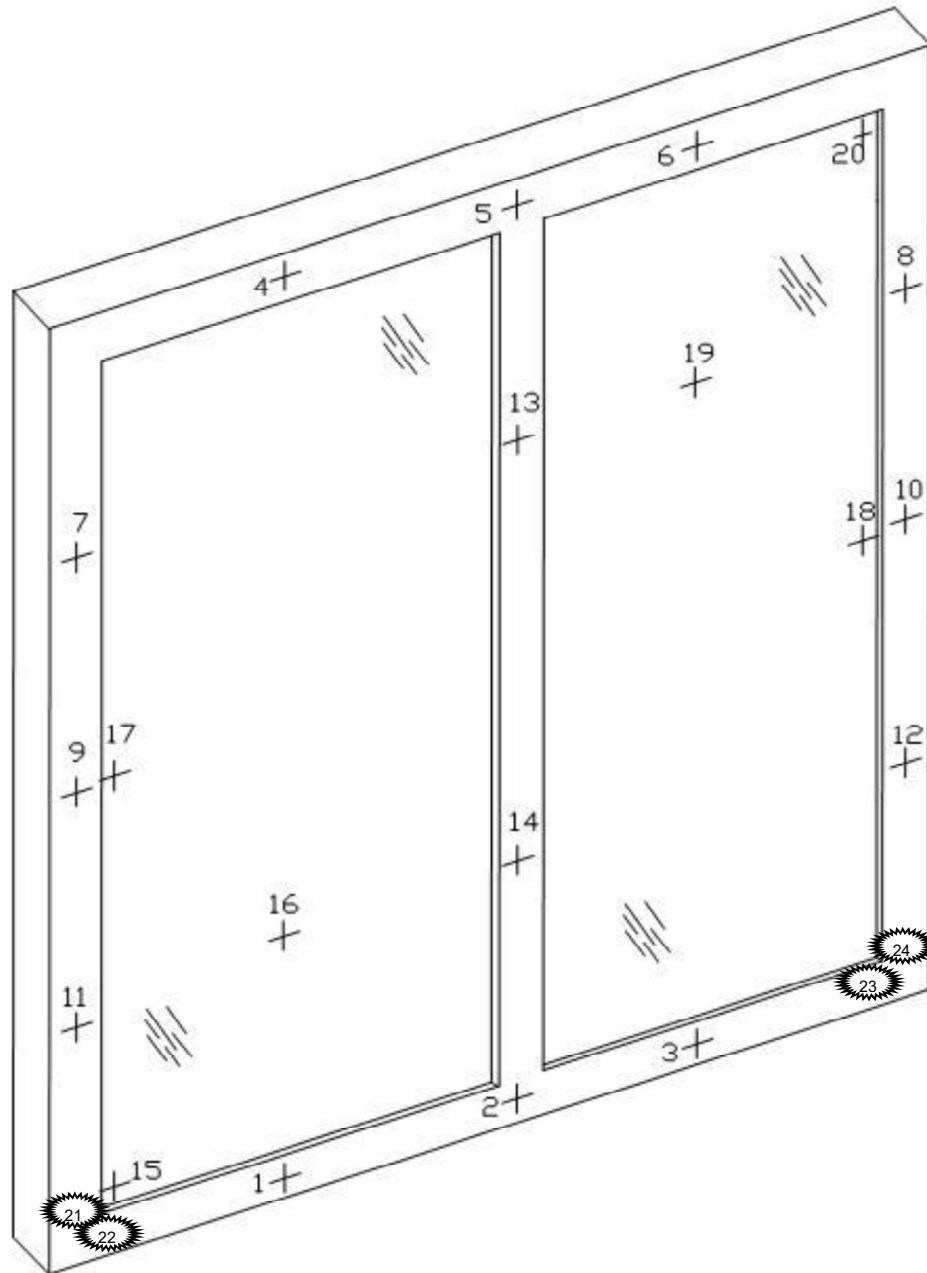
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**SECTION 12**

