

CR LAURENCE CO., INC.

TEST REPORT

SCOPE OF WORK

AAMA/WDMA/CSA 101/I.S.2/A440-17 TESTING ON IW 8000 SINGLE HUNG

REPORT NUMBER

J2603.01-303-44 R3

TEST DATE(S)

01/15/19 - 01/28/19

ISSUE DATE

02/06/19

REVISION DATE

03/25/19

RECORD RETENTION END DATE

02/06/22

PAGES

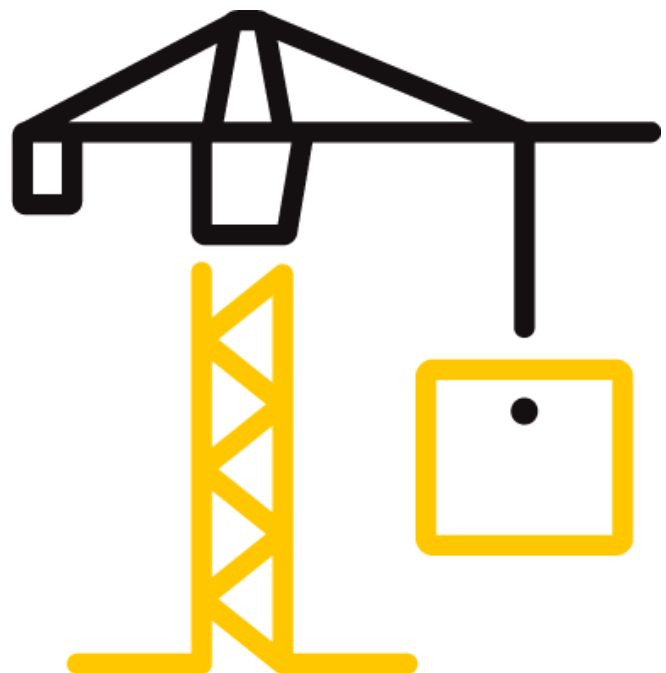
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TEST REPORT FOR CR LAURENCE CO., INC.

Report No.: j2603.01-303-44 R3

Date: 02/06/19

REPORT ISSUED TO

CR LAURENCE CO., INC.

2100 East 38th Street
Vernon, California 90058

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by CR Laurence Co., Inc. 2100 East 38th Street Vernon, California 90058 to perform testing in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-17, *NAFS 2017 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*, on their IW8000 Single Hung. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Intertek testing facility in Lake Forest, California. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

TITLE	RESULTS
AAMA/WDMA/CSA 101/I.S.2/A440 -17	Class CW – PG80: Size Tested 1526 x 2318 mm (60 x 91-1/4 in) – Type H
Design Pressure	±3840 Pa (±80.20 psf)
Air Infiltration @ 1.57 psf	0.2 L/s/m ² (0.03 cfm/ft ²)
Air Infiltration @ 6.27 psf	0.6 L/s/m ² (0.12 cfm/ft ²)
Air Exfiltration @ 1.57 psf	<0.1 L/s/m ² (<0.01 cfm/ft ²)
Air Exfiltration @ 6.27 psf	0.6 L/s/m ² (0.12 cfm/ft ²)
Water Penetration Resistance Test Pressure	580 Pa (12.11 psf)

For INTERTEK B&C:

COMPLETED BY:	Aaron Baker	REVIEWED BY:	Jarod Hardman
TITLE:	Technician – Building & Construction	TITLE:	Operations Manager
SIGNATURE:		SIGNATURE:	
DATE:	03/22/19	DATE:	03/22/19

adb:ab

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SECTION 3

TEST METHOD(S)

The specimens were evaluated in accordance with the following:

AAMA/WDMA/CSA 101/I.S.2/A440-17, *NAFS 2017 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

ASTM E283-04(2012), *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*

ASTM E330/E330M-14, *Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference*

ASTM E331-00(2016), *Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*

ASTM E987-88(2009), *Standard Test Methods for Deglazing Force of Fenestration Products*

ASTM E2068-00(2016), *Standard Test Method for Determination of Operating Force of Sliding Windows and Doors*

ASTM F588-14, *Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact*

SECTION 4

MATERIAL SOURCE/INSTALLATION

Test specimen was provided by the client. Representative samples of the test specimen will be retained by Intertek B&C for a minimum of four years from the test completion date.

The specimen was installed into a Douglas Fir wood buck. The rough opening allowed for a 1/4" shim space. The exterior and interior perimeter of the door was sealed with silicone sealant. Installation of the tested product was performed by the client.

LOCATION	ANCHOR DESCRIPTION	ANCHOR LOCATION
Through Frame	#10 x 2-1/2" Flat Head Phillips Wood Screws	3" from corner at head and sill 12" o/c; 4" from corners at jambs and 12" o/c.

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SECTION 5

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Garrett Osterode	CR Laurence Co., Inc.
Aaron Baker	Intertek B&C
Jarod Hardman	Intertek B&C

SECTION 6

TEST SPECIMEN DESCRIPTION

Product Type: Single Hung

Series/Model: IW8000

Product Size(s):

OVERALL AREA:	WIDTH		HEIGHT	
	millimeters	inches	millimeters	inches
3.5 m ² (38.07 ft ²)				
Overall Size	1526	60	2311	91
Interior Sash	1472	58	762	30

Frame Construction:

FRAME MEMBER	MATERIAL	DESCRIPTION
Head	Aluminum	Part No. SH812, See attached Drawings Section 10.
Jambs	Aluminum	Part No. SH814, See attached Drawings Section 10.
Sill	Aluminum	Part No. SH813, See attached Drawings Section 10.
Fixed Interlock	Aluminum	Part No. SH866, Secured through frame jambs with two #8 x 1" Phillip Hex Head fasteners into screw bosses. See Attached Drawings Section 10
Sill	PVC	Part No. WH811, snapped onto center leg. See attached Drawings Section 10.
Jambs	PVC	Part No. WH809 snapped onto jambs. See Attached drawings Section 10.

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FRAME MEMBER	MATERIAL	DESCRIPTION
Head	PVC	Part No. WH808, snapped onto center leg, See attached Drawings Section 10.
	JOINERY TYPE	DETAIL
All Corners	Coped	Secured through jambs with two #8 x 1" Hex Washer Head Screws into screw bosses.

Sash Construction:

SASH MEMBER	MATERIAL	DESCRIPTION
Interlock	Aluminum	Part No. SH854, See Attached Drawings Section 10
Stiles	Aluminum	Part No. SH855, See attached Drawings Section 10.
Bottom rail	Aluminum	Part No. SH852, See attached Drawings Section 10.
Interlock	Aluminum	Part No. SH858, See attached Drawings Section 10.
	JOINERY TYPE	DETAIL
All Corners	Coped	Secured through the stiles with four #8 x 1" Phillip Hex Head fasteners into screw bosses through balance catch clip.

Reinforcement: *No reinforcement was utilized.*
Weatherstripping:

DESCRIPTION	QUANTITY	LOCATION
Pile Gasket Triple Fin, 0.310" x 0.230", W-027.	1 row	Channel inserted full span of center leg of frame at sill and jambs.
Pile Gasket Triple Fin, 0.310" x 0.230", W-027.	1 row	Channel inserted full width of fixed and sash interlock.

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Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

GLASS TYPE	SPACER TYPE	INTERIOR LITE	EXTERIOR LITE	GLAZING METHOD
1-1/4" IG	Aluminum Spacer - Dual Seal (A1-D)	3/16" Clear Heat Strengthened -0.060" PVB innerlayer- 3/16" Clear Heat Strengthened	1/4" clear Tempered	Exterior set dry glazed with sponge gasket at interior face (Part No. NP881), and Wedge Gasket (Part No. WH416) with exterior glass stop (Part No. SH884).

LOCATION	QUANTITY	DAYLIGHT OPENING		GLASS BITE
		millimeters	inches	
Fixed lite	1	1422 x 1426	56 x 56-1/8	1"
Sash	1	1346 x 638	53-25-1/8	1"

Drainage:

DRAINAGE METHOD	SIZE	QUANTITY	LOCATION
Weep Hole w/ cover (Part No. WH276)	1-3/4" wide by 1/4" high	2	2-1/2" from jambs at exterior face of sill.

Hardware:

DESCRIPTION	QUANTITY	LOCATION
PC Guide, Part No. NP 942	1 Row	Interior leg of frame at jambs and sill, see attached Drawings Section 10.
Amesbury – Balance, Part No. K29095	2	Midspan of Right and Left Jambs, see attached Drawings Section 10.
Latch, Part No. SH858	2	Inserted into bottom rail 16-1/2" from each end of sash, see attached Drawings Section 10.