**THERMOCOUPLE LOCATION DIAGRAM**



COLD POINT LOCATIONS	
21	37.74
22	38.04
23	36.84
24	37.53



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**SECTION 13**

**GLAZING DEFLECTION**

	<b>Left Glazing</b>	<b>Right Glazing</b>
<b>EDGE GAP WIDTH</b>	0.55"	0.55"
<b>ESTIMATED CENTER GAP WIDTH</b> upon receipt of specimen in laboratory (after stabilization)	0.52"	0.50"
<b>CENTER GAP WIDTH</b> at laboratory ambient conditions on day of testing	0.52"	0.50"
<b>CENTER GAP WIDTH</b> at test conditions	0.42"	0.44"

*Glass collapse determined using a digital glass and air space meter*

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.

Required annual calibrations for the Intertek B&C, 'thermal test chamber' (ICN 004287) in Fresno, California were last conducted in October 2018 in accordance with Intertek B&C calibration procedure. A CTS Calibration verification was performed December 2018. A Metering Box Wall Transducer and Surround Panel Flanking Loss Characterization was performed March 2019.

ANSI/NCSL Z540-2-1997 type B uncertainty for this test was 1.66%.

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

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**DRAWINGS**

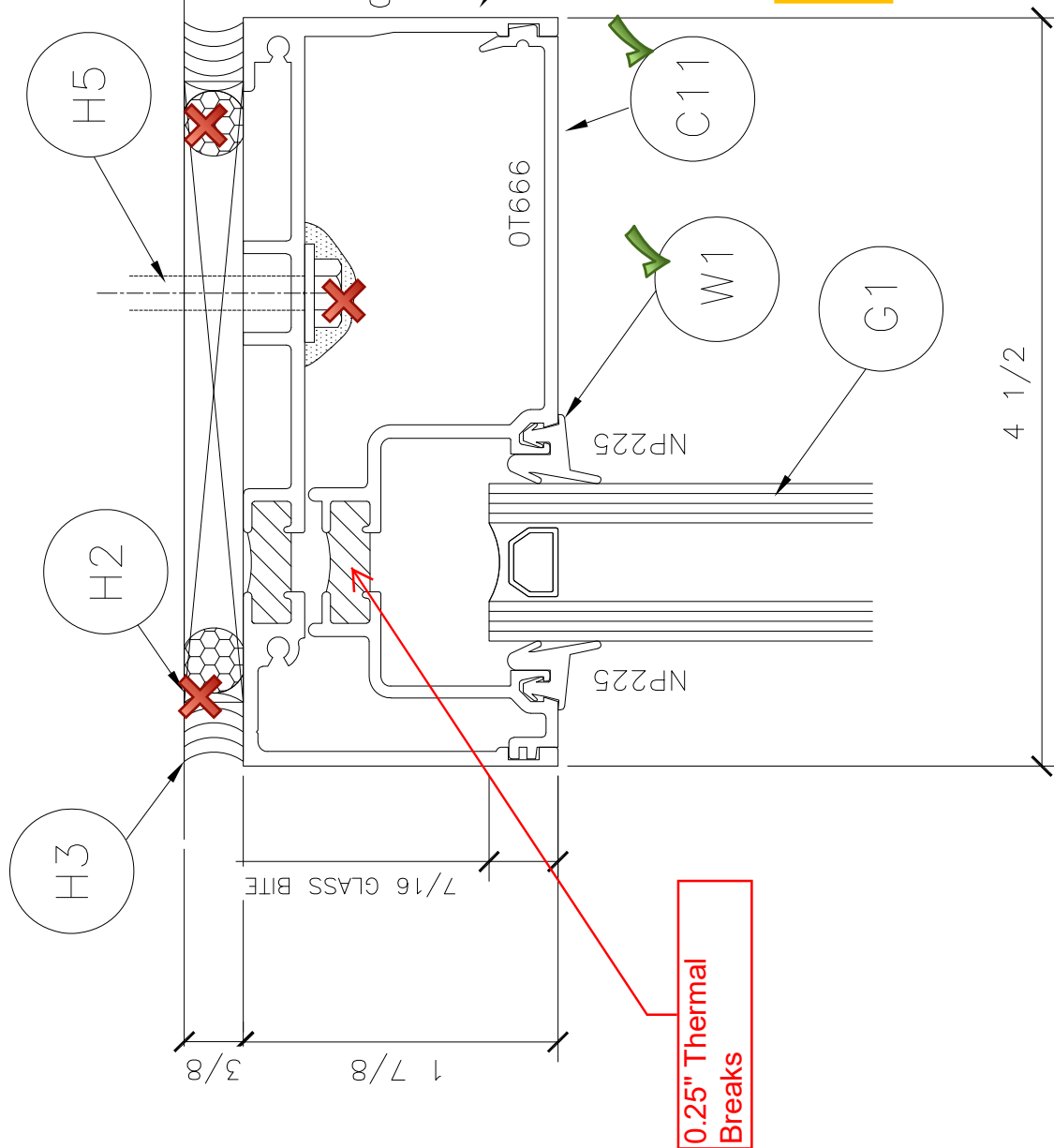
The test specimen drawings which follow have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

ITEM	PT. NO.	PART DESCRIPTION	MATERIAL
C1	OT652	WALL JAMB	ANODIZED
C2	OT655	VERTICAL MULLION	ANODIZED
C3	OT551	SSG VERTICAL MULLION	ANODIZED
C4	SS551	OPTIONAL STEEL STIFFENER	ANODIZED
C5	FF561	MALE EXPANSION MULLION	ANODIZED
C6	FF569	FEMALE EXPANSION MULLION	ANODIZED
C7	PV100	PVC JAMB FILLER	PVC
C8	OG539	SILL FACE PLATE	ANODIZED
C9	OG534	INTERMEDIATE HORIZONTAL (EXT. GLAZE) FACE PLATE	ANODIZED
C10	OT668	HEAD CHANNEL (EXT. GLAZE)	ANODIZED
C11	OT666	HEAD INSERT (EXT. GLAZE)	ANODIZED
C12	OT663	INTERMEDIATE HORIZONTAL (EXT. GLAZE)	ANODIZED
C13	OT676	SILL INSERT (EXT. GLAZE)	ANODIZED
C14	OT662	SILL CHANNEL (EXT. GLAZE)	ANODIZED
C15	OG532	INSERT INTERMEDIATE HORIZONTAL (EXT. GLAZE)	ANODIZED
<b>FRAME &amp; SASH COMPONENTS</b>			
<b>WEATHERSTRIP</b>			
W1	NP225	GASKET	EPDM
W2	SP450	VERTICAL SSG GASKET	EPDM
W4	VS200	TWO FINGERED GASKET	EPDM
<b>GLAZING</b>			
G1	1/4 TEMPERED GLASS – 1/2” AIR FILLED ALUM SPACER – 1/4” TEMPERED GLASS		G1
G2	SETTING BLOCK INTERMEDIATE (EXT. GLAZE)		G2
G3	SETTING BLOCK SILL		G3