Screen Construction: *No screen was utilized.*

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SECTION 7
TEST RESULTS

The temperature during testing was 19 °C (66°F). The results are tabulated as follows:

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Operating Force, per ASTM E2068	Initiate Motion: 240 N (54 lbf) Maintain Motion: 200 N (45 lbf) Latches: 8.90 N (2 lbf)	280 N (62.95 lbf) max 200 N (44.96 lbf) max 100 N (22.5 lbf) max	
Air Leakage, Infiltration per ASTM E283 at 75 Pa (1.57 psf)	0.2 L/s/m ² (0.03 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1, 2
Air Leakage, Infiltration per ASTM E283 at 300 Pa (6.27 psf)	0.6 L/s/m ² (0.12 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1, 2
Air Leakage, Exfiltration per ASTM E283 at 75 Pa (1.57 psf)	<0.1 L/s/m ² (<0.01 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1, 2
Air Leakage, Exfiltration per ASTM E283 at 300 Pa (6.27 psf)	0.6 L/s/m ² (0.12 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1, 2
Water Penetration, per ASTM E331 at 580 Pa (12.11 psf)	Pass	No leakage	
Uniform Load Deflection, per ASTM E330 Deflections taken at interlock +3840 Pa (+80.20 psf) -3840 Pa (-80.20 psf)	5.33 mm (0.21") 5.08 mm (0.20")	7.87 mm (0.31") max. 7.87 mm (0.31") max.	3, 4
Uniform Load Structural, per ASTM E330 Permanent set taken at interlock +5760 Pa (+120.30 psf) -5760 Pa (-120.30 psf)	0.25 mm (0.01") 0.25 mm (0.01")	7.62 mm (0.30") max. 7.62 mm (0.30") max.	3, 4
Forced Entry Resistance, per ASTM F588, Type: A - Grade: 10	Pass	No entry	

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TITLE OF TEST	RESULTS	ALLOWED	NOTE
Deglazing, per ASTM E987 Operating direction, 320 N (70 lbf) Remaining direction, 230 N (50 lbf)	Pass Pass	Meets as stated Meets as stated	

Note 1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.

Note 2: Test Date 01/28/19 / Time: 9:00 AM

Note 3: Loads were held for 10 seconds.

Note 4: Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

SECTION 8 ALTERATIONS

No alterations were required.

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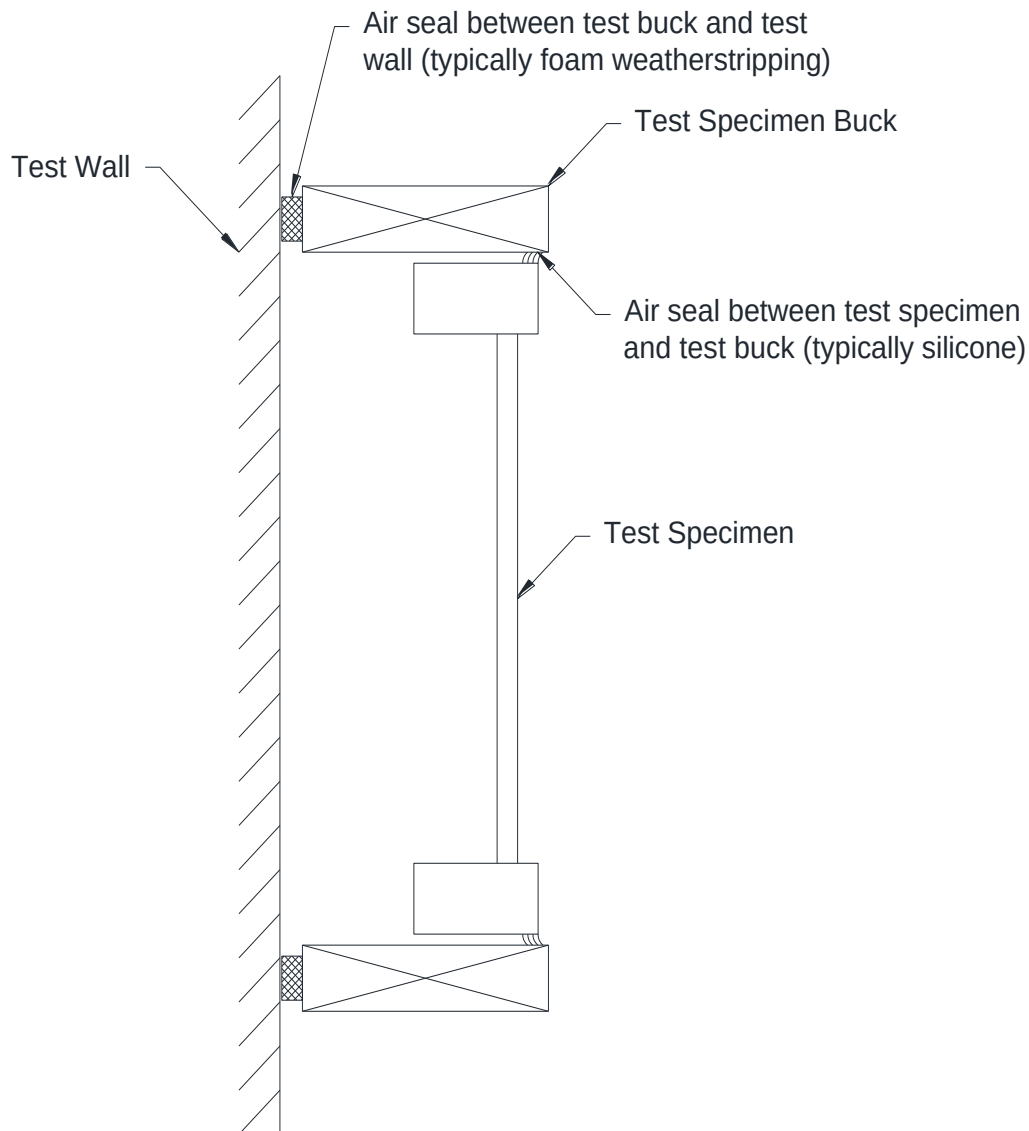
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SECTION 9

LOCATION OF AIR SEAL

The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weatherstripping and is attached to the edge of the test specimen buck. The test specimen buck is placed against the test wall and clamped in place, compressing the weatherstripping and creating a seal.





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25800 Commercentre Drive
Lake Forest, California 92630

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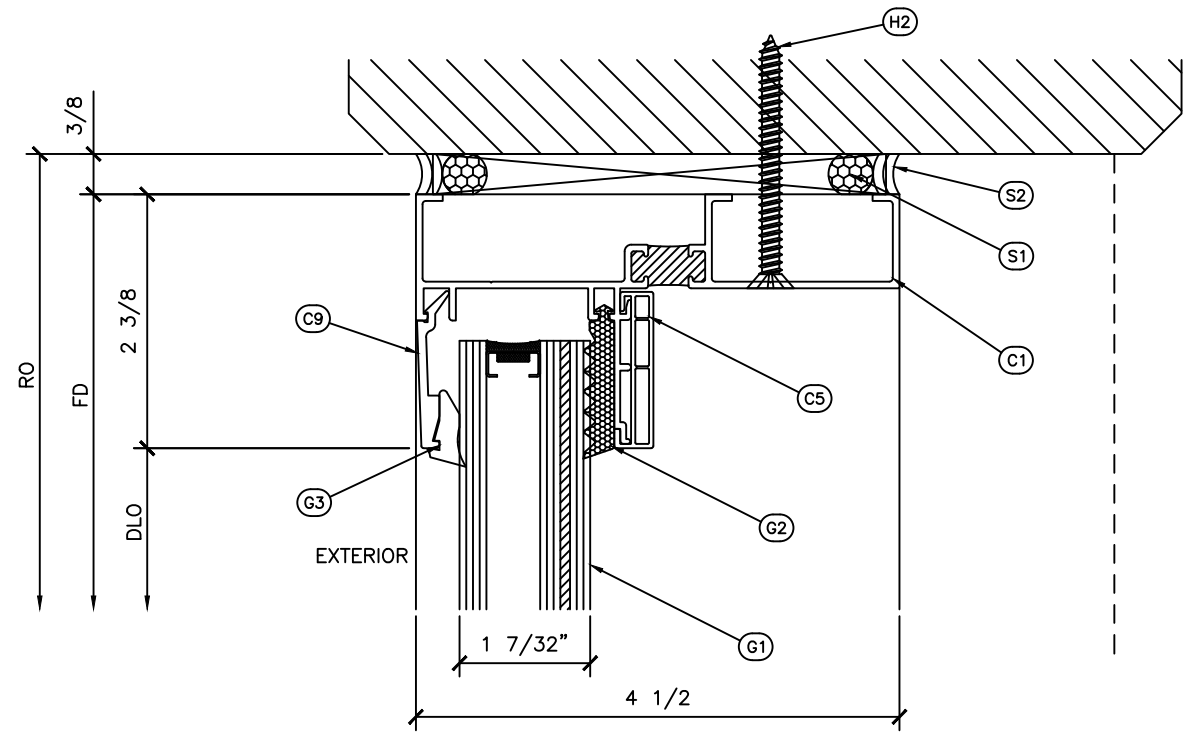
SECTION 10