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H2 - Backer Rod

6" from CL of Vertical Members & center of Lite

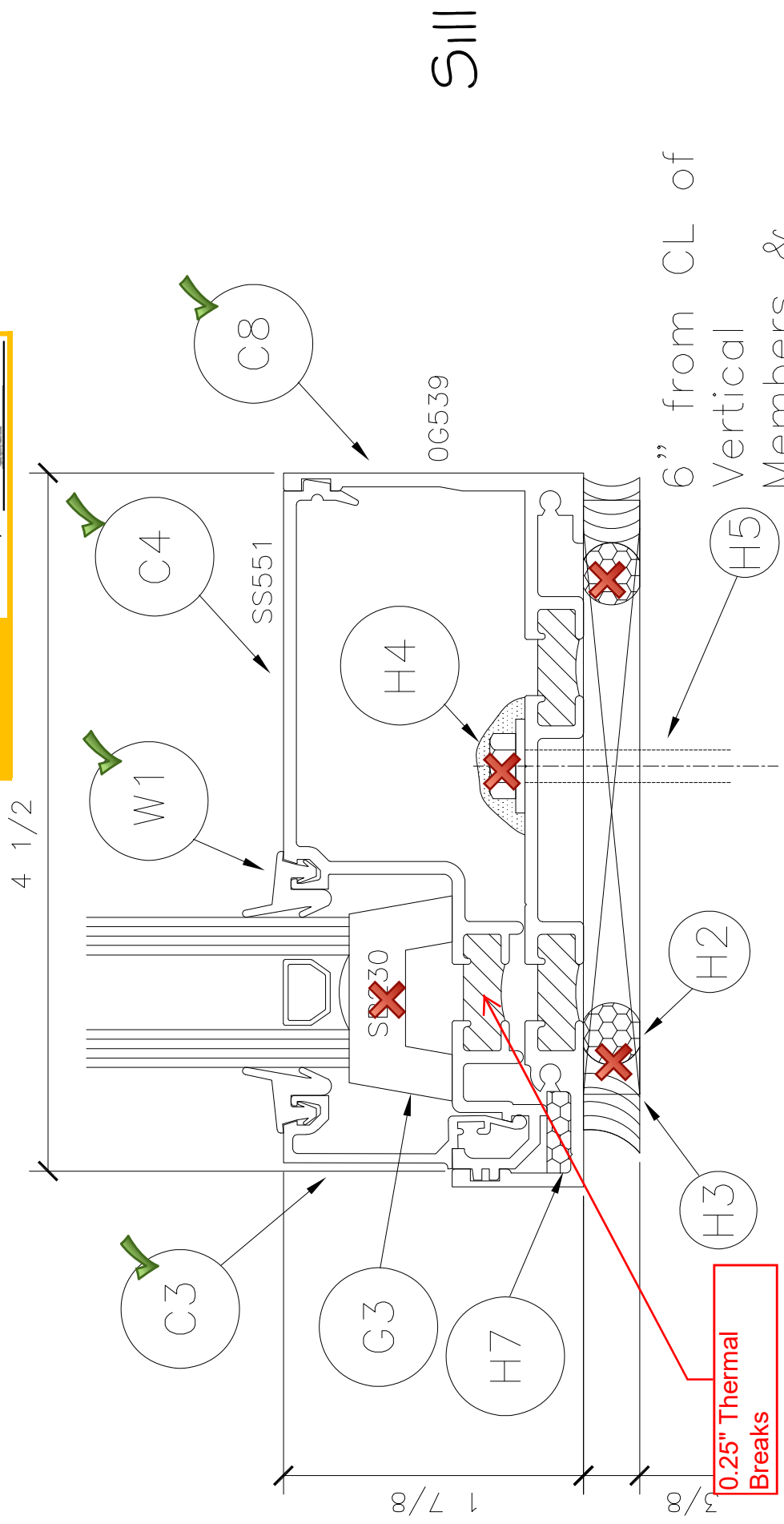


**intertek**  
 Test. Quality. Forward.

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⑥ SECTION DETAIL AT HEAD


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# Sill

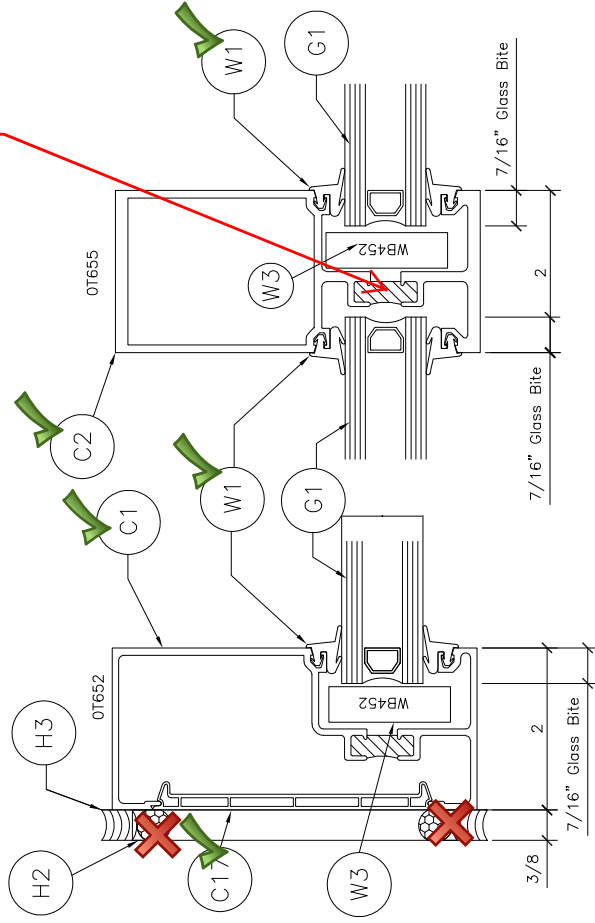
6" from CL of Vertical Members & center of Lite

## SECTION DETAIL AT SILL

**intertek**  
Total Quality Assurance.