DRAWINGS

The test specimen drawings 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.



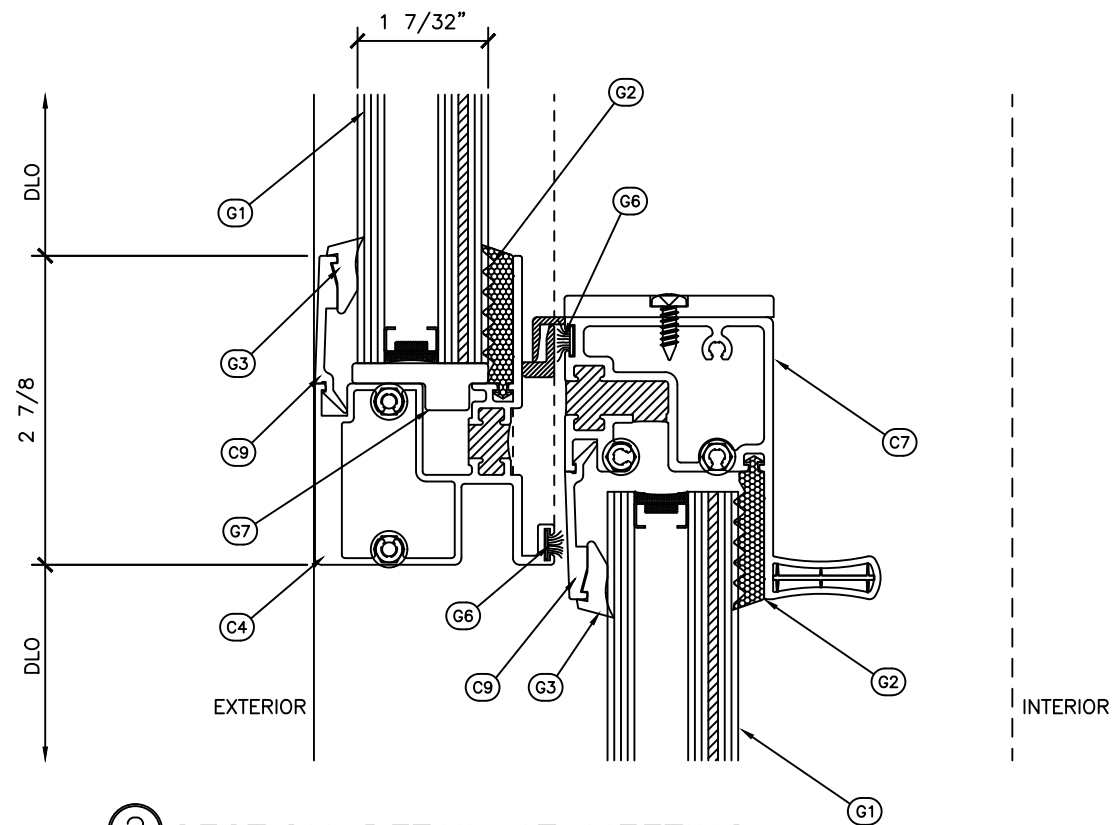
REVISIONS	
 C.R.LAURENCE CO. ARCHITECTURAL PRODUCTS 2100 E. 38TH Street, Los Angeles, CA 90058 www.crlaurence.com	
Job Name:	SERIES IW8000 HURRICANE RESISTANT SINGLE HUNG WINDOW
Glazing Contractor:	
DATE:	01.02.2018
DRAWN BY:	GDO
CHECKED BY:	XX
SCALE:	AS SHOWN
JOB #:	PTC464017
SHT 1 OF 3	



① SECTION DETAIL AT HEAD

ARCH REF: N/A

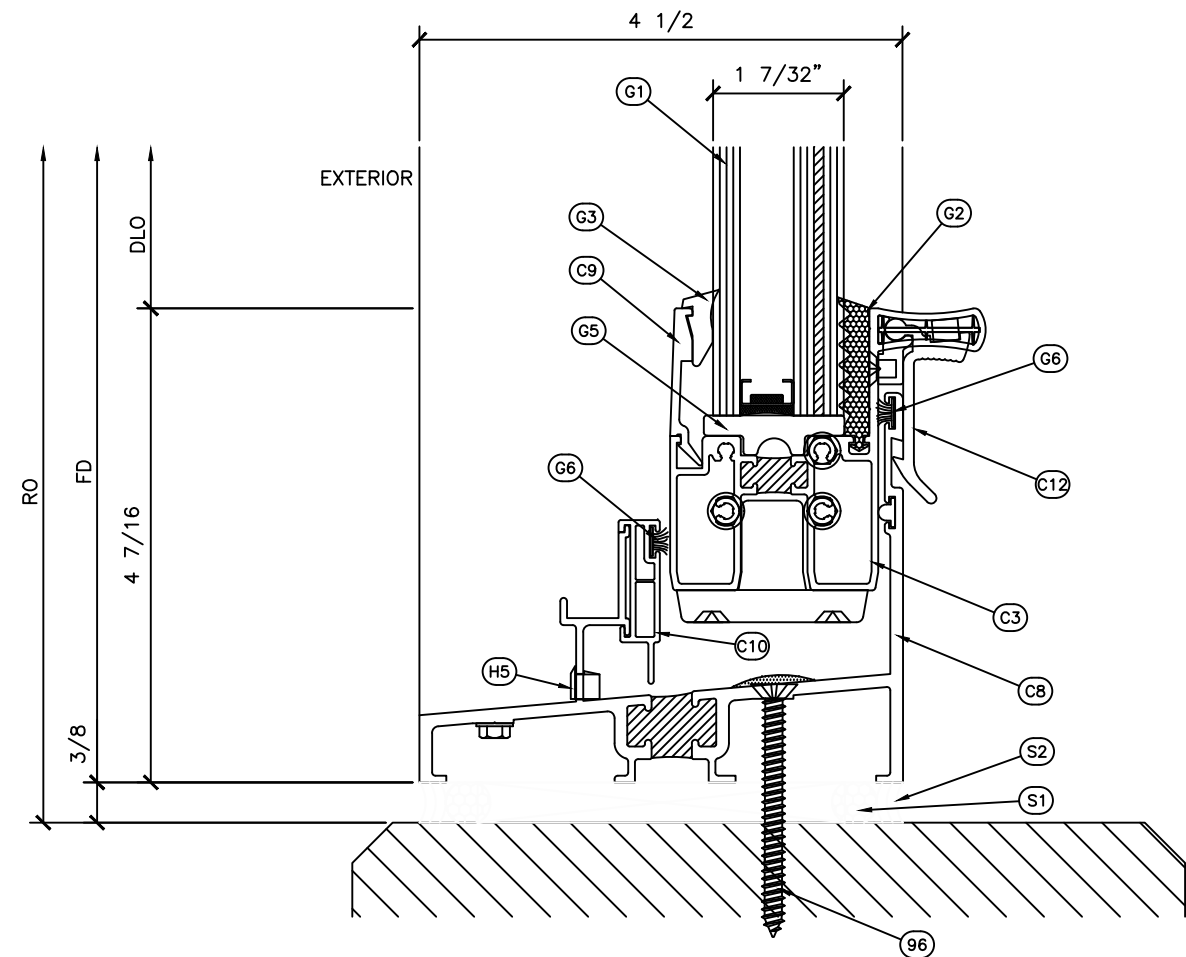
1'-0"=1'-0"



② SECTION DETAIL AT MEETING

ARCH REF: N/A

1'-0"=1'-0"



③ SECTION DETAIL AT SILL

ARCH REF: N/A

1'-0"=1'-0"

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Verified by:

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SERIES IW8000
HURRICANE RESISTANT
SINGLE HUNG WINDOW

Job Name:

Glazing Contractor:

DATE: 01.02.2018

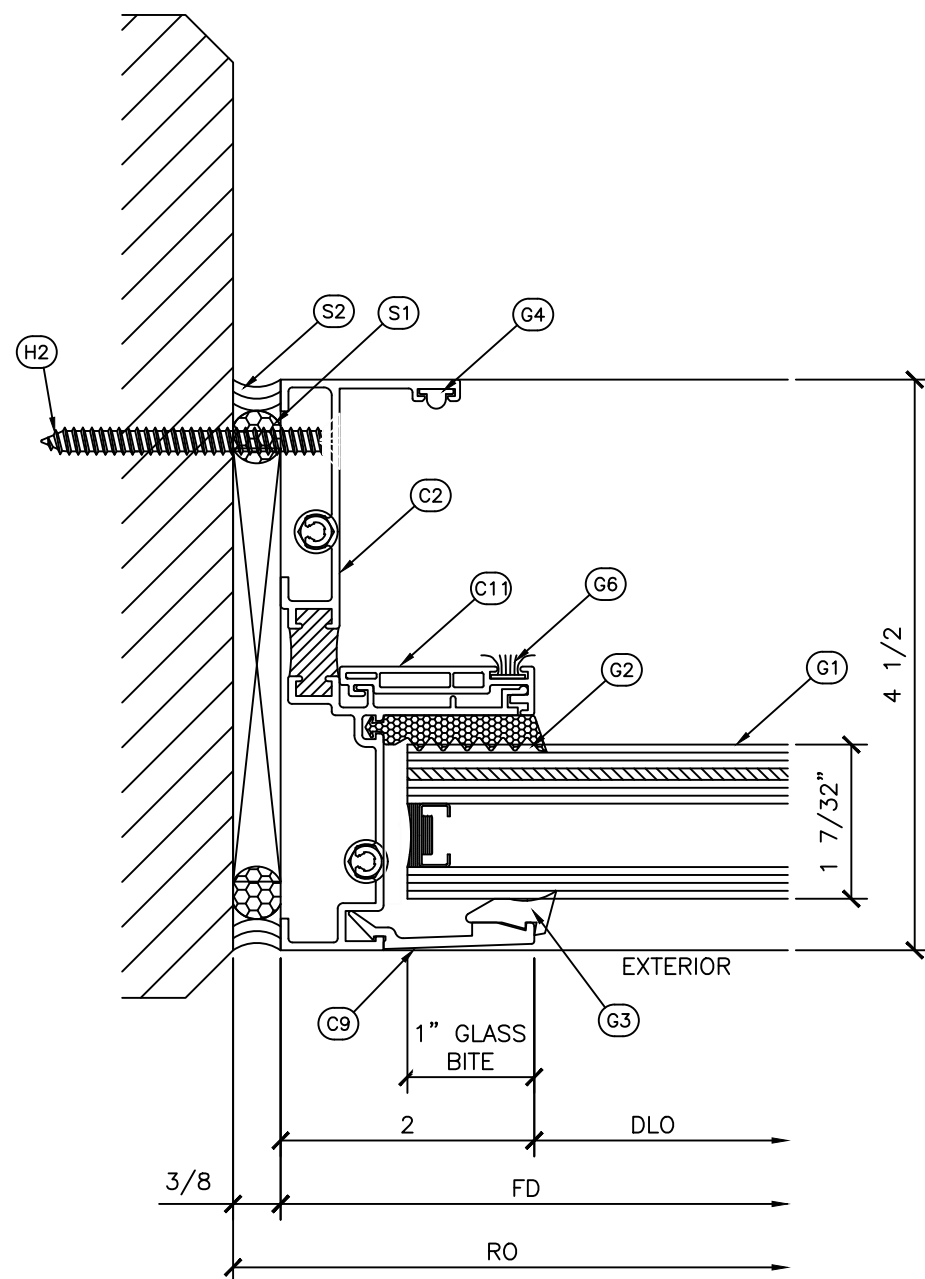
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SCALE: AS SHOWN