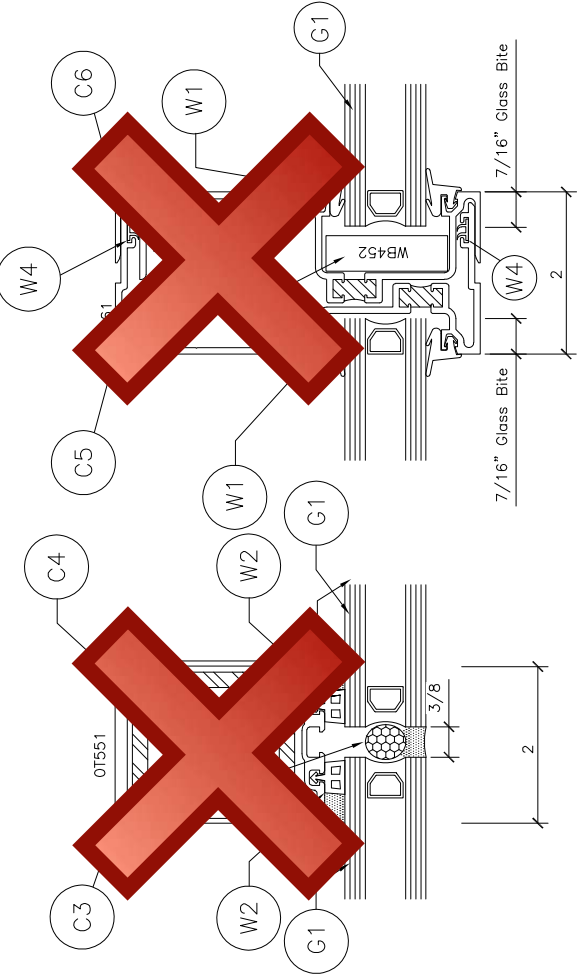
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**0.25" Thermal Breaks**



① SECTION DETAIL AT JAMB

Left Jamb/Right Jamb



③ SECTION DETAIL AT STRUCTURAL SILICONE

Left Jamb/VM/Right Jamb

④ SECTION DETAIL AT EXPANSION MULLION

Left Jamb/VM/Right Jamb

② SECTION DETAIL AT VERTICAL

Left Jamb/VM/Right Jamb

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**SECTION 15**

**REVISION LOG**

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