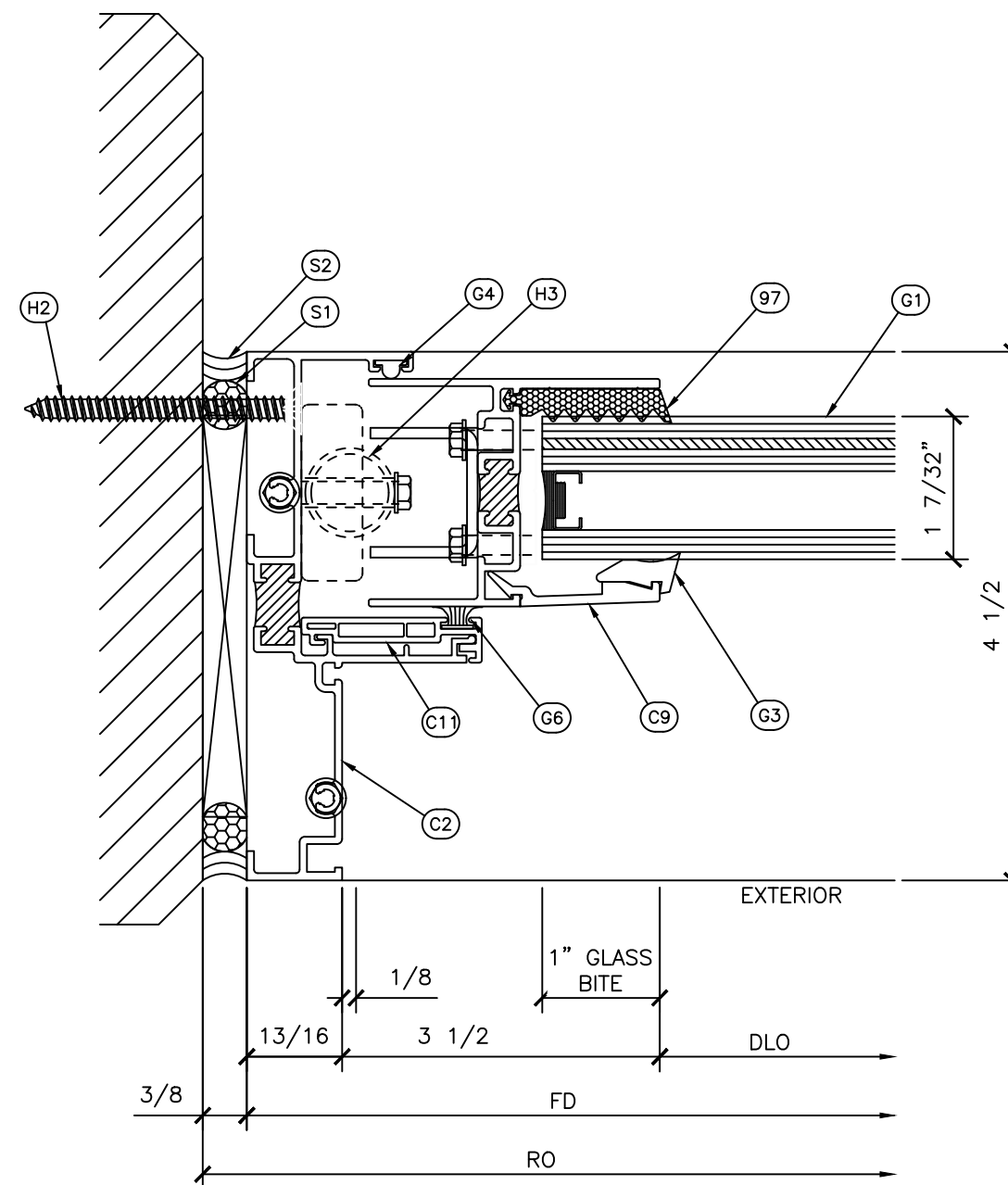
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SHT 2 OF 3



④ SECTION DETAIL AT JAMB

ARCH REF: N/A

$$\overline{1' - 0''} = 1' - 0''$$


⑤ SECTION DETAIL AT JAMB

ARCH REF: N/A

$$\overline{1' - 0''} = 1' - 0''$$


U

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ARCHITECTURAL PRODUCTS
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10111 Street, Los Angeles
www.crlaurence.com

SERIES IW8000
HURRICANE RESISTANT
SINGLE HUNG WINDOW

Job Name:

Glazing Contractor:

DATE: 01.02.2018

DRAWN BY: GDO

CHECKED BY: XX

SCALE: AS SHOWN

JOB #: PTC464017

SHT 3 OF 3



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SECTION 11

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	02/06/19	N/A	Original Report Issue
1	03/22/19	2, 7	Addition of exfiltration air results
2	03/22/19	1-4	Revise NAFS 2011 to 2017
3	03/25/19	2, 7	Include additional testing air infiltration values.